Class 2 Permit Modification Request

Modify Excluded Waste Prohibition

Waste Isolation Pilot Plant
Carlsbad, New Mexico

WIPP Permit Number - NM4890139088-TSDF

April 2013

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Acronyms and Abbreviations

ATWIR	Annual Transuranic Waste Inventory Report
C&C Agreement	Agreement for Consultation and Cooperation
CFR	Code of Federal Regulations
CH	contact-handled
DOE	U.S. Department of Energy
LWA	Land Withdrawal Act
NMAC	New Mexico Administrative Code
NMED	New Mexico Environment Department
NRC	Nuclear Regulatory Commission
Permit	Hazardous Waste Facility Permit
PMR	Permit Modification Request
QAPjP	Quality Assurance Project Plan
RCRA	Resource Conservation and Recovery Act
RH	remote-handled
SNF	spent nuclear fuel
TRU	transuranic
TRUCON	TRU Waste Content Codes
TWBIR	Transuranic Waste Baseline Inventory Report
WAC	Waste Acceptance Criteria
WIPP	Waste Isolation Pilot Plant

Overview of the Permit Modification Request

This document contains a Class 2 Permit Modification Request (**PMR**) for the Hazardous Waste Facility Permit (**Permit**) at the Waste Isolation Pilot Plant (**WIPP**), Permit Number NM4890139088-TSDF.

This PMR is being submitted by the U.S. Department of Energy (**DOE**),Carlsbad Field Office and Nuclear Waste Partnership LLC, collectively referred to as the Permittees, in accordance with the Permit, Part 1, Section 1.3.1 (20.4.1.900 New Mexico Administrative Code [**NMAC**] (incorporating Title 40 Code of Federal Regulations (**CFR**) §270.42(b))). The modification to the Permit is being requested for the following item:

- Modify the excluded waste prohibition, and associated text pertaining to transuranic (**TRU**) mixed waste that has ever been managed as high-level waste and waste from specified tanks listed in the Permit.

These changes do not reduce the ability of the Permittees to provide continued protection to human health and the environment.

The requested modification to the Permit and related supporting documents are provided in this **PMR**. The proposed modification to the text of the Permit has been identified using red text and a double underline for new text and a ~~strikeout~~ font for deleted information. All direct quotations are indicated by italicized text. The following information specifically addresses how compliance has been achieved with the Permit, Part 1, Section 1.3.1. for submission of this Class 2 PMR.

1. 20.4.1.900 NMAC (incorporating 40 CFR 270.42(b)(1)(i)) requires the applicant to describe the exact change to be made to the Permit conditions and supporting documents referenced by the Permit.

This modification proposes to revise Permit, Part 2 and Attachments C and C6, to modify the prohibition with respect to excluded waste (i.e., *TRU mixed waste that has ever been managed as high-level waste and waste from tanks specified in Permit Attachment C are not acceptable at WIPP unless specifically approved through a Class 3 permit modification*). The proposed changes pertain to the following part and attachments of the Permit:

- Revising Part 2, Section 2.3.3.8. and deleting Table 2.3.3.8.

- Revising Attachment C, Waste Analysis Plan, Section C-1c and deleting all text in Table C-4.

- Revising Attachment C6, Audit and Surveillance Program, Table C6-1.

This PMR does **NOT** propose to allow DOE to accept and dispose of high-level waste at the WIPP facility. The WIPP Land Withdrawal Act (**LWA**) Amendment specifically bans the emplacement and disposal of high-level radioactive waste and spent nuclear fuel (**SNF**) at the WIPP facility. Language added by this PMR reiterates the prohibition.

The Table of Changes (Appendix A) describes each change that is being proposed and the Proposed Revised Permit Text (Appendix B) shows the changes to the permit text in redline strikeout.

2. 20.4.1.900 NMAC (incorporating 40 CFR 270.42(b)(1)(ii)), requires the applicant to identify that the modification is a Class 2 modification.

The proposed modification is classified as a Class 2 Modification for the reason indicated below:

> 20.4.1.900 New Mexico Administrative Code (incorporating 40 CFR §270.42, Appendix I, Item B.) "*General Facility Standards, 1. Changes to waste sampling or analysis methods:…d. Other changes…2*"

A position paper on the classification of the modification is included as Appendix C and provides further information regarding classification as a Class 2 PMR.

3. 20.4.1.900 NMAC (incorporating 40 CFR 270.42(b)(1)(iii)), requires the applicant to explain why the modification is needed.

The WIPP Permit is developed and approved based on requirements specified in the Hazardous Waste Permit Program of the hazardous waste regulations that implement Subtitle C of the Resource Conservation and Recovery Act (**RCRA**). The RCRA regulations apply to all aspects pertaining to management of hazardous waste. The radioactive aspects of the waste are not regulated by the RCRA. The excluded waste prohibition requires that the New Mexico Environment Department (**NMED**) approve the Permittees TRU waste determination through a Class 3 PMR. Because this determination is not RCRA related, the Permittees believe the provisions, as stated, are inappropriate and should be modified.

In 2004 a Class 2 PMR was approved by the NMED to modify the Permit to exclude certain waste from shipment to the WIPP facility. The exclusion defined this waste as waste that was ever managed as high-level waste and waste from the tanks specified in the Permit. The PMR prohibited acceptance and disposal of such wastes at the WIPP facility unless they are approved for disposal through a subsequent Class 3 PMR.

The 2004 PMR was submitted by the Permittees in response to a 2003 proposal by the NMED to approve an agency-initiated permit modification that would restrict acceptance at the WIPP facility of this same waste and other waste not specifically included in the December 1995 DOE Transuranic Waste Baseline Inventory Report (**TWBIR**). Part of the concern expressed by NMED in their fact sheet issued with their proposal to approve an agency-initiated modification was the issuance of DOE Order 435.1, Radioactive Waste Management, and the litigation by the Natural Resource Defense Council contesting implementation of the order[1]. At the time of the proposed agency action, the Idaho Federal District Court had issued a judgment in the plaintiff's favor, which was appealed by DOE. The 9th Circuit Court of Appeals overturned the Idaho District Court's judgment in November 2004[2]. This occurred after the Permittee's had requested and received approval of the Class 2 PMR that added the subject waste exclusion.

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[1] NRDC v. DOE, Civ. No. 01-0413-S-BLW, U. S. District Court for the District of Idaho, July 2, 2003; NRDC challenged DOE Order 435.1 which governs the management of DOE radioactive waste. NRDC contended that the DOE exceeded its authority by attempting through the Order to revise the definition of high-level waste set by Congress in the Nuclear Waste Policy Act (42 U.S.C.S. § 10107).

[2] NRDC, et al v. DOE, No. 03-35711, United States Court of Appeals for the Ninth Circuit; The Appeals Court did not agree with the District Court that the case was ripe and reversed the decision and remanded it back to the District Court with directions to dismiss.

Additionally, subsequent to the approval of the PMR, the 9th Circuit Court of Appeals, in 2008, upheld a decision that the Washington Cleanup Priority Act, which attempted to restrict import of radioactive mixed waste to the Hanford site, was preempted. This decision was based upon a Supreme Court decision finding that the federal government has occupied the entire field of nuclear safety concerns and that the intent of the restriction was to regulate the radioactive aspects of the mixed waste and is thus preempted. Therefore, to the extent that the 2004 Class 2 permit modification requires the NMED to make a determination of nuclear safety concerns, the matter has been reserved to federal determination.

Another concern related to chemical compatibility was raised by the NMED in 2003 in its fact sheet. This concern provided the NMED with the nexus to the RCRA regulations in order to exclude the waste. The NMED indicated that since the excluded wastes were not identified as WIPP-bound waste in Revision 2 of the TWBIR, sufficient waste characterization was not available to determine that the waste could meet the WIPP Transuranic Waste Acceptance Criteria (**WAC**). Specifically, the NMED was concerned that the compatibility analysis submitted with the WIPP Facility Permit Application did not demonstrate that the excluded waste is compatible with other waste, the waste containers, the transportation containers, and the backfill material.

In approving the 2004 PMR, waste compatibility was no longer a concern of the NMED. There are three reasons why this is the case. First, compatibility is based on the chemicals in the waste. The comprehensive list of chemicals examined in the 1996 compatibility study has not changed except as noted below. Future changes to accommodate the excluded waste are not anticipated. Second, chemical compatibility is further addressed in the Permit in Part 2.3.3 and Attachment C where it explicitly states that *waste incompatible with backfill, seal and panel closures materials, container and packaging materials, shipping container materials, or other waste are not acceptable at WIPP*. Compliance with this prohibition is achieved as described in Section 3.5.3 of the WIPP WAC (DOE/WIPP-02-3122, Revision 7.3) for contact-handled (**CH**) TRU waste and Section 4.5.3 for remote-handled (**RH**) TRU waste. Third, when new chemicals are identified and new hazardous waste numbers requested for addition to the Permit, the request is accompanied with a chemical compatibility assessment[3].

As proof of this process, it is worth noting that Section 5.4 of Revision 2 of the TWBIR identifies possible future WIPP waste. Included were the tank waste at the Hanford Site, CH TRU waste at General Electric Vallecitos Nuclear Center, and particulate waste streams from Rocky Flats, among others. Of these wastes, only the Hanford wastes were specified in the excluded waste prohibition added to the Permit, while the wastes from General Electric Vallecitos Nuclear Center and Rocky Flats were subsequently shipped and disposed of at the WIPP facility without special provisions regarding chemical compatibility. This is because generator/storage sites are required to assess chemical compatibility as part of the waste characterization process prior to the waste being authorized for transport and disposal at the WIPP facility.

As described in the WIPP WAC, evaluation of chemical compatibility of waste to be received at the WIPP facility utilizes the authorized method for chemical compatibility evaluation that has been established for transport of the waste to the WIPP facility, instead of using some separate method. Using this methodology, chemical compatibility (or incompatibility) of wastes no longer provides a basis for maintaining the excluded waste prohibition in the Permit. Waste is

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[3] See for example Class 2 PMRs submitted March 6, 2001 and May 12, 2003.

evaluated for chemical compatibility through the systems and controls that currently exist and that all TRU waste containers destined for disposal at the WIPP facility must pass.

Since 2004 the TWBIR has been replaced with the Annual Transuranic Waste Inventory Report (**ATWIR**), which is updated annually. Chemical compatibility is not documented in, nor is it a part of, the annual inventory process. In 2012, an updated chemical compatibility evaluation for existing, projected, and approved TRU waste streams was performed using the following data sources:

- 2011 ATWIR
- WIPP Waste Data System
- CH TRU Content Codes (**TRUCON**) and RH TRUCON chemical lists
- The list of allowed hazardous waste numbers in the WIPP Permit
- Information on WIPP backfill materials and fire suppressant chemicals used in the WIPP underground.

The results of this chemical compatibility analysis/evaluation is provided in Appendix D and serves the following purposes: it demonstrates that there is no compatibility concern, it demonstrates that there is a methodology for evaluating compatibility should new chemicals be identified in the future, and it updates the compatibility analysis provided in the 1996 WIPP RCRA Part B Permit Application. As described previously, waste in waste containers that is transported to and disposed of at the WIPP facility undergoes compatibility review to ensure chemical compatibility with backfill, seal and panel closures materials, container and packaging materials, shipping container materials, or other wastes separately from the chemical compatibility analysis/evaluation provided in Appendix D.

The WIPP facility is authorized for the disposal of both CH and RH defense TRU waste as specified in the WIPP LWA Amendment (Public Law 104-201). Section 12 of the LWA Amendment specifically bans the emplacement and disposal of high-level radioactive waste and SNF at the WIPP facility. Definitions for TRU and high-level radioactive waste and for SNF are either provided or referenced in the WIPP LWA Amendment.

To comply with the ban on the emplacement and disposal of high-level radioactive waste and SNF stipulated in the WIPP LWA Amendment, waste being considered for disposal at the WIPP facility must be defense TRU waste. The DOE’s assessment and determination for compliance with the LWA is established from generator/storage site historical process and management records for the waste and is based upon documentation regarding the origin of the waste.

For instance, the definition for “high-level radioactive waste” given in the Nuclear Waste Policy Act of 1982[4] consists of two parts as follows:

A. *The highly radioactive material resulting from the reprocessing of spent nuclear fuel, including liquid waste produced directly in reprocessing and any solid material derived from such liquid waste that contains fission products in sufficient concentrations; and*

B. *Other highly radioactive material that the Commission, consistent with existing law, determines by rule requires permanent isolation.*

The second part of the definition effectively allows the Commission (i.e., the Nuclear Regulatory Commission (**NRC**)) to determine what constitutes high-level radioactive waste. The NRC has stated in 10 CFR 60.2 that high-level radioactive waste means:

1. *Irradiated reactor fuel,*

2. *Liquid waste resulting from the operation of the first cycle solvent extraction system, or equivalent, and the concentrated waste from subsequent extraction cycles, or equivalent, in a facility for reprocessing irradiated reactor fuel, and*

3. *Solids into which such liquid wastes have been converted.*

Based on these definitions for high-level radioactive waste, it is clear that the assessment of a waste (e.g., waste stored in tanks) is not based upon specific numerical concentration values, but instead on the source and origin from which the waste is derived. As such, the generator/storage site historical process and management records provide the basis for any high-level radioactive waste assessment. DOE Order 435.1, Radioactive Waste Management, provides specific criteria for determining whether a radioactive waste is high-level waste, TRU waste, or other radioactive waste as defined by the Nuclear Waste Policy Act and the NRC.

Wastes to be disposed of at the WIPP facility are determined to be defense TRU waste as required by the WIPP WAC. As such, there is no need in the Permit to specifically exclude some waste streams with a provision that requires them to be approved through a Class 3 PMR while allowing other waste streams to be approved without such a provision. The waste analysis requirements for the excluded wastes currently identified in the Permit would be no different from any other waste being considered for disposal at the WIPP facility, and as such, they should be subject to the same waste stream approval process. Furthermore, the prohibition for disposal of high level-radioactive waste at the WIPP facility is specifically added to the WIPP Permit by the PMR and as such does not need to have additional approval requirements imposed in the WIPP Permit. In addition, the responsibility for nuclear waste generated as the result of atomic energy defense activities is granted to the DOE by the Atomic Energy Act of 1954[5], as amended. The Class 3 process associated with the waste exclusion in the Permit puts the NMED in the position of having to make a decision whether or not to modify the Permit regarding the adequacy of a DOE defense nuclear classification and not the hazardous waste characteristics. The WIPP Permit is meant to address requirements and prohibitions associated with the chemical constituents in the waste. These requirements and prohibitions are related to

[4] 42 U.S.C 10101 et seq.
[5] 42 U.S.C 2011 et seq.

the waste parameters that must be assessed to ensure the waste can be managed safely at the disposal facility and in accordance with the RCRA hazardous waste regulations.

The proposed modification does not alter or modify the program requirements or components associated with waste characterization. The Permittees are still responsible for obtaining accurate waste analysis information. In order to accomplish this, the Permittees require the generator/storage site to produce waste information that is consistent with the requirements in the Permit. This is accomplished as follows:

- Generator/storage sites are required to develop a Quality Assurance Project Plan (**QAPjP**) that mirrors the requirements in the WIPP Permit and must provide a list of the procedures that implement the requirements in the QAPjP. The Permittees must approve the QAPjP prior to generator/storage sites performing characterization of waste for shipment to the WIPP facility.

- The audit and surveillance program, as described in Attachment C6 of the Permit, provides the assurance that the generator/storage site waste characterization program produces information that will allow the Permittees to meet their obligation for accurate waste analysis information.

- Generator/storage sites provide radiography and visual examination results in batch data reports that must pass through three levels of data review before data are considered complete and released for waste analysis purposes. The three levels of review are: 1) data generation level review, 2) independent technical review, and 3) project level review.

- Once a waste stream has been characterized, the Site Project Manager will also submit a Waste Stream Profile Form and Characterization Information Summary, which will be used as the basis for acceptance of waste characterization information by the Permittees.

Furthermore, the proposed modification does not alter or modify the authority of the NMED in review and oversight of these program components. This process has worked effectively for approximately 14 years without using the Class 3 PMR approval process currently required for excluded waste. Therefore, the requirement to submit and approve a Class 3 PMR for waste that has ever been managed as high-level waste and waste from waste tanks subject to exclusion is not needed to ensure that compliant and acceptable waste is received and disposed of at the WIPP facility. Modification of the exclusion specifically prohibits the DOE from sending high-level waste, as defined in the LWA, to the WIPP facility.

In 1981, in accordance with Section 213 of the Department of Energy National Security and Military Applications of Nuclear Energy Authorization Act of 1980, Pub. Law 96-164, the DOE and the State of New Mexico entered into an Agreement for Consultation and Cooperation (the C&C Agreement). The C&C Agreement was subsequently modified in 1984 and 1987. The C&C Agreement documents the formal agreement between DOE and New Mexico on matters related to the development, operation, and decommissioning of the WIPP facility. Article VI, as amended, discusses the WIPP Mission. It states that “WIPP is intended to include receipt, handling and permanent disposal of defense transuranic waste…” Additionally, Section 12 of the WIPP Land Withdrawal Act, as amended (**LWA**), states that “The Secretary shall not transport high-level radioactive waste or spent nuclear fuel to WIPP or emplace or dispose of such waste or fuel at WIPP.” The PMR does not change the mission as identified in the C&C

Agreement that DOE will receive, handle, and permanently dispose of defense TRU waste, nor does it disturb the restriction of the LWA prohibiting the transportation, emplacement, or disposal of high-level radioactive waste or spent nuclear fuel at the WIPP facility.

The Permit already contains numerous conditions (e.g., Part 1, Section 1.2, Part 2, Section 2.2.1, Part 2, Section 2.3.3.3) that limit the type of hazardous waste that can be received and disposed of at the WIPP facility as waste defined by the DOE as TRU mixed waste. These conditions merely identify the radiological classification of the waste. They do not regulate the nuclear safety aspects of TRU mixed waste. Such regulation is reserved to the DOE as discussed previously.

In summary, this PMR is needed for the following reasons:

A. Consistency: Modify the excluded waste prohibition to be consistent with the WIPP LWA without the requirement to obtain special NMED regulatory approval that is not based on a RCRA-related (chemical) property of the waste.

B. Efficiency: Modification of the exclusion and associated approval requirements will streamline the process for shipping eligible TRU waste from generator/storage sites to the WIPP facility without incurring unnecessary delays associated with the approval of a Class 3 PMR. The potential benefit to the public from this PMR is that it facilitates a more timely cleanup of sites contaminated with TRU waste and results in risk reduction. In addition, the public is afforded a 60-day comment period by virtue of the Class 2 process to provide written comments regarding the proposal to modify the exclusion.

4. 20.4.1.900 NMAC (incorporating 40 CFR 270.42 (b)(1)(iv)), requires the applicant to provide the applicable information required by 40 CFR 270.13 through 270.21, 270.62 and 270.63.

The regulatory crosswalk describes those portions of the WIPP Permit that are affected by this PMR. Where applicable, regulatory citations in this modification reference Title 20, Chapter 4, Part 1, NMAC, revised March 9, 2009, incorporating 40 CFR Parts 264 and 270. 40 CFR §§270.16 through 270.21, 270.62, and 270.63 are not applicable at WIPP. Consequently, they are not listed in the regulatory crosswalk table.

5. 20.4.1.900 NMAC (incorporating 40 CFR 270.11(d)(1) and 40 CFR 270.30(k)), requires that any person signing under paragraph a and b must certify the document in accordance with 20.4.1.900 NMAC.

The transmittal letter for this PMR contains the signed certification statement in accordance with Permit Part 1, Section 1.9.

Regulatory Crosswalk

Regulatory Citation(s) 20.4.1.900 NMAC (incorporating 40 CFR Part 270)	Regulatory Citation(s) 20.4.1.500 NMAC (incorporating 40 CFR Part 264)	Description of Requirement	Added or Clarified Information		
			Section of the WIPP Permit Application	Yes	No
§270.13		Contents of Part A permit application	Attachment B Part A		✓
§270.14(b)(1)		General facility description	Attachment A		✓
§270.14(b)(2)	§264.13(a)	Chemical and physical analyses	Part 2.3.1 Attachment C		✓
§270.14(b)(3)	§264.13(b)	Development and implementation of waste analysis plan	Part 2.3.1.1 Attachment C	✓	
	§264.13(c)	Off-site waste analysis requirements	Part 2.2.1 Attachment C	✓	
§270.14(b)(5)	§264.15(a-d)	General inspection requirements	Part 2.7 Attachment E-1a		✓
	§264.174	Container inspections	Attachment E-1b(1)		✓
§270.23(a)(2)	§264.602	Miscellaneous units inspections	Attachment E-1b Attachment E-1b(1)		✓
§270.14(b)(6)		Request for waiver from preparedness and prevention requirements of Part 264 Subpart C	NA		✓
§270.14(b)(7)	264 Subpart D	Contingency plan requirements	Part 2.12 Attachment D		✓
	§264.51	Contingency plan design and implementation	Part 2.12.1 Attachment D		✓
	§264.52 (a) & (c-f)	Contingency plan content	Attachment D		✓
	§264.53	Contingency plan copies	Part 2.12.2 Attachment D		✓
	§264.54	Contingency plan amendment	Part 2.12.3 Attachment D		✓
	§264.55	Emergency coordinator	Part 2.12.4 Attachment D-4a(1)		✓
	§264.56	Emergency procedures	Attachment D-4		✓
§270.14(b)(8)		Description of procedures, structures or equipment for:	Attachment A Part 2.11		✓
§270.14(b)(8)(i)		Prevention of hazards in unloading operations (e.g., ramps and special forklifts)	Part 2.11		✓
§270.14(b)(8)(ii)		Runoff or flood prevention (e.g., berms, trenches, and dikes)	Attachment A1-1c(1) Part 2.11		✓
§270.14(b)(8)(iii)		Prevention of contamination of water supplies	Part 2.11		✓
§270.14(b)(8)(iv)		Mitigation of effects of equipment failure and power outages	Part 2.11		✓
§270.14(b)(8)(v)		Prevention of undue exposure of personnel (e.g., personal protective equipment)	Part 2.11		✓
§270.14(b)(8)(vi) §270.23(a)(2)	§264.601	Prevention of releases to the atmosphere	Part 2.11 Part 4.4 Attachment D-4e Attachment G-1a		✓
	264 Subpart C	Preparedness and Prevention	Part 2.10		✓
	§264.31	Design and operation of facility	Part 2.1		✓

Regulatory Citation(s) 20.4.1.900 NMAC (incorporating 40 CFR Part 270)	Regulatory Citation(s) 20.4.1.500 NMAC (incorporating 40 CFR Part 264)	Description of Requirement	Added or Clarified Information		
			Section of the WIPP Permit Application	Yes	No
	§264.32	Required equipment	Part 2.10.1 Attachment D		✓
	§264.33	Testing and maintenance of equipment	Part 2.10.2 Attachment E-1a		✓
	§264.34	Access to communication/alarm system	Attachment E-1a Part 2.10.3		✓
	§264.35	Required aisle space	Part 2.10.4		✓
	§264.37	Arrangements with local authorities	Attachment D-4a(3)		✓
§270.14(b)(9)	§264.17(a-c)	Prevention of accidental ignition or reaction of ignitable, reactive, or incompatible wastes	Part 2.9		✓
§270.14(b)(10)		Traffic pattern, volume, and controls, for example: Identification of turn lanes Identification of traffic/stacking lanes, if appropriate Description of access road surface Description of access road load-bearing capacity Identification of traffic controls	Attachment A4		✓
§270.14(b) (11)(i) and (ii)	§264.18(a)	Seismic standard applicability and requirements	Attachment G2-2.2 Renewal App. Sep. 2009, 270.14 Contents of Part B: General Requirements		✓
§270.14(b)(11)(iii-v)	§264.18(b)	100-year floodplain standard	Attachment A1-1c(1) Renewal App. Sep. 2009, 270.14 Contents of Part B: General Requirements		✓
§270.14(b) (12)	§264.16(a-e)	Personnel training program	Part 2.8 Attachment F		✓
§270.14(b)(13)	264 Subpart G	Closure and post-closure plans	Part 6 & 7 Attachment G & H		✓
§270.14(b)(13)	§264.111	Closure performance standard	Attachment G-1a		✓
§270.14(b)(13)	§264.112(a), (b)	Written content of closure plan	Attachment G-1		✓
§270.14(b)(13)	§264.112(c)	Amendment of closure plan	Part 6.3 Attachment G-1d(4)		✓
§270.14(b)(13)	§264.112(d)	Notification of partial and final closure	Attachment G-2a		✓
§270.14(b)(13)	§264.112(e)	Removal of wastes and decontamination/dismantling of equipment	Attachment G-1e(2)		✓
§270.14(b)(13)	§264.113	Time allowed for closure	Part 6.5 Attachment G-1d		✓
§270.14(b)(13)	§264.114	Disposal/decontamination	Part 6.6 Attachment G-1e(2)		✓
§270.14(b)(13)	§264.115	Certification of closure	Part 6.7 Attachment G-2a		✓
§270.14(b)(13)	§264.116	Survey plat	Part 6.8 Attachment G-2b		✓

Regulatory Citation(s) 20.4.1.900 NMAC (incorporating 40 CFR Part 270)	Regulatory Citation(s) 20.4.1.500 NMAC (incorporating 40 CFR Part 264)	Description of Requirement	Added or Clarified Information		
			Section of the WIPP Permit Application	Yes	No
§270.14(b)(13)	§264.117	Post-closure care and use of property	Part 7.3 Attachment H-1a		✓
§270.14(b)(13)	§264.118	Post-closure plan; amendment of plan	Part 7.5 Attachment H-1a (1)		✓
§270.14(b)(13)	§264.178	Closure/containers	Part 6.9 Attachment A1-1h Attachment G-1		✓
§270.14(b)(13)	§264.601	Environmental performance standards-miscellaneous units	Attachment A-4 Attachment D-1 Attachment G-1a		✓
§270.14(b)(13)	§264.603	Post-closure care	Part 7.3 Attachment G-1a(3)		✓
§270.14(b)(14)	§264.119	Post-closure notices	Part 7.4 Attachment H-2		✓
§270.14(b)(15)	§264.142	Closure cost estimate	NA		✓
	§264.143	Financial assurance	NA		✓
§270.14(b)(16)	§264.144	Post-closure cost estimate	NA		✓
	§264.145	Post-closure care financial assurance	NA		✓
§270.14(b)(17)	§264.147	Liability insurance	NA		✓
§270.14(b)(18)	§264.149-150	Proof of financial coverage	NA		✓
§270.14(b)(19)(i), (vi), (vii), and (x)		Topographic map requirements Map scale and date Map orientation Legal boundaries Buildings Treatment, storage, and disposal operations Run-on/run-off control systems Fire control facilities	Attachment B2 Part A Renewal App. Sep. 2009, 270.14 Contents of Part B: General Requirements		✓
§270.14(b)(19)(ii)	§264.18(b)	100-year floodplain	Attachment B2 Part A Renewal App. Sep. 2009, 270.14 Contents of Part B: General Requirements		✓
§270.14(b)(19)(iii)		Surface waters	Attachment B2 Part A Renewal App. Sep. 2009, 270.14 Contents of Part B: General Requirements		✓
§270.14(b)(19)(iv)		Surrounding land use	Attachment B2 Part A Renewal App. Sep. 2009, 270.14 Contents of Part B: General Requirements		✓

Regulatory Citation(s) 20.4.1.900 NMAC (incorporating 40 CFR Part 270)	Regulatory Citation(s) 20.4.1.500 NMAC (incorporating 40 CFR Part 264)	Description of Requirement	Added or Clarified Information		
			Section of the WIPP Permit Application	Yes	No
§270.14(b)(19)(v)		Wind rose	Attachment B2 Part A Renewal App. Sep. 2009, 270.14 Contents of Part B: General Requirements		✓
§270.14(b)(19)(viii)	§264.14(b)	Access controls	Attachment B2 Part A Renewal App. Sep. 2009, 270.14 Contents of Part B: General Requirements		✓
§270.14(b)(19)(ix)		Injection and withdrawal wells	Attachment B2 Part A Renewal App. Sep. 2009, 270.14 Contents of Part B: General Requirements		✓
§270.14(b)(19)(xi)		Drainage on flood control barriers	Attachment B2 Part A Renewal App. Sep. 2009, 270.14 Contents of Part B: General Requirements		✓
§270.14(b)(19)(xii)		Location of operational units	Attachment B2 Part A Renewal App. Sep. 2009, 270.14 Contents of Part B: General Requirements		✓
§270.14(b)(20)		Other federal laws Wild and Scenic Rivers Act National Historic Preservation Act Endangered Species Act Coastal Zone Management Act Fish and Wildlife Coordination Act Executive Orders	Attachment B Renewal App. Sep. 2009, 270.14 Contents of Part B: General Requirements		✓
§270.15	§264 Subpart I	Containers	Part 3 Part 4.3 Attachment A1		✓
	§264.171	Condition of containers	Part 3.3 Attachment A1		✓
	§264.172	Compatibility of waste with containers	Part 3.4 Attachment A1		✓
	§264.173	Management of containers	Part 3.5 Attachment A1		✓
	§264.174	Inspections	Part 3.7 Attachment E-1 Attachment A1-1e		✓

Regulatory Citation(s) 20.4.1.900 NMAC (incorporating 40 CFR Part 270)	Regulatory Citation(s) 20.4.1.500 NMAC (incorporating 40 CFR Part 264)	Description of Requirement	Added or Clarified Information		
			Section of the WIPP Permit Application	Yes	No
§270.15(a)	§264.175	Containment systems	Part 3.6 Attachment A1		✓
§270.15(c)	§264.176	Special requirements for ignitable or reactive waste	Attachment A1-1g Permit Part 2.1		✓
§270.15(d)	§264.177	Special requirements for incompatible wastes	Attachment A1-1g Permit Part 2.3.3.4		✓
	§264.178	Closure	Part 6 Attachment G		✓
§270.15(e)	§264.179	Air emission standards	Part 4.4.2 Attachment N		✓
§270.23	264 Subpart X	Miscellaneous units	Part 1.3.1 Attachment A2-1 Attachment G1.3.1		✓
§270.23(a)	§264.601	Detailed unit description	Part 4 Part 5 Attachment A2 Attachment L		✓
§270.23(b)	§264.601	Hydrologic, geologic, and meteorologic assessments	Part 4 Part 5 Attachment A2 Attachment L		✓
§270.23(c)	§264.601	Potential exposure pathways	Part 4 Part 5 Attachment A2 Attachment N Attachment L		✓
§270.23(d)		Demonstration of treatment effectiveness	Part 4 Attachment A2 Attachment N		✓
	§264.602	Monitoring, analysis, inspection, response, reporting, and corrective action	Part 4 Part 5 Attachment A2 Attachment E-1 Attachment N Attachment L		✓
	§264.603	Post-closure care	Attachment H Attachment H1		✓
	264 Subpart E	Manifest system, record keeping, and reporting	Permit Part 1 Permit Part 2.13 & 2.14 Permit Part 4 Attachment C		✓
§270.30(j)(2)	§264.73(b)	Ground-water records	Part 1		✓
	264 Subpart F	Releases from solid waste management units	Part 5 & 7 Attachment G2 & L		✓
	§264.90	Applicability	Part 5 Attachment L		✓
	§264.91	Required programs	Attachment L		✓
	§264.92	Ground-water protection standard	Attachment L		✓
	§264.93	Hazardous constituents	Attachment L		✓

Regulatory Citation(s) 20.4.1.900 NMAC (incorporating 40 CFR Part 270)	Regulatory Citation(s) 20.4.1.500 NMAC (incorporating 40 CFR Part 264)	Description of Requirement	Added or Clarified Information		
			Section of the WIPP Permit Application	**Yes**	**No**
	§264.94	Concentration limits	Part 5 Attachment L		✓
	§264.95	Point of compliance	Part 5 Attachment L		✓
	§264.96	Compliance period	Attachment L		✓
	§264.97	General ground-water monitoring requirements	Part 5 Attachment L		✓
	§264.98	Detection monitoring program	Part 5 Attachment L		✓
	§264.99	Compliance monitoring program	Part 5 Attachment L		✓
	§264.100	Corrective action program	Part 5 Attachment L		✓
	§264.101	Corrective action for solid waste management units	Part 8 Attachment L		✓
	264 Appendix IX	Ground-water Monitoring List	Part 5 Attachment L		✓

Appendix A
Table of Changes

Table of Changes

Affected Permit Section	Explanation of Change
Permit Part 2 Condition 2.3.3.8	Modified the excluded waste prohibition to read: “High-level radioactive waste, as defined in the WIPP Land Withdrawal Act, is not acceptable at the WIPP facility.”
Permit Part 2, Table 2.3.3.8	Deleted table in its entirety.
Attachment C, Section C-1c	Modified bullet that states: “waste that has ever been managed as high-level waste and waste from tanks specified in Table C-4, unless specifically approved through a Class 3 permit modification,” to read: “high-level radioactive waste as defined in the WIPP Land Withdrawal Act”
Attachment C. Table C-4	Deleted all text in the table and reserved the table.
Attachment C6, Table C6-1	Modified bullet in Item 12a that states: “waste that has ever been managed as high-level waste and waste from tanks specified in Table C-4, unless specifically approved through a Class 3 permit modification,” to read: “high-level radioactive waste as defined in the WIPP Land Withdrawal Act”

Appendix B
Proposed Revised Permit Text

Proposed Revised Permit Text:

2.3.3.8. Excluded Waste

High-level radioactive waste, as defined in the WIPP Land Withdrawal Act, is not acceptable at the WIPP facility.TRU mixed waste that has ever been managed as high-level waste and waste from tanks specified in Permit Attachment C are not acceptable at WIPP unless specifically approved through a Class 3 permit modification. Such wastes are listed in Table 2.3.3.8 below.

Table 2.3.3.8 - Additional Approved Waste Streams	
Date Class 3 Permit Modification Request Approved	**Description of Waste Stream**

C-1c Waste Prohibited at the WIPP Facility

The following TRU mixed waste are prohibited at the WIPP facility:

- liquid waste is not acceptable at WIPP. Liquid in the quantities delineated below is acceptable:

  - Observable liquid shall be no more than 1 percent by volume of the outermost container at the time of radiography or visual examination

  - Internal containers with more than 60 milliliters or 3 percent by volume observable liquid, whichever is greater, are prohibited

  - Containers with Hazardous Waste Number U134 assigned shall have no observable liquid

  - Overpacking the outermost container that was examined during radiography or visual examination or redistributing untreated liquid within the container shall not be used to meet the liquid volume limits

- non-radionuclide pyrophoric materials, such as elemental potassium

- hazardous wastes not occurring as co-contaminants with TRU mixed wastes (non-mixed hazardous wastes)

- wastes incompatible with backfill, seal and panel closures materials, container and packaging materials, shipping container materials, or other wastes

- wastes containing explosives or compressed gases

- wastes with polychlorinated biphenyls (**PCBs**) not authorized under an EPA PCB waste disposal authorization

- wastes exhibiting the characteristic of ignitability, corrosivity, or reactivity (EPA Hazardous Waste Numbers of D001, D002, or D003)

- high-level radioactive waste as defined in the WIPP Land Withdrawal Act~~waste that has ever been managed as high-level waste and waste from tanks specified in Table C-4, unless specifically approved through a Class 3 permit modification~~

- any waste container from a waste stream (or waste stream lot) which has not undergone either radiographic or visual examination of a statistically representative subpopulation of the waste stream in each shipment, pursuant to Permit Attachment C7

- any waste container from a waste stream which has not been preceded by an appropriate, certified WSPF (see Section C-1d)

Table C-4 (Reserved)
Waste Tanks Subject to Exclusion

Hanford Site - 177 Tanks	
A-101 through A-106	C-201 through C-204
AN-101 through AN-107	S-101 through S-112
AP-101 through AP-108	SX-101 through SX-115
AW-101 through AW-106	SY-101 through SY-103
AX-101 through AX-104	T-101 through T-112
AY-101 through AY-102	T-201 through T-204
B-101 through B-112	TX-101 through TX-118
B-201 through B-204	TY-101 through TY-106
BX-101 through BX-112	U-101 through U-112
BY-101 through BY-112	U-201 through U-204
C-101 through C-112	
Savannah River Site - 51 Tanks	
Tank 1 through 51	
Idaho National Engineering and Environmental Laboratory - 15 Tanks	
WM-103 through WM-106	WM-180 through 190

Table C6-1 Waste Analysis Plan (WAP) Checklist

Waste Analysis Plan (WAP) General Checklist for use at DOE'S Generator/Storage Sites

	WAP Requirement[1]	Procedure Documented: Location	Procedure Documented: Adequate? Y/N (Why?)	Example of Implementation/ Objective Evidence, as applicable: Item Reviewed	Example of Implementation/ Objective Evidence, as applicable: Adequate? Y/N	Comment (e.g., any change in procedure since last audit, etc.)
	Unacceptable Waste					

12	Are procedures in place to ensure that the generator/storage site ensures, through administrative and operational procedures and characterization techniques, that waste containers do not include the following unacceptable waste:
	• liquid waste is not acceptable at WIPP. Liquid in the quantities delineated below is acceptable
	    • Observable liquid shall be no more than 1 percent by volume of the outermost container at the time of radiography or visual examination
	    • Internal containers with more than 60 milliliters or 3 percent by volume observable liquid, whichever is greater, are prohibited
	    • Containers with Hazardous Waste Number U134 assigned shall have no observable liquid
	    • Overpacking the outermost container that was examined during radiography or visual examination or redistributing untreated liquid within the container shall not be used to meet the liquid volume limits
	• non-radionuclide pyrophoric materials
	• hazardous wastes not occurring as co-contaminants with TRU wastes (non-mixed hazardous wastes)
	• wastes incompatible with backfill, seal and panel closures materials, container and packaging materials, shipping container materials, or other wastes
	• wastes containing explosives or compressed gases (continued below)					

	WAP Requirement[1]	Procedure Documented		Example of Implementation/ Objective Evidence, as applicable		Comment (e.g., any change in procedure since last audit, etc.)
		Location	Adequate? Y/N (Why?)	Item Reviewed	Adequate? Y/N	
12a	• wastes with polychlorinated biphenyls (PCBs) not authorized under an EPA PCB waste disposal authorization • wastes exhibiting the characteristic of ignitability, corrosivity, or reactivity (EPA Hazardous Waste Numbers of D001, D002, or D003) • high-level radioactive waste as defined in the WIPP Land Withdrawal Act~~waste that has ever been managed as high-level waste and waste from tanks specified in Table C-4, unless specifically approved through a Class 3 permit modification~~ • any waste container from a waste stream (or waste stream lot) which has not undergone either radiographic or visual examination of a statistically representative subpopulation of the wastes stream in each shipment pursuant to Permit Attachment C7 • any waste container from a waste stream which has not been preceded by an appropriate, certified Waste Stream Profile Form (see Section C-1d) (Section C-1c)					

Appendix C
Position Paper on the Classification of the Permit Modification Entitled: "Modify Excluded Waste Prohibition"

Position Paper on the Classification of the Permit Modification entitled:

"Modify Excluded Waste Prohibition"

Purpose: The purpose of this paper is to provide justification for the classification of the proposed Waste Isolation Pilot Plant (WIPP) Permit Modification Request (PMR) entitled "Modify Excluded Waste Prohibition." The Permittees have classified the modification as a Class 2 based on Item B.1.d in Appendix I of Title 40 of the Code of Federal Regulations (CFR), Part 270.42. This item is described as "B. General Facility Standards, 1. changes to waste sampling and analysis methods:, d. other changes." This paper provides background for the modification then discusses the regulatory framework, agency guidance, and precedent for the use of this classification. This paper also discusses the complexity of changes in terms of determining whether the Class 3 process is needed.

Background: In 1988, the U.S. Environmental Protection Agency (EPA) identified that it would be necessary to modify hazardous waste facility permits.[1] The EPA established a hierarchy for permit modifications that has two fundamental features: (1) a three-tiered classification system, and (2) specific procedures for processing modifications of each class. Included with the classification system is Appendix I to 40 CFR 270 that "identifies what types of facility changes [that] constitute Classes 1, 2, and 3 modifications. This classification list generally follows the organization of the facility standards in Part 264 and is designed to be self-explanatory."[2] This encourages a plain language reading of the items classified in Appendix I. The EPA further stated, regarding Section B of Appendix I: "The "General Facility Standards" portion of Appendix I encompasses changes that affect the general standards and requirements that apply to all hazardous waste facilities (Subparts B through E of Part 264). These changes primarily involve the various plans that must be maintained by the facility (e.g., contingency plan, training plan) and are self-explanatory."[3] These specifically include Subpart B, Waste Analysis.

Section B.1 specifically applies to 40 CFR 264.13 General Waste Analysis. Of the four items listed under the "B.1" heading, only item "a" or item "d" are likely to apply to the WIPP facility. Therefore, based on the plain reading of the requirements and the list in Appendix I, if the Permittees seek to change any of these items in the Waste Analysis Plan (**WAP**), and the change is not the result of a change in the regulations, the general category of "other changes" found in item "B.1.d" would apply.

What the Permittees are proposing: The Permittees are proposing to modify the excluded waste prohibition, and associated text from Permit Part 2 and Permit Attachments C and C6. The excluded waste prohibition pertains to transuranic (**TRU**) mixed waste that has ever been managed as high-level waste and waste from specified tanks listed in the Permit. The Permit part and sections affected by this PMR are related to WAP requirements in 40 CFR 264.13. Permit Part 2, Section 2.3.3. is the treatment, storage and disposal facility waste acceptance

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[1] 53 FR 37912, Wednesday, September 28, 1988, p. 37913 states: "The Agency believes that permits must be viewed as living documents that can be modified to allow facilities to make technological improvements, comply with new environmental standards, respond to changing waste streams, and generally improve waste management practices. Since permits are usually written for ten years of operation, the facility or the permit writer cannot anticipate all or even most of the administrative, technical, or operational changes required over the permit term for the facility to maintain an up-to-date operation. Therefore, permit modifications are inevitable."

[2] 53 FR 37912, Wednesday, September 28, 1988, p. 37923.

[3] 53 FR 37912, Wednesday, September 28, 1988, p. 37925.

criteria (TSDF-WAC), which is a subsection under the General Waste Analysis requirements. Permit Attachment C, Section C-1c and Table C-8 are included in the WIPP WAP. According to the EPA guidance for preparing Waste Analysis Plans (OSWER 9938.4-03), the purpose of the waste analysis is three-fold: to determine if the waste is hazardous, to identify and classify the waste, and to determine waste management options. The guidance further indicates that waste analysis involves verifying the physical and chemical characteristics of the waste by performing a detailed chemical and physical analysis or by using acceptable knowledge. The WIPP Permit currently employs acceptable knowledge and radiography or visual examination to accomplish these purposes. The process of preparing a waste analysis plan and identifying the methods to use for waste analysis involves the identification of waste parameters that, when assessed, can demonstrate that the waste is acceptable to the disposal facility. The parameters identified for the WIPP facility are included in the TSDF-WAC and are amenable to characterization using the methods mentioned above.

This tie between parameters, prohibited items, and characterization methods, is mandated by the EPA guidance and is a fundamental premise in the WIPP Permit. Therefore, a change in a prohibited item directly affects the sampling and analysis methods and 40 CFR 270.42 Appendix I, Item B.1.d. applies. Because the prohibition is referred to as the TSDF-WAC in the WAP, no specific changes are needed in the WAP methods discussions, however, generator/storage site implementing procedures are expected to change.

In response to 20.4.1.900 New Mexico Administrative Code (NMAC) (incorporating 40 CFR 270.42(b)(1)(ii)), which requires the applicant to identify that the modification is a Class 2 modification, the Permittees propose a Class 2 permit modification for the following reasons:

1. **Application of Appendix I to 40 CFR 270.42, Classification of Permit Modification**. Based on the descriptions provided in Appendix I to 40 CFR 270.42, the proposed modification falls into Item B, *General Facility Standards*…1. *Changes to waste sampling or analytical methods*…d. *Other changes*. Specifically, as stated previously and as outlined above, the proposed change affects a requirement within the requirements for General Waste Analysis and the WAP. As such, the change applies to the general facility standards and through a process of elimination is determined to most appropriately relate to the general facility standards pertaining to changes to waste sampling or analysis methods. The most applicable item under the general facility standard for changes to waste sampling or analysis methods is other changes since the PMR does not address changes to agency guidance or regulations, incorporate changes associated with F039 sampling or analysis methods, or incorporate changes associated with underlying hazardous constituents in ignitable or corrosive wastes.

2. **Precedent Established by the Classification of the PMR that Added the Exclusion (July 2, 2004)**. The PMR that added the excluded waste prohibition to the Permit being proposed for modification in this PMR was classified as a Class 2 pursuant to Item B.1.d in Appendix I to 40 CFR 270.42. This PMR modified the exact same parts and sections of the Permit that the subject PMR is proposing to delete.

3. **The Proposed PMR Does Not Substantially Alter a Facility or Its Operation**. This PMR is also classified as a Class 2 PMR in accordance with the general principles set forth in the preamble to the U.S. Environmental Protection Agency (EPA) notice promulgating the permit modification procedures codified at 40 CFR § 270.42. EPA's final rule establishes the principle that Class 2 procedures are appropriate for changes that do not substantially alter a facility or its operation. The proposed PMR would not

alter the WIPP facility or its operation. Minimal generator/storage site procedure changes are anticipated if the proposed PMR is accepted since each waste stream to be disposed of at the WIPP facility would still be required to be evaluated and determined to be TRU waste. However, sites would not have to evaluate the exclusion (i.e., was the waste managed as high-level waste and in any of the tanks listed in the Permit) as part of the acceptable knowledge process. They would still have to determine that the waste is in compliance with the WIPP WAC.

4. **Precedent Established by the PMR to Revise the Polychlorinated Chlorinated Biphenyl (PCB) Prohibition (May 21, 2003)**. The proposed PMR is similar to the Class 2 PMR related to PCB waste that the Permittees submitted in May 2003. That PMR was approved as a Class 2 modification pursuant to Item B.1.d in Appendix I to 40 CFR 270.42, In the PCB PMR, the Permittees proposed a change to the TSDF-WAC and the WAP listing of waste prohibited at the WIPP facility. Specifically, a prohibition on the disposal of PCB waste in concentrations equal to or greater than 50 parts per million was modified to be a prohibition on PCB waste not authorized under an EPA disposal authorization. The proposed PMR is similar to the PCB PMR as follows:

- The subject PMR is proposing changes to these same portions in the Permit as the PCB PMR

- A justification for the change in the PCB PMR was because PCBs are regulated under the Toxic Substances Control Act (TSCA) with specific disposal options/requirements and not RCRA. This justification is similar to the justification for the subject PMR since the major justification for the proposed PMR is that the designation of radioactive waste as high-level or TRU is regulated under the WIPP Land Withdrawal Act and the Atomic Energy Act and not RCRA. These laws give the authority for TRU waste determination to the Secretary of Energy.

5. **The Proposed PMR is Not Complex**. The regulations at 20 CFR 270.42(b)(6)(i)(C)(2) state that the Director (Secretary of the NMED) may elevate the Class 2 modification request to a Class 3 if "The complex nature of the change requires the more extensive procedures of Class 3." This, of course, is aimed at assuring changes are "subject to the same review and public participation procedures as permit applications"[4] which is the goal of the Class 3 modification process. Worth noting is that this provision is restricted to the complexity of the change and not the complexity of the permit. No complex discussions or formulae are involved in the current modification request. The modification request simply proposes to modify the excluded waste prohibition from the Permit.

6. **The Class 2 Process Provides Sufficient Public Comment on the Proposed PMR**. The EPA has established a tiered approach to modifying hazardous waste permits. This tiered approach was developed based on the significance of the change, particularly on the design and operation of the permitted facility. For Class 2 modifications, which, by definition, do not substantially alter the facility or its operation, the regulations mandate a 60-day public comment period and at least one meeting with the public to explain the changes. This public comment period is the same for a Class 3 modification, however, following the public comment period, the regulating agency is expected to provide the

[4] 53 FR 37912, Wednesday, September 28, 1988, p. 37919.

public with additional opportunities to participate in the process, including, the possibility of a hearing.

7. **The Permittees are Precluded from Using the Class 3 Process**. The EPA built in the option that the regulatory agency can elevate the modification to a Class 3 under certain specific conditions as follows:

   At the same time, the safeguards built into today's rule will ensure that Class 2 modifications receive sufficient review and that risks are limited under automatic authorizations. These safeguards include: (1) Limitations on the types of modifications that can be made under Class 2 procedures, (2) the Agency's authority to reject Class 2 modification requests because the applications are incomplete, or to require that they undergo Class 3 procedures (a new requirement in this final rule), (3) the fact that the Agency has up to 300 days to revoke an automatic authorization, if human health or environmental concerns are identified, and (4) the requirement that activities under automatic authorizations comply with Part 265 requirements.

   As noted above, these safeguards include one significant new requirement, which EPA has included in response to commenters' concerns about the default provision. Section 270.42(b)(6) has been amended to allow the Director to determine that a Class 2 modification request should instead follow the Class 3 modification procedures. The Director may make this determination by the 90-day deadline (or 120-day deadline, if extended) required for Class 2 modifications, provided that there is significant public concern about the proposed modification or if he believes that the nature of the change warrants the more extensive procedures of Class 3. Therefore, if members of the public feel strongly that a Class 2 modification request should be subject to the Part 124 approval procedures contained in Class 3, they can raise this issue with the Agency during the comment period and express the reasons why the Class 2 process is not appropriate in the particular case. (53 FR 37912-01, p. 37917)

   According to this standard, the Agency, not the Permittee, has the responsibility to judge the significance of the public comment and its relevance to the proposal to modify the excluded waste prohibition. These comments would have to provide justification as to why such modification should be subjected to the more rigorous process of the Class 3 permit modification.

8. **Modifying a Requirement to Submit a Class 3 PMR in the Permit does not Necessarily Require a Class 3 PMR**. The EPA hierarchy for permit modification is based on their impacts on the design and operations of the permitted facility. The EPA constructed Appendix I of 40 CFR 270.42 to reflect that hierarchy. The key to applying the hierarchy and determining the proper classification is the purpose of the modification. According to the EPA, Class 1 and Class 2 modifications do not substantially alter existing permit conditions or significantly affect the overall operation of the facility. Class 3 modifications cover major changes that substantially alter the facility or its operations.

   The modification that is the subject of this PMR does not substantially alter permit conditions and has no impact on the operations of the facility. It does not change the type of waste that will be accepted at the WIPP facility. Its purpose is to modify a waste exclusion from the Permit. Modifying the exclusion in the Permit does not authorize any waste streams, either generally or specifically. Modifying the exclusion does fit within the actions contemplated by EPA as an “other change” to a WAP as discussed above and therefore is considered non-substantial.

The Class 3 required by the exclusion, on the other hand, serves an entirely different purpose. It seeks to have specific waste streams included in the inventory of acceptable waste through modification request that is to be subjected to the public review and comment requirements of the Class 3 process. The exclusion requires a Class 3 PMR because there is no specific modification category in Appendix I to accommodate the action of approving specific waste streams. Therefore, the exclusion currently in the Permit is in the category of “Other modifications” according to 40 CFR 270.42(d).

Appendix D
Chemical Compatibility of Transuranic Waste Streams

CHEMICAL COMPATIBILITY OF TRANSURANIC WASTE STREAMS

Revision 0—September 2012

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AL/9-12/WP/WTS:R6161_Revision 0.docx

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Acronyms, Abbreviations, and Units

ATWIR	Annual Transuranic Waste Inventory Report
CH	contact-handled
CH-TRAMPAC	Contact-Handled Transuranic Waste Authorized Methods for Payload Control
CH-TRUCON	CH-TRU Waste Content Codes
DOE	U.S. Department of Energy
EPA	U.S. Environmental Protection Agency
RCRA	Resource Conservation and Recovery Act
RH	remote-handled
RH-TRUCON	RH-TRU Waste Content Codes
TRU	transuranic
WDS	Waste Data System
WIPP	Waste Isolation Pilot Plant

1.0 Introduction

A chemical compatibility analysis was performed on all defense-generated, contact-handled (CH) and remote-handled (RH) transuranic (TRU) waste streams reported in the 2011 Annual Transuranic Waste Inventory Report (ATWIR) (DOE, 2011a) and/or obtained from the Waste Isolation Pilot Plant (WIPP) Waste Data System (WDS) database. This chemical compatibility analysis was performed as an update to the analysis that was performed in 1996 as part of the WIPP Resource Conservation and Recovery Act (RCRA) Part B Permit Application (DOE, 1996, Appendix C1). New or revised information for updating the chemical compatibility analysis is now available from the various U.S. Department of Energy (DOE) generator sites for the TRU waste streams that have either already been disposed of at the WIPP facility or are projected to be disposed of at the WIPP facility in the future. The methodology used in this analysis is described in the U.S. Environmental Protection Agency (EPA) document, “A Method for Determining the Compatibility of Hazardous Wastes” (Hatayama et al., 1980). This method is also the basis for the RCRA Part B Permit analysis performed in 1996 and the chemical compatibility analysis performed for the shipment of CH-TRU and RH-TRU wastes in the TRUPACT-II, TRUPACT-III, HalfPACT, or RH-TRU 72-B shipping packages (Appendix 6.1 of DOE, 2009; and Appendix 4.1 of DOE, 2011b). The following sections of this report present the data sources for existing, projected, and approved TRU waste streams, the methodology used to perform the chemical compatibility analysis, as well as the results and conclusions of the analysis.

2.0 Data Sources

The primary sources of information used in this chemical compatibility analysis for chemicals in the TRU waste streams were the ATWIR (DOE, 2011a), the WIPP WDS database, the CH-TRU Waste Content Codes (CH-TRUCON) chemical lists (DOE, 2012a), and the RH-TRU Waste Content Codes (RH-TRUCON) chemical lists (DOE, 2012b). Additional information associated with other chemicals in the waste underground, not included in the TRU waste streams, was collected from WIPP personnel, the 1996 WIPP RCRA Part B Permit Application (DOE, 1996), and the WIPP Hazardous Waste Permit (DOE, 2012c).

2.1 Annual Transuranic Waste Inventory Report

The ATWIR, Appendices A and B, (DOE, 2011a) lists the existing and projected CH- and RH-TRU waste streams at generator sites destined for permanent disposal at the WIPP facility. All existing and projected waste streams with the potential for disposal at WIPP were included in this chemical compatibility analysis for completeness. It should be noted that only waste streams subjected to the approval process defined by the WIPP Hazardous Waste Facility Permit are eligible for disposal at the WIPP facility. Appendix A of the ATWIR presents waste profile reports for existing CH- and RH-TRU waste streams potentially destined for WIPP facility disposal. The waste stream identifier and description are listed for each waste stream. Many waste profile reports within Appendix A of the ATWIR also indicate the proposed Content Code that will be applied to the waste stream for shipping; some waste streams, however, do not specify a Content Code. Appendix B of the ATWIR presents waste profile reports for projected CH- and RH-TRU waste streams. Like those in Appendix A of the ATWIR, these waste profile reports provide the waste stream identifier, description, and, in some cases, proposed Content Codes. All existing and projected CH- and RH-TRU waste streams identified in Appendices A and B of the ATWIR were evaluated for chemical compatibility. Waste streams that were identified only in the ATWIR are indicated as "ATWIR" in Appendix A of this report.

2.2 WIPP Waste Data System Database

The WDS database lists the CH- and RH-TRU waste streams that are currently approved for shipping and/or have been shipped to the WIPP facility in the past. A list of approved waste streams and corresponding Content Codes was obtained from the WDS database. This list of approved waste streams was compared to the list of existing and projected waste streams documented in the ATWIR. Many of the waste streams listed in Appendix A of the ATWIR have been approved for shipping and are, therefore, also identified in the WDS database. Waste streams that are only identified in the WDS (i.e., not listed in the ATWIR are identified in Appendix A of this report) typically represent approved waste streams from sites that have completed shipping (e.g., Rocky Flats Environmental Technology Site) or approved waste streams that may have a different identifier in the WDS than in the ATWIR. All approved waste streams identified in the WDS were evaluated for chemical compatibility. Waste streams that were identified in only the WDS are indicated as "WDS" in Appendix A of this report. Waste streams that were identified in both the WDS and the ATWIR are indicated as "Both" in Appendix A of this report.

2.3 CH-TRUCON and RH-TRUCON Chemical Lists

Chemical lists associated with each CH- or RH-TRU Content Code (DOE, 2012a and 2012b), corresponding to waste streams listed in the WDS and/or the ATWIR, were used in determining the potential chemical compounds/materials in the waste streams. During development of the Content Codes, each generator site produces a representative list of chemicals/materials that may be present in the waste. These content code-specific chemical lists are summarized in the CH- and RH-TRUCON documents (DOE, 2012a and 2012b). The chemical components found in each Content Code-specific chemical list were determined by examining the process technology and waste generation and packaging procedures, by chemical analysis, or by process flow analysis. This approach accounts for chemical/material inputs into the system, even though all of the components may not be present in the resulting waste. For example, generator sites might list both acids and bases in their chemical lists, even though the two groups are required by waste generating/packaging procedures to be neutralized and/or rendered nonreactive prior to placement in a TRU-waste payload container. The Content Code-specific chemical lists cover the materials that may be used in waste packaging (inorganic materials [e.g., metal] and commercial plastics, cellulosics, and rubbers are the major constituents in TRU wastes and packaging materials). These chemical lists estimate chemical/material concentration levels as either trace (<1% by weight), minor (1-10%), or dominant (>10%).

2.4 WIPP Hazardous Waste Permit

The approved hazardous waste code chemicals listed in Table 2.3.4 of the WIPP Hazardous Waste Permit (DOE, 2012c) were reviewed and added to the list of potential chemicals for evaluation if the chemicals were not also included in the TRU waste stream chemical lists. The chemical acetonitrile, represented by EPA Reactivity Group 26 (Nitriles), was identified in Hazardous Waste Code U003 and added to the chemical compatibility analysis. All other chemicals and EPA Reactivity Groups listed in the WIPP Hazardous Waste Permit were duplicated by the chemicals in the CH- and RH-TRU chemical lists (DOE, 2012a and 2012b).

2.5 Other Chemical Sources

Other potential chemical sources that were evaluated as part of the chemical compatibility analysis include backfill materials used in the WIPP underground and fire suppressant chemicals.

Unreacted magnesium oxide, which is used in the WIPP underground as backfill material, was added in the chemical compatibility analysis with the EPA Reactivity Group Number 10 (Caustics). However, the hydration of magnesium oxide results in the formation of brucite (Mg[OH]), which buffers the pH of the solution at approximately 8.5. Therefore, caustic conditions are not produced by the use of magnesium oxide backfill.

Compounds in the fire suppressants used at the WIPP facility were added. Compounds listed on the Material Safety Data Sheets for Ansulite 6% AFFF (AFC-3) and FORAY Dry Chemical Extinguishing Agent, which are the two fire suppressants in use at the WIPP facility, were evaluated and the following reactive compounds from the fire suppressants were included in the chemical compatibility analysis:

Compound	EPA Reactivity Group Number
Tertiary butyl alcohol	4 (Alcohols and Glycols)
Hexylene glycol	4 (Alcohols and Glycols)
Diethylene glycol monobutyl ether	14 (Ethers)
Fluorosurfactants	15 (Inorganic Fluorides)
Water	106 (Water and Mixtures Containing Water)

Ansulite 6% AFFF (AFC-3) contains a proprietary mixture of hydrocarbon surfactants, fluorosurfactants, inorganic salts, and water, and the additional ingredients diethylene glycol monobutyl ether, tertiary butyl alcohol, and hexylene glycol. The reactive components are listed with EPA Reactivity Group Number above. The hydrocarbon surfactants are not considered hazardous reactive constituents. The FORAY Dry Chemical Extinguishing Agent contains magnesium aluminum silicate, monoammonium phosphate, ammonium sulfate, calcium carbonate, and methyl hydrogen polysiloxane, which are not hazardous reactive constituents.

3.0 Methodology

The chemical compatibility analysis was performed using the method described in the EPA document, "A Method for Determining the Compatibility of Hazardous Wastes" (Hatayama et al., 1980). This method provides a systematic means of analyzing the chemical compatibility for specific combinations of chemical compounds and materials. It classifies individual chemical compounds into chemical groups and identifies the potential adverse reactions resulting from incompatible combinations of the groups. The EPA method was utilized in the original chemical compatibility analysis of TRU-mixed waste streams (DOE, 1996) and remains the preferred and applicable authority for hazardous waste and chemical compatibility. Copies of the chemical compatibility chart presented as Figure 6 in Hatayama, et al. (1980) are presented, with appropriate reference, on the websites for Princeton University[1], Harvard University[2], Fresno State University[3], and others.

Waste streams were identified from the ATWIR and WDS database (as described in Section 2.0). Where provided, the Content Codes identified for each waste stream listed in the ATWIR or WDS database were used to determine potential chemical compounds/materials in those waste streams. For those waste streams in the ATWIR that did not have a Content Code listed within

[1] http://web.princeton.edu/sites/ehs/chemwaste/compatability.htm
[2] http://www.uos.harvard.edu/ehs/environmental/EPAChemicalCompatibilityChart.pdf
[3] http://www.fresnostate.edu/ehsrms/enviromgt/hazwaste/chemical/shtml

the waste profile report, a representative and conservative Content Code was used for this purpose based on the most inclusive description of the waste form and the generator site.

Once the Content Codes and associated chemical lists were identified for each waste stream, the chemicals and materials in each chemical list, regardless of concentration level (i.e., trace, minor, and dominant), were categorized into the EPA Reactivity Groups based on chemical properties and structure (acids, caustics, metals, etc.) as described in Hatayama et al., (1980). Figure 1 presents the EPA Reactivity Groups, their corresponding number designations, and their potential reactions and consequences. Non-reactive compounds identified in the chemical lists were placed into one of three additional groups – OI (Other Inorganics – other non-reactive inorganic materials); OO (Other Organics – other non-reactive organic materials); and OSMA (Other Solidification Materials and Absorbents – other previously reacted or non-reactive solidification and absorbent materials). This ensures a chemical compatibility evaluation that encompasses the various potential chemical processes that could occur in the TRU waste materials, the packaging materials, and the waste containers themselves. Appendix A presents a table of all CH- and RH-TRU waste streams and corresponding EPA Reactivity Groups within each waste stream.

A compilation of all represented EPA Reactivity Groups from the waste streams (Appendix A), and the other chemical sources discussed in Sections 2.4 and 2.5, is presented in Table 1. The potential reactions between the chemicals/materials within the compilation of all represented EPA Reactivity Groups were then evaluated using the EPA Reactivity Chart presented in Figure 1. EPA Reactivity Groups are classified as "incompatible" if the potential exists for any of the following reactions:

- Heat generation
- Fire
- Innocuous and non-flammable gas generation
- Toxic gas formation
- Flammable gas generation
- Explosion
- Violent polymerization
- Solubilization of toxic substances.

The hazardous waste compatibility chart in Figure 1 summarizes the potential types of reactions possible between each of the EPA Reactivity Groups represented in the lists of allowable chemicals for each waste stream. This chart was used to create a list of potential chemical incompatibilities in the TRU waste streams, which is presented in Appendix B. Each identified incompatibility was then evaluated to determine if the potential reaction is likely or possible to occur within the waste streams. Appendix B presents explanations why the reaction associated with each of the potential chemical incompatibilities is unlikely or will not occur. For example, a site listing a caustic (Group 10) and an acid (Group 1) in its waste that has only the neutralized/reacted product present in an immobilized form does not present an incompatibility. Further reactions of this type do not occur once the waste is neutralized/rendered nonreactive in its final form as required by generator site waste generating/packaging procedures.

4.0 Results and Conclusions

In summary, the potential chemicals/materials present in all existing, projected, and approved CH- and RH-TRU waste streams identified in the ATWIR and WDS database were evaluated for compatibility across waste streams and with the potential chemicals/materials present in waste packaging materials and containers, WIPP backfill, fire suppressant systems, and allowable hazardous waste codes. The possible chemical constituents comprising the waste streams were conservatively evaluated irrespective of chemical concentrations, including those estimated to be present in trace (<1% by weight) quantities, and expected presence in the final waste form. All potential chemicals/materials were divided into EPA Reactivity Groups and possible chemical incompatibilities between reactivity groups were assessed using the EPA method described in Hatayama et al., (1980). The results of the chemical compatibility analysis are presented as a list of potential chemical incompatibilities in Appendix B along with explanations as to why the associated reaction is unlikely or will not occur. As detailed in Appendix B, the reactions will not occur because the waste is solid or solidified and the chemicals/materials are in an inert form, potential reactions (e.g., neutralization of acids and bases) would have occurred prior to the waste being generated and packaged in its final form, and/or immobilization of the waste ensures incomplete reactions will not occur. The results of the analysis demonstrate chemical compatibility across all existing, projected, and approved TRU waste streams, waste packaging materials and containers, backfill material, and fire suppressant materials. Therefore, chemical compatibility is not anticipated to be an issue for TRU waste to be disposed in the WIPP facility.

5.0 References

Hatayama, H. K., J. J. Chen, E. R. de Vera, R. D. Stephens, and D. L. Storm, 1980, "A Method for Determining the Compatibility of Hazardous Wastes," EPA-600/2-80-076, U.S. Environmental Protection Agency, Cincinnati, Ohio.

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U.S. Department of Energy (DOE), 2011a, *Annual Transuranic Waste Inventory Report – 2011 (Data Cutoff Date 12/30/2010)*, DOE/TRU-11-3425, Revision 0, U.S. Department of Energy, Carlsbad Field Office.

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U.S Department of Energy (DOE), 2012a, *CH-TRU Waste Content Codes (CH-TRUCON)*, Revision 44, U.S. Department of Energy, Carlsbad Field Office.

U.S Department of Energy (DOE), 2012b, *RH-TRU Waste Content Codes (RH-TRUCON)*, Revision 22, U.S. Department of Energy, Carlsbad Field Office.

U.S Department of Energy (DOE), 2012c, *Waste Isolation Pilot Plant Hazardous Waste Permit*, U.S. Department of Energy, Carlsbad Field Office.

Figure

EPA's Chemical Compatibility Chart

EPA-600/2-80-076 April 1980

A METHOD FOR DETERMINING THE COMPATIBILITY OF CHEMICAL MIXTURES

Please Note: This chart is intended as an indication of some of the hazards that can be expected on mixing chemical wastes. Because of the differing activities of the thousands of compounds that may be encountered, it is not possible to make any chart definitive and all inclusive. It cannot be assumed to ensure compatibility of wastes because wastes are not classified as hazardous on the chart, nor do any blanks necessarily mean that the mixture cannot result in a hazard occurring. Detailed instructions as to hazards involved in handling and disposing of any given waste should be obtained from the originator of the waste.

CODE	CONSEQUENCE
H	Heat Generation
F	Fire
G	Innocuous and non-flammable gas generation
GT	Toxic Gas formation
GF	Flammable Gas formation
E	Explosion
P	Violent Polymerization
S	Solubilization of toxic substance
U	May be hazardous, but Unknown

#	REACTIVITY GROUP NAME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	101	102	103	104	105	106	107
1	Acids, Mineral, Non-oxidizing																																									
2	Acids, Mineral, Oxidizing																																									
3	Acids, Organic		G H																																							
4	Alcohols and Glycols	H	H F	H P																																						
5	Aldehydes	H P	H F	H P																																						
6	Amides	H	H GT																																							
7	Amines, Aliphatic and Aromatic	H	H GT	H		H																																				
8	Azo Compounds, Diazo Compounds and Hydrazines	H G	H GT	H G	H G	H																																				
9	Carbamates	H G	H GT						G H																																	
10	Caustics	H	H	H		H				H G																																
11	Cyanides	GT GF	GT GF	GT GF					G																																	
12	Dithiocarbamates	H,F GF	H,F GF	H,GT GF		GF GT		U	H G																																	
13	Esters	H	H F						H G		H																															
14	Ethers	H	H F																																							
15	Fluorides, Inorganic	GT	GT	GT																																						
16	Hydrocarbons, Aromatic		H F																																							
17	Halogenated Organics	H GT	H,F GT					H GT	H G		H GF	H																														
18	Isocyanates	H G	H,F GT	H G	H P			H P	H G		H,P G	H G	U																													
19	Ketones	H	H F						H G		H	H																														
20	Mercaptans and Other Organic Sulfides	GT GF	H,F GT						H G									H	H	H																						
21	Metals, Alkali and Alkaline Earth, Elemental	H,F GF	H,F GF	H,F GF	H,F GF	H,F GF	GF H	GF H	GF H	GF H	GF H	GF H	GF,H GT	GF H				H E	GF H	GF H	GF H																					
22	Metals, Other Elemental & Alloys as Powders, Vapors, or Sponges	H,F GF	H,F GF	G F					H,F GT	U	GF H							H E	GF H		H,F GF																					
23	Metals, Other Elemental & Alloys as Sheets, Rods, Drops, etc.	H,F GF	H,F GF						H,F G									H F																								
24	Metals and Metal Compounds, Toxic	S	S	S			S	S			S																															
25	Nitrides	GF HF	H,F E	H GF	H,E GF	GF H			U	H G	U	GF H	GF H	GF H				GF H	U	GF H	GF H	E																				
26	Nitriles	H,GT GF	H,F GT	H							U											H P			S	GF H																
27	Nitro Compounds, Organic		H,F GT			H					H E											H,E GF				H,E GF																
28	Hydrocarbons, Aliphatic, Unsaturated	H	H F			H																	H E																			
29	Hydrocarbons, Aliphatic, Saturated		H F																																							
30	Peroxides and Hydroperoxides, Organic	H G	H E		H F	H G		H GT	H,F E	H,F GT		H,E GT	H,F GT					H E	H	E	H,F GT	H E	H G		H G	H,E GF	H,P GT		H P													
31	Phenols and Cresols	H	H F						H G										H P			GF H				GF H					H											
32	Organophosphates, Phosphothioates, Phosphodithioates	H GT	H GT						U		H E											H									U											
33	Sulfides, Inorganic	GT GF	HF GF	GT		H			E										H												H GT											
34	Epoxides	H P	H P	H P	H P	U		H P	H P		H P	H P	U								H P	H P	H P		H P	H P					H P	H P	U	H P								
101	Combustible and Flammable Materials, Miscellaneous	H G	H,F GT																			H,F G				H,F GF					H,F GT											
102	Explosives	H E	H E	H E					H E		H E			H E								H E	H E	H E	E	E					H E	H E		H E	H E	H E						
103	Polymerizable Compounds	P H	P H	P H					P H		P H	P H	U									P H	P H	P H	P H	P H					P H	P H		P H			H E					
104	Oxidizing Agents, Strong	H GT		H GT	H F	H F	H,F GT	H,F GT	H E	H,F GT		H,E GT	H,F GT	H F	H F		H F	H GT	H,F GT	H F	H,F GT	H,F E	H,F E	H F		H,F E	H,F GT	H E	H F	H F	H G	H F	H,F GT	H,F GT	H,F G	H,F G	H E	H,F GT				
105	Reducing Agents, Strong	H GF	H,F GT	H GF	H,F GF	H,F GF	H GF	H G				H GT	H F				H,F E	H E	H GF	H GF	H GF						H GF	H E			H E	H GF	H,GT GF		H	H GF	H E	H,P GF	H,F E			
106	Water and Mixtures Containing Water	H	H						G										H G			H GF	H GF		S	H GF								GT GF						GF GT		
107	Water Reactive Substances	<---EXTREMELY REACTIVE! DO NOT MIX WITH ANY CHEMICAL OR WASTE MATERIAL! EXTREMELY REACTIVE!--->																																								

Figure 1
EPA's Chemical Compatibility Chart
(Hatayama, et al., 1980)

Table

Table 1
Compilation of Represented EPA Reactivity Groups

EPA Reactivity Group Number	Reactivity Group Name
1	Acids, Mineral, Non-Oxidizing
2	Acids, Mineral, Oxidizing
3	Acids, Organic
4	Alcohols and Glycols
5	Aldehydes
6	Amides
7	Amines, Aliphatic and Aromatic
8	Azo Compounds, Diazo Compounds, and Hydrazines
10	Caustics
11	Cyanides
13	Esters
14	Ethers
15	Fluorides, Inorganic
16	Hydrocarbons, Aromatic
17	Halogenated Organics
18	Isocyanates
19	Ketones
20	Mercaptans and Other Organic Sulfides
21	Metals, Alkali and Alkaline Earth, Elemental
22	Metals, Other Elemental and Alloys as Powders, Vapors, or Sponges
23	Metals, Other Elemental and Alloys as Sheets, Rods, Drops, Moldings, etc.
24	Metals and Metal Compounds, Toxic
25	Nitrides
26	Nitriles
27	Nitro Compounds
28	Hydrocarbons, Aliphatic, Unsaturated
29	Hydrocarbons, Aliphatic, Saturated
30	Peroxides and Hydroperoxides, Organic
31	Phenols and Creosols
32	Organophosphates, Phosphothioates, Phosphodithioates
33	Sulfides, Inorganic
34	Epoxides
101	Combustible and Flammable Materials, Miscellaneous
102	Explosives
103	Polymerizable Compounds
104	Oxidizing Agents, Strong
105	Reducing Agents, Strong
106	Water and Mixtures Containing Water
107	Water Reactive Substances

Appendix A
CH- and RH-TRU Waste Streams and Associated EPA Reactivity Group Numbers

CH- and RH-TRU Waste Streams and Associated EPA Reactivity Group Numbers

Source	Site	Waste Stream Identifier	TRU Type	EPA Reactivity Group Number																																								
				1	2	3	4	5	6	7	8	10	11	13	14	15	16	17	18	19	20	21	22	23	24	25	27	28	29	30	31	32	33	34	101	102	103	104	105	106	107	OI	OO	OSMA
ATWIR	AE	AE-T003	CH	●	●																		●	●	●																●	●		●
ATWIR	AE	AE-T001	CH																	●				●	●										●							●		●
WDS	AE	AECHHM	CH	●	●																		●	●	●																●	●		●
WDS	AE	AECHDM	CH																	●				●	●										●							●		●
ATWIR	AW	AW-N027.531	CH	●	●	●	●					●			●					●		●	●	●	●	●						●			●			●	●		●	●	●	●
ATWIR	AW	AW-T033.1325	CH	●	●	●	●					●			●					●		●	●	●	●	●						●			●			●	●		●	●	●	●
ATWIR	BL	BL-Parks	CH	●	●	●	●					●				●	●	●		●		●	●	●	●		●		●			●			●	●		●	●	●	●	●	●	●
ATWIR	BL	BL-Parks-A	CH	●	●	●	●					●				●	●	●		●		●	●	●	●		●		●			●			●	●		●	●	●	●	●	●	●
WDS	BL	BLCHDN.001	CH	●	●	●	●				●	●	●	●	●	●	●	●	●	●		●	●	●	●	●		●	●	●		●			●		●	●	●	●	●	●	●	●
BOTH	IN	IN-BN004	CH	●	●	●	●					●			●	●	●	●		●			●	●	●							●			●			●	●	●	●	●	●	●
ATWIR	IN	IN-BN050	CH	●	●	●	●					●			●	●	●	●		●			●	●	●							●			●			●	●	●	●	●	●	●
ATWIR	IN	IN-BN204	CH	●	●	●	●					●			●	●	●	●		●			●	●	●							●			●			●	●	●	●	●	●	●
BOTH	IN	IN-BN222	CH	●	●	●	●					●			●	●	●	●		●		●	●	●	●							●			●			●	●	●	●	●	●	●
ATWIR	IN	IN-BN290	CH	●	●	●	●					●			●	●	●	●		●			●	●	●							●			●			●	●	●	●	●	●	●
ATWIR	IN	IN-BN311	CH	●	●	●	●					●			●	●	●	●		●			●	●	●							●			●			●	●	●	●	●	●	●
ATWIR	IN	IN-BN806	CH	●	●	●	●					●			●	●	●	●		●			●	●	●							●			●			●	●	●	●	●	●	●
ATWIR	IN	IN-BN811	CH	●	●	●	●					●			●	●	●	●		●			●	●	●							●			●			●	●	●	●	●	●	●
ATWIR	IN	IN-BN817	CH	●	●	●	●					●			●	●	●	●		●			●	●	●							●			●			●	●	●	●	●	●	●
ATWIR	IN	IN-BN823	CH	●	●	●	●					●			●	●	●	●		●			●	●	●							●			●			●	●	●	●	●	●	●
BOTH	IN	IN-BN835	CH	●	●	●	●					●			●	●	●	●		●			●	●	●							●			●			●	●	●	●	●	●	●
BOTH	IN	IN-BN836	CH	●	●	●	●					●			●	●	●	●		●			●	●	●							●			●			●	●	●	●	●	●	●
ATWIR	IN	IN-BN976	CH	●	●	●	●					●			●	●	●	●		●			●	●	●							●			●			●	●	●	●	●	●	●
ATWIR	IN	IN-BN978	CH	●	●	●	●					●			●	●	●	●		●			●	●	●							●			●			●	●	●	●	●	●	●
BOTH	IN	IN-BNINW216	CH	●	●	●	●					●			●	●	●	●		●			●	●	●							●			●			●	●	●	●	●	●	●
BOTH	IN	IN-BNINW218	CH	●	●	●	●					●			●	●	●	●		●			●	●	●							●			●			●	●	●	●	●	●	●
ATWIR	IN	IN-LL-W019-S3900	CH	●	●	●	●					●			●	●	●	●		●			●	●	●							●			●			●	●	●	●	●	●	●
ATWIR	IN	IN-W347	CH	●	●	●	●					●			●	●	●	●		●			●	●	●							●			●			●	●	●	●	●	●	●
ATWIR	IN	IN-W351	CH	●	●	●	●					●			●	●	●	●		●			●	●	●							●			●			●	●	●	●	●	●	●
ATWIR	IN	IN-BN095	CH	●	●	●	●					●			●	●	●	●		●			●	●	●			●	●			●			●			●	●	●	●	●	●	●
ATWIR	IN	IN-ID-RF-S3114	CH	●	●	●	●					●			●	●	●	●		●			●	●	●			●	●			●			●			●	●	●	●	●	●	●
ATWIR	IN	IN-ID-RF-S3150-A	CH	●	●	●	●					●			●	●	●	●		●			●	●	●			●	●			●			●			●	●	●	●	●	●	●
ATWIR	IN	IN-ID-SDA-Debris	CH	●	●	●	●					●			●	●	●	●		●			●	●	●			●	●			●			●			●	●	●	●	●	●	●
ATWIR	IN	IN-ID-SDA-Sludge	CH	●	●	●	●					●			●	●	●	●		●			●	●	●			●	●			●			●			●	●	●	●	●	●	●
ATWIR	IN	IN-ID-SDA-Soil	CH	●	●	●	●					●			●	●	●	●		●			●	●	●			●	●			●			●			●	●	●	●	●	●	●
ATWIR	IN	IN-BN421	CH				●										●	●		●				●	●										●					●		●		●
ATWIR	IN	IN-BN425	CH				●										●	●		●				●	●										●					●		●		●
ATWIR	IN	IN-ID-RF-S5126	CH																					●											●									●
ATWIR	IN	IN-ID-RF-S5300-A	CH													●		●				●		●	●										●							●		●

CH- and RH-TRU Waste Streams and Associated EPA Reactivity Group Numbers (Continued)

Source	Site	Waste Stream Identifier	TRU Type	EPA Reactivity Group Number																																								
				1	2	3	4	5	6	7	8	10	11	13	14	15	16	17	18	19	20	21	22	23	24	25	27	28	29	30	31	32	33	34	101	102	103	104	105	106	107	OI	OO	OSMA
ATWIR	IN	IN-LL-M001-S5400	CH													●		●				●		●	●										●							●		●
ATWIR	IN	IN-W322	CH													●		●		●				●	●										●							●		●
ATWIR	IN	IN-W358	CH													●		●		●				●	●										●							●		●
ATWIR	IN	IN-W337	CH														●	●		●		●		●	●										●							●		●
ATWIR	IN	IN-BN090	CH														●	●		●		●		●	●										●							●		●
BOTH	IN	IN-BN510	CH														●	●		●		●		●	●										●							●		●
BOTH	IN	IN-BN510.1	CH														●	●		●		●		●	●										●							●		●
ATWIR	IN	IN-W170	CH														●	●		●		●		●	●										●							●		●
ATWIR	IN	IN-W171	CH														●	●		●		●		●	●										●							●		●
ATWIR	IN	IN-W259	CH														●	●		●		●		●	●										●							●		●
ATWIR	IN	IN-W283	CH														●	●		●		●		●	●										●							●		●
ATWIR	IN	IN-W287	CH														●	●		●		●		●	●										●							●		●
ATWIR	IN	IN-W323	CH														●	●		●		●		●	●										●							●		●
ATWIR	IN	IN-W345	CH														●	●		●		●		●	●										●							●		●
ATWIR	IN	IN-BN375	CH		●							●					●	●		●		●		●	●										●			●				●		●
ATWIR	IN	IN-BN842	CH		●							●					●	●		●		●		●	●										●			●				●		●
ATWIR	IN	IN-W338	CH		●							●					●	●		●		●		●	●										●			●				●		●
ATWIR	IN	IN-BN005	CH									●												●	●										●						●	●		●
ATWIR	IN	IN-BN409	CH									●												●	●										●						●	●		●
ATWIR	IN	IN-LL-T004-S3141	CH									●												●	●										●						●	●		●
ATWIR	IN	IN-BN203	CH	●	●											●	●	●	●	●			●	●	●										●			●				●		●
ATWIR	IN	IN-ID-RF-S5100-A	CH	●	●											●	●	●	●	●			●	●	●										●			●				●		●
ATWIR	IN	IN-ID-RTC-S5000	CH	●	●											●	●	●	●	●			●	●	●										●			●				●		●
ATWIR	IN	IN-ID-SA-T001	CH	●	●											●	●	●	●	●			●	●	●										●			●				●		●
ATWIR	IN	IN-ID-SNL-HCF-S5400	CH	●	●											●	●	●	●	●			●	●	●										●			●				●		●
ATWIR	IN	IN-MFC-S5490	CH	●	●											●	●	●	●	●			●	●	●										●			●				●		●
ATWIR	IN	IN-W269	CH	●	●											●	●	●	●	●			●	●	●										●			●				●		●
ATWIR	IN	IN-W339	CH	●	●											●	●	●	●	●			●	●	●										●			●				●		●
ATWIR	IN	IN-BN430	CH				●										●	●		●		●		●	●										●					●		●		●
ATWIR	IN	IN-BN431	CH				●										●	●		●		●		●	●										●					●		●		●
ATWIR	IN	IN-BN432	CH				●										●	●		●		●		●	●										●					●		●		●
WDS	IN	ID-AECHHM	CH	●	●	●	●					●		●	●	●	●	●		●			●	●	●				●			●			●			●	●	●	●	●	●	●
WDS	IN	ID-AECHDM	CH	●	●	●	●					●				●	●	●		●		●	●	●	●		●		●			●			●	●		●	●	●	●	●	●	●
WDS	IN	ID-RF-S3114	CH				●										●	●						●	●			●	●						●					●				●
WDS	IN	ID-RF-S3150-A	CH				●										●	●						●	●			●	●						●					●				●
WDS	IN	ID-SDA-SLUDGE	CH	●	●	●	●					●			●	●	●	●		●			●	●	●			●	●			●			●			●	●	●	●	●	●	●
WDS	IN	ID-RF-S5126	CH																					●											●									●
WDS	IN	INW276.001	CH																					●											●									●
WDS	IN	INW276.002	CH																					●											●									●

CH- and RH-TRU Waste Streams and Associated EPA Reactivity Group Numbers (Continued)

Source	Site	Waste Stream Identifier	TRU Type	EPA Reactivity Group Number																																								
				1	2	3	4	5	6	7	8	10	11	13	14	15	16	17	18	19	20	21	22	23	24	25	27	28	29	30	31	32	33	34	101	102	103	104	105	106	107	OI	OO	OSMA
WDS	IN	ID-RF-S5300-A	CH													•		•				•		•	•										•							•		•
WDS	IN	INW169.001	CH													•		•				•		•	•										•							•		•
WDS	IN	INW198.001	CH													•		•				•		•	•										•							•		•
WDS	IN	INW216.001	CH	•	•	•	•					•			•	•	•	•		•		•	•	•	•							•			•			•	•	•	•	•	•	•
WDS	IN	INW218.001	CH	•	•	•	•					•			•	•	•	•		•		•	•	•	•							•			•			•	•	•	•	•	•	•
WDS	IN	IN-BN211	CH		•							•						•						•											•			•				•		•
WDS	IN	INW211.001	CH		•							•						•						•											•			•				•		•
WDS	IN	INW252.001	CH															•							•										•									•
WDS	IN	ID-RF-S5100-A	CH	•	•											•	•	•	•	•			•	•	•										•			•				•		•
WDS	IN	IN-BN161	CH	•	•											•	•	•	•	•			•	•	•										•			•				•		•
WDS	IN	IN-BN243	CH	•	•											•	•	•	•	•			•	•	•										•			•				•		•
WDS	IN	IN-BN296	CH	•	•											•	•	•	•	•			•	•	•										•			•				•		•
WDS	IN	IN-BN600	CH	•	•											•	•	•	•	•			•	•	•										•			•				•		•
WDS	IN	INW161.001	CH	•	•							•				•	•	•	•	•		•	•	•	•										•			•				•		•
WDS	IN	INW222.001	CH	•	•	•	•					•			•	•	•	•	•	•			•	•	•							•			•			•	•	•	•	•	•	•
WDS	IN	INW243.001	CH	•	•											•	•	•	•	•			•	•	•										•			•				•		•
WDS	IN	INW247.001R1	CH	•	•											•	•	•	•	•			•	•	•										•			•				•		•
WDS	IN	INW276.003	CH	•	•											•	•	•	•	•			•	•	•										•			•				•		•
WDS	IN	INW276.004	CH	•	•											•	•	•	•	•			•	•	•										•			•				•		•
WDS	IN	INW296.001	CH	•	•											•	•	•	•	•			•	•	•										•			•				•		•
WDS	IN	ID-SDA-DEBRIS	CH		•		•					•					•	•		•		•		•	•			•	•						•			•		•		•		•
WDS	IN	ID-SDA-SOIL	CH				•										•	•						•	•			•	•						•					•				•
WDS	IN	IN-BN304	CH	•	•							•				•	•	•	•	•		•	•	•	•										•			•				•		•
WDS	IN	ID-LL-W019-S3900	CH	•	•	•	•					•		•		•	•	•		•			•	•	•		•		•		•	•			•	•		•		•	•	•		•
WDS	IN	ID-LL-M001-S5400	CH	•	•	•	•					•				•	•	•		•		•	•	•	•		•		•		•	•			•	•		•	•	•	•	•	•	•
WDS	IN	ID-LL-T004-S3141	CH									•				•						•		•	•										•	•			•		•	•		
WDS	IN	ID-NTLBL-S3900	CH	•	•	•	•				•	•	•	•	•	•	•	•	•	•		•	•	•	•	•		•	•	•		•			•		•	•	•	•	•	•	•	•
WDS	IN	ID-NTLLNL-S3900	CH	•	•	•	•				•	•	•	•	•	•	•	•	•	•		•	•	•	•	•		•	•	•		•			•		•	•	•	•	•	•	•	•
WDS	IN	ID-NTVERB-S5400	CH	•	•	•	•				•	•	•	•	•	•	•	•	•	•		•	•	•	•	•		•	•	•		•			•		•	•	•	•	•	•	•	•
WDS	IN	ID-RF-BNL-ASH	CH	•	•	•	•				•	•	•	•	•	•	•	•	•	•		•	•	•	•	•		•	•	•		•			•		•	•	•	•	•	•	•	•
WDS	IN	IN-BN252	CH	•	•	•	•				•	•	•	•	•	•	•	•	•	•		•	•	•	•	•		•	•	•		•			•		•	•	•	•	•	•	•	•
WDS	IN	ID-NRD.1	CH	•	•	•	•					•				•	•	•		•		•	•	•	•		•		•			•			•	•		•	•	•	•	•	•	•
WDS	IN	ID-NTLBL-S5400	CH	•	•	•	•					•				•	•	•		•		•	•	•	•		•		•			•			•	•		•	•	•	•	•	•	•
WDS	IN	ID-NTLLLBL-S5400	CH	•	•	•	•					•				•	•	•		•		•	•	•	•		•		•			•			•	•		•	•	•	•	•	•	•
WDS	IN	ID-NTLLNL-S5400	CH	•	•	•	•					•				•	•	•		•		•	•	•	•		•		•			•			•	•		•	•	•	•	•	•	•
WDS	IN	ID-NTLRC-S5400	CH	•	•	•	•					•				•	•	•		•		•	•	•	•		•		•			•			•	•		•	•	•	•	•	•	•
WDS	IN	ID-NT-RF-DECON	CH	•	•	•	•					•				•	•	•		•		•	•	•	•		•		•			•			•	•		•	•	•	•	•	•	•
WDS	IN	ID-NTS-EGG-HET	CH	•	•	•	•					•				•	•	•		•		•	•	•	•		•		•			•			•	•		•	•	•	•	•	•	•
WDS	IN	ID-NTS-ITRI-S5310	CH	•	•	•	•					•				•	•	•		•		•	•	•	•		•		•			•			•	•		•	•	•	•	•	•	•

CH- and RH-TRU Waste Streams and Associated EPA Reactivity Group Numbers (Continued)

				EPA Reactivity Group Number																																								
Source	Site	Waste Stream Identifier	TRU Type	1	2	3	4	5	6	7	8	10	11	13	14	15	16	17	18	19	20	21	22	23	24	25	27	28	29	30	31	32	33	34	101	102	103	104	105	106	107	OI	OO	OSMA
WDS	IN	ID-NTS-TTR-HET	CH	●	●	●	●					●				●	●	●		●		●	●	●	●		●		●			●			●	●		●	●	●	●	●	●	●
WDS	IN	ID-SA-T001	CH	●	●	●	●					●				●	●	●		●		●	●	●	●		●		●			●			●	●		●	●	●	●	●	●	●
WDS	IN	ID-SNL-HCF-S5400	CH	●	●	●	●					●				●	●	●		●		●	●	●	●		●		●			●			●	●		●	●	●	●	●	●	●
WDS	IN	ID-SNL-SOURCES-S5400	CH	●	●	●	●					●				●	●	●		●		●	●	●	●		●		●			●			●	●		●	●	●	●	●	●	●
WDS	IN	ID-GEVNC-02	CH	●	●	●	●					●				●	●	●		●		●	●	●	●		●		●			●			●	●		●	●	●	●	●	●	●
WDS	IN	ID-LBNL-S5400	CH	●	●	●	●					●				●	●	●		●		●	●	●	●		●		●			●			●	●		●	●	●	●	●	●	●
ATWIR	KN	KN-B234TRU	CH	●	●	●	●				●	●	●	●	●	●	●	●	●	●		●	●	●	●	●		●	●	●		●			●		●	●	●	●	●	●	●	●
ATWIR	KN	KN-B234TRU_SS	CH	●	●	●	●				●	●	●	●	●	●	●	●	●	●		●	●	●	●	●		●	●	●		●			●		●	●	●	●	●	●	●	●
BOTH	LA	LA-CIN02.001	CH	●	●	●	●					●				●		●		●				●	●		●	●	●						●	●		●	●	●	●	●		●
BOTH	LA	LA-MHD08.001	CH	●	●		●	●								●						●		●	●										●					●	●	●		●
BOTH	LA	LA-MIN03-NC.001	CH	●	●	●	●					●				●		●		●				●	●		●	●	●						●	●		●	●	●	●	●		●
ATWIR	LA	LA-MSG04.001	CH	●	●	●	●					●				●		●		●				●	●		●	●	●						●	●		●	●	●	●	●		●
ATWIR	LA	LA-TA-03-28	CH	●	●	●	●					●				●		●		●				●	●		●	●	●						●	●		●	●	●	●	●		●
ATWIR	LA	LA-TA-21-13	CH	●	●	●	●					●				●		●		●				●	●		●	●	●						●	●		●	●	●	●	●		●
ATWIR	LA	LA-TA-50-15	CH	●	●	●	●					●				●		●		●				●	●		●	●	●						●	●		●	●	●	●	●		●
ATWIR	LA	LA-TA-50-18	CH	●	●	●	●					●				●		●		●				●	●		●	●	●						●	●		●	●	●	●	●		●
ATWIR	LA	LA-TA-50-19	CH	●	●	●	●					●				●		●		●				●	●		●	●	●						●	●		●	●	●	●	●		●
ATWIR	LA	LA-TA-55-38	CH	●	●	●	●					●				●		●		●				●	●		●	●	●						●	●		●	●	●	●	●		●
BOTH	LA	LA-MHD01.001	CH	●	●	●	●	●				●				●	●	●		●		●	●	●	●	●	●					●			●	●		●	●	●	●	●	●	●
ATWIR	LA	LA-MIN02-V.001	CH	●	●	●	●	●				●				●	●	●		●		●	●	●	●	●	●					●			●	●		●	●	●	●	●	●	●
ATWIR	LA	LA-TA-00-04	CH	●	●	●	●	●				●				●	●	●		●		●	●	●	●	●	●					●			●	●		●	●	●	●	●	●	●
ATWIR	LA	LA-TA-03-01	CH	●	●	●	●	●				●				●	●	●		●		●	●	●	●	●	●					●			●	●		●	●	●	●	●	●	●
ATWIR	LA	LA-TA-03-30	CH	●	●	●	●	●				●				●	●	●		●		●	●	●	●	●	●					●			●	●		●	●	●	●	●	●	●
ATWIR	LA	LA-TA-21-15	CH	●	●	●	●	●				●				●	●	●		●		●	●	●	●	●	●					●			●	●		●	●	●	●	●	●	●
BOTH	LA	LA-CIN01.001	CH	●	●	●	●					●				●		●		●		●		●	●		●		●			●			●	●		●	●	●	●	●		●
ATWIR	LA	LA-CIN03.001	CH	●	●	●	●					●				●		●		●		●		●	●		●		●			●			●	●		●	●	●	●	●		●
ATWIR	LA	LA-TA-21-16	CH	●	●	●	●					●				●		●		●		●		●	●		●		●			●			●	●		●	●	●	●	●		●
ATWIR	LA	LA-TA-21-05	CH																					●											●									●
BOTH	LA	LA-MHD02-PTX.001	CH	●	●		●	●								●						●		●	●										●					●	●	●		●
BOTH	LA	LA-MHD03.001	CH	●	●	●	●	●				●				●	●	●		●		●	●	●	●	●	●					●			●	●		●	●	●	●	●	●	●
BOTH	LA	LA-MHD09.001	CH	●	●	●	●	●				●				●	●	●		●		●	●	●	●	●	●					●			●	●		●	●	●	●	●	●	●
ATWIR	LA	LA-TA-03-12	CH													●		●				●		●	●										●							●		
ATWIR	LA	LA-TA-03-33	CH													●		●				●		●	●										●							●		
ATWIR	LA	LA-TA-21-06	CH													●		●				●		●	●										●							●		
ATWIR	LA	LA-TA-21-17	CH													●		●				●		●	●										●							●		
ATWIR	LA	LA-TRU-Empty	CH													●		●				●		●	●										●							●		
ATWIR	LA	LA-LANHD01	CH	●	●		●	●								●						●		●	●										●					●	●	●		●
BOTH	LA	LA-MHD04.001	CH	●	●		●	●								●						●		●	●										●					●	●	●		●
ATWIR	LA	LA-TA-03-14	CH	●	●		●	●								●						●		●	●										●					●	●	●		●

CH- and RH-TRU Waste Streams and Associated EPA Reactivity Group Numbers (Continued)

				EPA Reactivity Group Number																																								
Source	Site	Waste Stream Identifier	TRU Type	1	2	3	4	5	6	7	8	10	11	13	14	15	16	17	18	19	20	21	22	23	24	25	27	28	29	30	31	32	33	34	101	102	103	104	105	106	107	OI	OO	OSMA
ATWIR	LA	LA-TA-03-27	CH	●	●		●	●								●						●		●	●										●					●	●	●		●
ATWIR	LA	LA-TA-03-40	CH	●	●		●	●								●						●		●	●										●					●	●	●		●
ATWIR	LA	LA-TA-21-07	CH	●	●		●	●								●						●		●	●										●					●	●	●		●
ATWIR	LA	LA-TA-50-12	CH	●	●		●	●								●						●		●	●										●					●	●	●		●
ATWIR	LA	LA-TA-55-21	CH	●	●		●	●								●						●		●	●										●					●	●	●		●
ATWIR	LA	LA-TA-21-08	CH		●													●						●	●										●							●		●
ATWIR	LA	LA-TA-03-17	CH		●							●						●						●											●			●				●		●
ATWIR	LA	LA-TA-03-23	CH		●							●						●						●											●			●				●		●
ATWIR	LA	LA-TA-03-42	CH		●							●						●						●											●			●				●		●
ATWIR	LA	LA-TA-21-09	CH		●							●						●						●											●			●				●		●
BOTH	LA	LA-OS-00-01.001	CH									●										●	●	●	●										●				●		●	●		●
BOTH	LA	LA-OS-00-03	CH									●										●	●	●	●										●				●		●	●		●
ATWIR	LA	LA-TA-03-10	CH														●	●		●		●		●	●										●							●		●
ATWIR	LA	LA-TA-03-34	CH		●							●					●	●		●		●		●	●										●			●				●		●
ATWIR	LA	LA-TA-21-12	CH		●							●					●	●		●		●		●	●										●			●				●		●
ATWIR	LA	LA-TA-50-20	CH		●							●					●	●		●		●		●	●										●			●				●		●
ATWIR	LA	LA-LAMIN04S	CH									●												●	●										●							●		●
ATWIR	LA	LA-LANIN03NC	CH									●												●	●										●							●		●
ATWIR	LA	LA-MIN04-S.001	CH									●												●	●										●							●		●
ATWIR	LA	LA-LANHD02238	CH	●	●											●	●	●	●	●			●	●	●										●			●				●		●
BOTH	LA	LA-MHD05-ITRI.001	CH	●	●		●	●								●						●		●	●										●					●	●	●		●
ATWIR	LA	LA-TA-03-21	CH	●	●											●	●	●	●	●			●	●	●										●			●				●		●
ATWIR	LA	LA-TA-21-11	CH	●	●											●	●	●	●	●			●	●	●										●			●				●		●
BOTH	LA	LA-TA-55-19	CH	●	●	●	●	●				●				●	●	●		●		●	●	●	●	●	●					●			●	●		●	●	●	●	●	●	●
BOTH	LA	LA-TA-55-30	CH	●	●	●	●	●				●				●	●	●		●		●	●	●	●	●	●					●			●	●		●	●	●	●	●	●	●
ATWIR	LA	LA-TA-55-32	CH	●	●											●	●	●	●	●			●	●	●										●			●				●		●
WDS	LA	LA-OS-00-01	CH									●										●	●	●	●										●				●		●	●		●
WDS	LA	LA-TA-55-43.01	CH	●	●		●	●								●						●		●	●										●					●	●	●		●
WDS	LA	LA-MHD02.001	CH	●	●		●	●								●						●		●	●										●					●	●	●		●
ATWIR	LB	LB-T001	CH	●	●	●	●					●				●	●	●		●		●	●	●	●		●		●			●			●	●		●	●	●	●	●	●	●
ATWIR	LB	LB-T002	CH	●	●	●	●					●				●	●	●		●		●	●	●	●		●		●			●			●	●		●	●	●	●	●	●	●
ATWIR	LB	LB-T003	CH	●	●	●	●					●				●	●	●		●		●	●	●	●		●		●			●			●	●		●	●	●	●	●	●	●
ATWIR	LB	LB-T004	CH	●	●	●	●					●				●	●	●		●		●	●	●	●		●		●			●			●	●		●	●	●	●	●	●	●
ATWIR	LL	LL-W019	CH	●	●	●	●					●				●		●		●				●	●		●				●				●	●		●			●	●		●
ATWIR	LL	LL-M001	CH	●	●	●	●					●				●		●		●		●	●	●	●		●				●				●	●		●	●		●	●		●
ATWIR	LL	LL-W018-SS	CH		●							●						●						●				●							●			●				●		●
ATWIR	LL	LL-T004	CH									●				●						●		●	●										●	●			●		●	●		
ATWIR	LL	LL-W018-S5100	CH	●	●	●	●					●				●		●		●		●	●	●	●		●				●				●	●		●	●		●	●		●
WDS	LL	LL-M001-S5400	CH	●	●	●	●					●				●		●		●		●	●	●	●		●				●				●	●		●	●		●	●		●

CH- and RH-TRU Waste Streams and Associated EPA Reactivity Group Numbers (Continued)

				EPA Reactivity Group Number																																								
Source	Site	Waste Stream Identifier	TRU Type	1	2	3	4	5	6	7	8	10	11	13	14	15	16	17	18	19	20	21	22	23	24	25	27	28	29	30	31	32	33	34	101	102	103	104	105	106	107	OI	OO	OSMA
ATWIR	MC	MC-W001	CH									●										●	●	●	●										●	●			●		●	●		●
WDS	MU	MU-W002	CH	●	●	●	●				●	●	●	●	●	●	●	●	●	●		●	●	●	●	●		●	●	●		●			●		●	●	●	●	●	●	●	●
ATWIR	ND	ND-T001	CH	●	●	●	●					●				●	●	●		●		●	●	●	●		●		●			●			●	●		●	●	●	●	●	●	●
ATWIR	ND	ND-T002	CH	●	●	●	●					●				●	●	●		●		●	●	●	●		●		●			●			●	●		●	●	●	●	●	●	●
ATWIR	NT	NT-JAS-01	CH	●	●	●	●					●				●		●		●		●	●	●	●		●	●			●				●	●		●	●		●	●		●
ATWIR	NT	NT-W021	CH	●	●	●	●					●				●		●		●		●	●	●	●		●	●			●				●	●		●	●		●	●		●
WDS	NT	NT-RF-GRAPHITE	CH	●	●	●	●			●		●		●	●	●	●	●		●	●	●	●	●	●		●	●			●				●	●		●	●		●	●	●	●
WDS	NT	NT-RF-METAL	CH	●	●	●	●			●		●	●		●	●	●	●		●	●	●	●	●	●		●	●	●		●		●		●	●		●	●	●	●	●	●	●
WDS	NT	NTS54332R0	CH	●	●	●	●					●				●		●		●		●	●	●	●		●	●			●				●	●		●	●		●	●		●
WDS	NT	NTS54COMR0	CH	●	●	●	●					●				●		●		●		●	●	●	●		●	●			●				●	●		●	●		●	●		●
WDS	NT	NTS54MIX1R0	CH	●	●	●	●					●				●		●		●		●	●	●	●		●	●			●				●	●		●	●		●	●		●
WDS	NT	NT-RF-BERYLLIUM	CH	●	●	●	●			●		●	●			●	●	●		●	●	●	●	●	●		●	●	●		●		●		●	●		●	●	●	●	●	●	●
WDS	NT	NTLBL-S5400	CH	●	●	●	●				●	●	●	●	●	●	●	●	●	●		●	●	●	●	●		●	●	●		●			●		●	●	●	●	●	●	●	●
WDS	NT	NTLRC-S5400	CH	●	●	●	●				●	●	●	●	●	●	●	●	●	●		●	●	●	●	●		●	●	●		●			●		●	●	●	●	●	●	●	●
ATWIR	OR	OR-NFS-CH-HOM	CH		●	●	●					●	●					●				●	●	●	●								●		●	●		●			●	●		●
BOTH	OR	OR-NFS-CH-SOIL	CH		●	●	●					●	●					●				●	●	●	●								●		●	●		●			●	●		●
ATWIR	OR	OR-RADP-CH-SOILS	CH		●	●	●					●	●					●				●	●	●	●								●		●	●		●			●	●		●
ATWIR	OR	OR-RF-CH-HOM	CH		●	●	●					●	●					●				●	●	●	●								●		●	●		●			●	●		●
BOTH	OR	OR-CHEM-CH-HET	CH			●	●		●	●	●			●			●	●		●				●	●				●			●			●			●		●		●		
BOTH	OR	OR-GENR-CH-HET	CH			●	●		●	●	●			●			●	●		●				●	●				●			●			●			●		●		●		
BOTH	OR	OR-ISTP-CH-HET	CH			●	●		●	●	●			●			●	●		●				●	●				●			●			●			●		●		●		
BOTH	OR	OR-NBL-CH-HET	CH			●	●		●	●	●			●			●	●		●				●	●				●			●			●			●		●		●		
BOTH	OR	OR-NFS-CH-HET	CH			●	●		●	●	●			●			●	●		●				●	●				●			●			●			●		●		●		
ATWIR	OR	OR-PGDP-CH-HET	CH			●	●		●	●	●			●			●	●		●				●	●				●			●			●			●		●		●		
BOTH	OR	OR-RADP-CH-HET	CH			●	●		●	●	●			●			●	●		●				●	●				●			●			●			●		●		●		
BOTH	OR	OR-REDC-CH-HET	CH			●	●		●	●	●			●			●	●		●				●	●				●			●			●			●		●		●		
BOTH	OR	OR-RF-CH-HET	CH			●	●		●	●	●			●			●	●		●				●	●				●			●			●			●		●		●		
ATWIR	OR	OR-TBD-CH-HET	CH			●	●		●	●	●			●			●	●		●				●	●				●			●			●			●		●		●		
ATWIR	OR	OR-W203	CH			●	●		●	●	●			●			●	●		●				●	●				●			●			●			●		●		●		
ATWIR	OR	OR-WSTR-CH-HET	CH			●	●		●	●	●			●			●	●		●				●	●				●			●			●			●		●		●		
ATWIR	OR	OR-Y12-CH-HET	CH			●	●		●	●	●			●			●	●		●				●	●				●			●			●			●		●		●		
WDS	OR	OR-NFS-CH-HET-A	CH			●	●		●	●	●			●			●	●		●				●	●				●			●			●			●		●		●		
ATWIR	PA	PA-W014	CH				●									●	●	●						●	●															●		●		●
ATWIR	PA	PA-A015	CH	●	●	●	●					●				●	●	●		●		●	●	●	●		●		●			●			●	●		●	●	●	●	●	●	●
WDS	RF	RF122.01	CH		●	●	●						●				●	●		●		●	●	●	●			●				●			●					●	●	●	●	●
WDS	RF	RF122.03	CH		●	●	●						●				●	●		●		●	●	●	●			●				●			●					●	●	●	●	●
WDS	RF	RF122.06	CH		●	●	●						●				●	●		●		●	●	●	●			●				●			●					●	●	●	●	●
WDS	RF	RF139.01	CH		●	●	●						●				●	●		●		●	●	●	●			●				●			●					●	●	●	●	●
WDS	RF	RF107.04	CH	●			●					●		●		●	●	●					●	●	●										●					●		●	●	●

CH- and RH-TRU Waste Streams and Associated EPA Reactivity Group Numbers (Continued)

Source	Site	Waste Stream Identifier	TRU Type	EPA Reactivity Group Number																																								
				1	2	3	4	5	6	7	8	10	11	13	14	15	16	17	18	19	20	21	22	23	24	25	27	28	29	30	31	32	33	34	101	102	103	104	105	106	107	OI	OO	OSMA
WDS	RF	RF135.01	CH	●			●					●		●		●	●	●					●	●	●										●					●		●	●	●
WDS	RF	RF135.02	CH	●			●					●		●		●	●	●					●	●	●										●					●		●	●	●
WDS	RF	RF003.01	CH			●	●			●				●	●	●	●	●		●	●	●	●	●	●		●				●				●				●		●		●	
WDS	RF	RF001.01	CH	●	●	●	●					●			●	●	●	●		●	●	●	●	●	●			●	●			●			●			●		●	●	●	●	●
WDS	RF	RF101.01	CH	●	●	●	●					●			●	●	●	●		●	●	●	●	●	●			●	●			●			●			●		●	●	●	●	●
WDS	RF	RF101.29	CH	●	●	●	●					●			●	●	●	●		●	●	●	●	●	●			●	●			●			●			●		●	●	●	●	●
WDS	RF	RF101.31	CH	●	●	●	●					●			●	●	●	●		●	●	●	●	●	●			●	●			●			●			●		●	●	●	●	●
WDS	RF	RF101.35	CH	●	●	●	●					●			●	●	●	●		●	●	●	●	●	●			●	●			●			●			●		●	●	●	●	●
WDS	RF	RF102.01	CH	●	●	●	●			●		●	●		●	●	●	●		●	●	●	●	●	●			●	●		●		●		●			●		●	●	●	●	●
WDS	RF	RF102.31	CH	●	●	●	●			●		●	●		●	●	●	●		●	●	●	●	●	●			●	●		●		●		●			●		●	●	●	●	●
WDS	RF	RF004.01	CH		●	●	●					●					●	●		●		●	●	●	●				●		●				●	●		●	●		●	●	●	●
WDS	RF	RF006.01	CH		●	●	●					●					●	●		●		●	●	●	●				●		●				●	●		●	●		●	●	●	●
WDS	RF	RF008.01	CH		●	●	●					●					●	●		●		●	●	●	●				●		●				●	●		●	●		●	●	●	●
WDS	RF	RF104.01	CH		●	●	●					●					●	●		●		●	●	●	●				●		●				●	●		●	●		●	●	●	●
WDS	RF	RF101.30	CH	●	●	●	●					●			●	●	●	●		●	●	●	●	●	●			●	●			●			●			●		●	●	●	●	●
WDS	RF	RF110.05	CH		●		●					●				●	●	●						●	●										●			●		●		●	●	●
WDS	RF	RF036.01	CH	●	●	●	●					●			●	●	●	●		●	●	●	●	●	●			●	●						●			●		●	●	●	●	●
WDS	RF	RF113.01	CH	●	●	●	●					●			●	●	●	●		●	●	●	●	●	●			●	●						●			●		●	●	●	●	●
WDS	RF	RF125.01	CH	●	●	●	●					●			●	●	●	●		●	●	●	●	●	●			●	●						●			●		●	●	●	●	●
WDS	RF	RF129.01	CH	●	●	●	●					●			●	●	●	●		●	●	●	●	●	●			●	●						●			●		●	●	●	●	●
WDS	RF	RF129.05	CH	●	●	●	●					●			●	●	●	●		●	●	●	●	●	●			●	●						●			●		●	●	●	●	●
WDS	RF	RF130.01	CH	●	●	●	●					●			●	●	●	●		●	●	●	●	●	●			●	●						●			●		●	●	●	●	●
WDS	RF	RF134.02	CH	●	●	●	●					●			●	●	●	●		●	●	●	●	●	●			●	●						●			●		●	●	●	●	●
WDS	RF	RF011.01	CH	●	●		●			●		●	●				●	●				●	●	●	●						●		●		●			●		●	●	●	●	●
WDS	RF	RF015.01	CH	●	●		●			●		●	●				●	●				●	●	●	●						●		●		●			●		●	●	●	●	●
WDS	RF	RF032.01	CH	●	●		●			●		●	●				●	●				●	●	●	●						●		●		●			●		●	●	●	●	●
WDS	RF	RF115.01	CH	●	●		●			●		●	●				●	●				●	●	●	●						●		●		●			●		●	●	●	●	●
WDS	RF	RF117.01	CH	●	●		●			●		●	●				●	●				●	●	●	●						●		●		●			●		●	●	●	●	●
WDS	RF	RF123.02	CH	●	●		●			●		●	●				●	●				●	●	●	●						●		●		●			●		●	●	●	●	●
WDS	RF	RF137.01	CH	●	●		●			●		●	●				●	●				●	●	●	●						●		●		●			●		●	●	●	●	●
WDS	RF	RF124.01	CH	●	●	●	●					●			●	●	●	●		●	●	●	●	●	●			●	●			●			●			●		●	●	●	●	●
WDS	RF	RF124.02	CH									●					●	●					●	●	●										●								●	
WDS	RF	RF005.02	CH									●										●	●	●	●										●	●			●	●	●	●	●	
WDS	RF	RF107.07	CH	●	●	●	●						●			●	●	●		●		●	●	●	●			●				●			●					●	●	●	●	●
WDS	RF	RF126.01	CH	●			●									●	●	●					●	●	●										●					●		●	●	●
WDS	RF	RF126.04	CH	●			●									●	●	●					●	●	●										●					●		●	●	●
WDS	RF	RF107.03	CH	●	●	●	●			●		●	●			●	●	●		●	●	●	●	●	●			●	●		●	●	●		●			●		●	●	●	●	●
WDS	RF	RF107.05	CH	●	●	●	●			●		●	●			●	●	●		●	●	●	●	●	●			●	●		●	●	●		●			●		●	●	●	●	●
WDS	RF	RF107.06	CH	●	●	●	●			●		●	●			●	●	●		●	●	●	●	●	●			●	●		●	●	●		●			●		●	●	●	●	●

CH- and RH-TRU Waste Streams and Associated EPA Reactivity Group Numbers (Continued)

				EPA Reactivity Group Number																																								
Source	Site	Waste Stream Identifier	TRU Type	1	2	3	4	5	6	7	8	10	11	13	14	15	16	17	18	19	20	21	22	23	24	25	27	28	29	30	31	32	33	34	101	102	103	104	105	106	107	OI	OO	OSMA
WDS	RF	RF119.01	CH	●	●	●	●			●		●	●			●	●	●		●	●	●	●	●	●			●	●		●	●	●		●			●		●	●	●	●	●
WDS	RF	RF122.04	CH	●	●	●	●			●		●	●			●	●	●		●	●	●	●	●	●			●	●		●	●	●		●			●		●	●	●	●	●
WDS	RF	RF122.05	CH	●	●	●	●			●		●	●	●		●	●	●		●	●	●	●	●	●			●	●		●	●	●		●			●		●	●	●	●	●
WDS	RF	RF009.01	CH	●	●	●	●					●			●	●	●	●			●	●	●	●	●										●	●		●	●	●	●	●	●	●
WDS	RF	RF010.01	CH	●	●	●	●					●			●	●	●	●			●	●	●	●	●										●	●		●	●	●	●	●	●	●
WDS	RF	RF029.01	CH	●	●	●	●					●			●	●	●	●		●	●	●	●	●	●			●	●						●	●		●	●	●	●	●	●	●
WDS	RF	RF031.01	CH	●	●	●	●					●			●	●	●	●		●	●	●	●	●	●			●	●						●	●		●	●	●	●	●	●	●
WDS	RF	RF033.01	CH	●	●	●	●					●			●	●	●	●			●	●	●	●	●										●	●		●	●	●	●	●	●	●
WDS	RF	RF110.01	CH	●	●	●	●					●			●	●	●	●			●	●	●	●	●										●	●		●	●	●	●	●	●	●
WDS	RF	RF116.01	CH	●	●	●	●					●			●	●	●	●			●	●	●	●	●										●	●		●	●	●	●	●	●	●
WDS	RF	RF118.01	CH	●	●	●	●					●			●	●	●	●			●	●	●	●	●										●	●		●	●	●	●	●	●	●
WDS	RF	RF121.01	CH	●	●	●	●					●			●	●	●	●			●	●	●	●	●										●	●		●	●	●	●	●	●	●
WDS	RF	RF123.01	CH	●	●	●	●					●			●	●	●	●			●	●	●	●	●										●	●		●	●	●	●	●	●	●
WDS	RF	RF123.03	CH	●	●	●	●					●			●	●	●	●			●	●	●	●	●										●	●		●	●	●	●	●	●	●
WDS	RF	RF123.04	CH	●	●	●	●					●			●	●	●	●			●	●	●	●	●										●	●		●	●	●	●	●	●	●
WDS	RF	RF128.01	CH	●	●	●	●					●			●	●	●	●			●	●	●	●	●										●	●		●	●	●	●	●	●	●
WDS	RF	RF140.01	CH	●	●	●	●					●			●	●	●	●			●	●	●	●	●										●	●		●	●	●	●	●	●	●
WDS	RF	RF141.01	CH	●	●	●	●			●		●	●		●	●	●	●			●	●	●	●	●						●		●		●	●		●	●	●	●	●	●	●
WDS	RF	RF141.02	CH	●	●	●	●					●			●	●	●	●			●	●	●	●	●										●	●		●	●	●	●	●	●	●
WDS	RF	RF002.01	CH	●	●	●	●			●		●	●		●	●	●	●		●	●	●	●	●	●			●	●		●		●		●			●		●	●	●	●	●
WDS	RF	RF107.01	CH		●	●	●						●				●	●		●		●	●	●	●			●				●			●					●	●	●	●	●
ATWIR	RL	RL105-03	CH		●		●					●				●						●	●	●	●							●			●			●	●	●	●	●		●
ATWIR	RL	RL221U-09	CH		●		●					●				●						●	●	●	●							●			●			●	●	●	●	●		●
ATWIR	RL	RLPFP-04	CH														●	●						●	●				●			●			●									●
ATWIR	RL	RLPFP-03	CH		●							●				●						●		●	●										●	●		●	●	●	●	●		●
ATWIR	RL	RL201-03	CH									●										●	●	●	●										●						●	●		
ATWIR	RL	RL231Z-03	CH									●										●	●	●	●										●						●	●		
ATWIR	RL	RL233S-03	CH									●										●	●	●	●										●						●	●		
ATWIR	RL	RL300-03	CH									●										●	●	●	●										●						●	●		
ATWIR	RL	RL325-03	CH									●										●	●	●	●										●						●	●		
ATWIR	RL	RLBW-03	CH									●										●	●	●	●										●						●	●		
ATWIR	RL	RLCFF-03	CH									●										●	●	●	●										●						●	●		
ATWIR	RL	RLGEV-03	CH									●										●	●	●	●										●						●	●		
ATWIR	RL	RLWAR-03	CH									●										●	●	●	●										●						●	●		
ATWIR	RL	RL105-01	CH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
ATWIR	RL	RL200-01	CH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
ATWIR	RL	RL200-02	CH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
ATWIR	RL	RL202S-01	CH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
ATWIR	RL	RL209E-01	CH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●

CH- and RH-TRU Waste Streams and Associated EPA Reactivity Group Numbers (Continued)

				EPA Reactivity Group Number																																								
Source	Site	Waste Stream Identifier	TRU Type	1	2	3	4	5	6	7	8	10	11	13	14	15	16	17	18	19	20	21	22	23	24	25	27	28	29	30	31	32	33	34	101	102	103	104	105	106	107	OI	OO	OSMA
ATWIR	RL	RL216Z-02	CH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
ATWIR	RL	RL221T-01	CH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
ATWIR	RL	RL221U-01	CH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
ATWIR	RL	RL222S-01	CH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
ATWIR	RL	RL231Z-01	CH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
ATWIR	RL	RL233S-01	CH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
ATWIR	RL	RL300-01	CH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
ATWIR	RL	RL308-01	CH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
ATWIR	RL	RL325-01	CH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
ATWIR	RL	RL325-02	CH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
ATWIR	RL	RL618-01	CH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
ATWIR	RL	RLARG-01	CH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
ATWIR	RL	RLBAT-01	CH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
ATWIR	RL	RLBW-01	CH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
ATWIR	RL	RLCFF-01	CH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
ATWIR	RL	RLCH2-01	CH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
ATWIR	RL	RLESG-01	CH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
ATWIR	RL	RLEXX-01	CH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
ATWIR	RL	RLFFTF-01	CH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
ATWIR	RL	RLGEV-01	CH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
ATWIR	RL	RLHAN-01	CH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
ATWIR	RL	RLIAEA-01	CH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
ATWIR	RL	RLMLL-01	CH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
ATWIR	RL	RLPFP-01	CH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
ATWIR	RL	RLPFP-02	CH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
ATWIR	RL	RLPRC-01	CH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
ATWIR	RL	RLPURX-01	CH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
ATWIR	RL	RLRFET-01	CH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
ATWIR	RL	RLSAN-01	CH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
ATWIR	RL	RLSWO-01	CH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
ATWIR	RL	RLWAR-01	CH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
WDS	RL	RLHMOX.001	CH									●										●	●	●	●										●						●	●		
WDS	RL	RLMSSC.001	CH									●										●	●	●	●										●						●	●		
WDS	RL	RLVIPAC.001	CH									●										●	●	●	●										●						●	●		
WDS	RL	RLBWD.001	CH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
WDS	RL	RLCBWD.001	CH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
WDS	RL	RLCCP300D1	CH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
WDS	RL	RLCCP308D1	CH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
WDS	RL	RLCFFD.001	CH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●

CH- and RH-TRU Waste Streams and Associated EPA Reactivity Group Numbers (Continued)

				EPA Reactivity Group Number																																								
Source	Site	Waste Stream Identifier	TRU Type	1	2	3	4	5	6	7	8	10	11	13	14	15	16	17	18	19	20	21	22	23	24	25	27	28	29	30	31	32	33	34	101	102	103	104	105	106	107	OI	OO	OSMA
WDS	RL	RLETECD.001	CH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
WDS	RL	RLEXXOD.001	CH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
WDS	RL	RLM209ED.001	CH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
WDS	RL	RLM231ZD.001	CH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
WDS	RL	RLM231ZD.001(OLD)	CH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
WDS	RL	RLM233SD.001	CH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
WDS	RL	RLM300D.001	CH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
WDS	RL	RLM308D.001	CH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●	●	●
WDS	RL	RLM325D.001	CH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
WDS	RL	RLM325D.001(OLD)	CH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
WDS	RL	RLMGEVALD.001	CH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
WDS	RL	RLMPDT.001	CH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
WDS	RL	RLMPFPDD	CH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
WDS	RL	RLMPURX.001	CH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
WDS	RL	RLMWARD.001	CH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
WDS	RL	RLNPDT.002	CH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
WDS	RL	RLNPURX.001	CH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
WDS	RL	RLSWOCD.001	CH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
WDS	RL	RLMHASH.001	CH				●					●				●	●	●					●	●	●										●					●		●		●
WDS	RL	RLRFETS.001	CH				●					●				●	●	●					●	●	●										●					●		●		●
ATWIR	RP	RP-TFC001	CH		●							●				●						●		●	●										●	●		●	●	●	●	●		●
ATWIR	RP	RP-W754	CH		●							●				●						●		●	●										●	●		●	●	●	●	●		●
ATWIR	RP	RP-W755	CH		●							●				●						●		●	●										●	●		●	●	●	●	●		●
ATWIR	SA	SA-T001	CH	●	●	●	●					●				●	●	●		●		●	●	●	●		●		●			●			●	●		●	●	●	●	●	●	●
ATWIR	SA	SA-W134	CH	●	●	●	●					●				●	●	●		●		●	●	●	●		●		●			●			●	●		●	●	●	●	●	●	●
ATWIR	SA	SA-W134M	CH	●	●	●	●					●				●	●	●		●		●	●	●	●		●		●			●			●	●		●	●	●	●	●	●	●
ATWIR	SA	SA-W136	CH	●	●	●	●					●				●	●	●		●		●	●	●	●		●		●			●			●	●		●	●	●	●	●	●	●
BOTH	SR	SR-AGNS-HOM	CH	●	●	●	●				●	●	●	●	●	●	●	●	●	●		●	●	●	●	●		●	●	●		●			●		●	●	●	●	●	●	●	●
BOTH	SR	SR-MD-HOM-A	CH	●	●	●	●				●	●	●	●	●	●	●	●	●	●		●	●	●	●	●		●	●	●		●			●		●	●	●	●	●	●	●	●
BOTH	SR	SR-MD-HOM-C	CH	●	●	●	●				●	●	●	●	●	●	●	●	●	●		●	●	●	●	●		●	●	●		●			●		●	●	●	●	●	●	●	●
BOTH	SR	SR-MD-SOIL	CH	●	●	●	●				●	●	●	●	●	●	●	●	●	●		●	●	●	●	●		●	●	●		●			●		●	●	●	●	●	●	●	●
ATWIR	SR	SR-SDD-HOM-B	CH	●	●	●	●				●	●	●	●	●	●	●	●	●	●		●	●	●	●	●		●	●	●		●			●		●	●	●	●	●	●	●	●
ATWIR	SR	SR-SDD-HOM-C	CH	●	●	●	●				●	●	●	●	●	●	●	●	●	●		●	●	●	●	●		●	●	●		●			●		●	●	●	●	●	●	●	●
ATWIR	SR	SR-SWMF-SOIL	CH	●	●	●	●				●	●	●	●	●	●	●	●	●	●		●	●	●	●	●		●	●	●		●			●		●	●	●	●	●	●	●	●
ATWIR	SR	SR-W026-CIF-HOM	CH	●	●	●	●				●	●	●	●	●	●	●	●	●	●		●	●	●	●	●		●	●	●		●			●		●	●	●	●	●	●	●	●
ATWIR	SR	SR-SDD-HOM-A	CH			●	●							●			●	●		●			●		●				●			●			●					●		●		●
BOTH	SR	SR-W026-221F-HEPA	CH	●	●	●	●				●											●	●	●	●				●			●			●	●	●	●	●	●	●	●	●	●
BOTH	SR	SR-W027-221H-HEPA	CH	●	●	●	●				●											●	●	●	●				●			●			●	●	●	●	●	●	●	●	●	●
BOTH	SR	SR-W027-235F-HEPA	CH	●	●	●	●				●											●	●	●	●				●			●			●	●	●	●	●	●	●	●	●	●

CH- and RH-TRU Waste Streams and Associated EPA Reactivity Group Numbers (Continued)

Source	Site	Waste Stream Identifier	TRU Type	EPA Reactivity Group Number 1	2	3	4	5	6	7	8	10	11	13	14	15	16	17	18	19	20	21	22	23	24	25	27	28	29	30	31	32	33	34	101	102	103	104	105	106	107	OI	OO	OSMA
ATWIR	SR	SR-W027-773A-HEPA	CH	●	●	●	●				●											●	●	●	●				●			●			●	●	●	●	●	●	●	●	●	●
BOTH	SR	SR-AGNS-HET	CH	●	●	●	●					●				●	●	●		●		●	●	●	●		●		●			●			●	●		●	●	●	●	●	●	●
ATWIR	SR	SR-BCLDP-HET	CH	●	●	●	●				●	●			●	●	●	●		●		●	●	●	●				●			●			●	●	●	●	●	●	●	●	●	●
ATWIR	SR	SR-HBL-235F-HET	CH	●	●	●	●				●	●			●	●	●	●		●		●	●	●	●				●			●			●	●	●	●	●	●	●	●	●	●
ATWIR	SR	SR-KAC-HET	CH	●	●	●	●				●	●			●	●	●	●		●		●	●	●	●				●			●			●	●	●	●	●	●	●	●	●	●
BOTH	SR	SR-LA-PAD1	CH	●	●	●	●				●	●			●	●	●	●		●		●	●	●	●				●			●			●	●	●	●	●	●	●	●	●	●
BOTH	SR	SR-MD-HET	CH	●	●	●	●				●	●			●	●	●	●		●		●	●	●	●		●		●			●			●	●	●	●	●	●	●	●	●	●
BOTH	SR	SR-MD-PAD1	CH	●	●	●	●				●	●			●	●	●	●		●		●	●	●	●				●			●			●	●	●	●	●	●	●	●	●	●
ATWIR	SR	SR-NIST-HET	CH	●	●	●	●				●	●			●	●	●	●		●		●	●	●	●				●			●			●	●	●	●	●	●	●	●	●	●
ATWIR	SR	SR-SDD-HET-A	CH	●	●	●	●				●	●			●	●	●	●		●		●	●	●	●				●			●			●	●	●	●	●	●	●	●	●	●
ATWIR	SR	SR-SDD-HET-B	CH	●	●	●	●				●	●			●	●	●	●		●		●	●	●	●				●			●			●	●	●	●	●	●	●	●	●	●
BOTH	SR	SR-SWMF-HET-A	CH	●	●	●	●				●	●			●	●	●	●		●		●	●	●	●				●			●			●	●	●	●	●	●	●	●	●	●
ATWIR	SR	SR-T001-WSB-1	CH	●	●	●	●				●	●			●	●	●	●		●		●	●	●	●				●			●			●	●	●	●	●	●	●	●	●	●
BOTH	SR	SR-W026-221F-HET	CH	●	●	●	●				●	●			●	●	●	●		●		●	●	●	●				●			●			●	●	●	●	●	●	●	●	●	●
BOTH	SR	SR-W026-221F-HET-A	CH	●	●	●	●				●	●			●	●	●	●		●		●	●	●	●				●			●			●	●	●	●	●	●	●	●	●	●
BOTH	SR	SR-W026-772F-HET	CH	●	●	●	●				●	●			●	●	●	●		●		●	●	●	●				●			●			●	●	●	●	●	●	●	●	●	●
ATWIR	SR	SR-W026-DWPF-HET	CH	●	●	●	●				●	●			●	●	●	●		●		●	●	●	●				●			●			●	●	●	●	●	●	●	●	●	●
ATWIR	SR	SR-W026-MFFF-1	CH	●	●	●	●				●	●			●	●	●	●		●		●	●	●	●				●			●			●	●	●	●	●	●	●	●	●	●
ATWIR	SR	SR-W026-PDCF-1	CH	●	●	●	●				●	●			●	●	●	●		●		●	●	●	●				●			●			●	●	●	●	●	●	●	●	●	●
ATWIR	SR	SR-W026-WSB-2	CH	●	●	●	●				●	●			●	●	●	●		●		●	●	●	●				●			●			●	●	●	●	●	●	●	●	●	●
BOTH	SR	SR-W027-221F-HET-A	CH	●	●	●	●				●	●			●	●	●	●		●		●	●	●	●				●			●			●	●	●	●	●	●	●	●	●	●
ATWIR	SR	SR-W027-221F-HET-C-D	CH	●	●	●	●				●	●			●	●	●	●		●		●	●	●	●				●			●			●	●	●	●	●	●	●	●	●	●
ATWIR	SR	SR-W027-221F-HET-E	CH	●	●	●	●				●	●			●	●	●	●		●		●	●	●	●				●			●			●	●	●	●	●	●	●	●	●	●
BOTH	SR	SR-W027-221H-HET	CH	●	●	●	●				●	●			●	●	●	●		●		●	●	●	●				●			●			●	●	●	●	●	●	●	●	●	●
ATWIR	SR	SR-W027-221H-HET-B	CH	●	●	●	●				●	●			●	●	●	●		●		●	●	●	●				●			●			●	●	●	●	●	●	●	●	●	●
BOTH	SR	SR-W027-221H-HET-C	CH	●	●	●	●				●	●			●	●	●	●		●		●	●	●	●				●			●			●	●	●	●	●	●	●	●	●	●
BOTH	SR	SR-W027-235F-HET	CH	●	●	●	●				●	●			●	●	●	●		●		●	●	●	●				●			●			●	●	●	●	●	●	●	●	●	●
ATWIR	SR	SR-W027-321-322M-HET	CH	●	●	●	●				●	●			●	●	●	●		●		●	●	●	●				●			●			●	●	●	●	●	●	●	●	●	●
ATWIR	SR	SR-W027-643G-HET	CH	●	●	●	●				●	●			●	●	●	●		●		●	●	●	●				●			●			●	●	●	●	●	●	●	●	●	●
BOTH	SR	SR-W027-773A-HET	CH	●	●	●	●				●	●			●	●	●	●		●		●	●	●	●				●			●			●	●	●	●	●	●	●	●	●	●
ATWIR	SR	SR-W027-773A-HET-CLAS	CH	●	●	●	●				●	●			●	●	●	●		●		●	●	●	●				●			●			●	●	●	●	●	●	●	●	●	●
ATWIR	SR	SR-W027-776A-HET	CH	●	●	●	●				●	●			●	●	●	●		●		●	●	●	●				●			●			●	●	●	●	●	●	●	●	●	●
BOTH	SR	SR-W027-FB-PRE86-C	CH	●	●	●	●				●	●			●	●	●	●		●		●	●	●	●				●			●			●	●	●	●	●	●	●	●	●	●
BOTH	SR	SR-W027-HBL-BOX	CH	●	●	●	●				●	●			●	●	●	●		●		●	●	●	●				●			●			●	●	●	●	●	●	●	●	●	●
ATWIR	SR	SR-W027-UNK	CH	●	●	●	●				●	●			●	●	●	●		●		●	●	●	●				●			●			●	●	●	●	●	●	●	●	●	●
BOTH	SR	SR-W026-221F-HOM	CH	●	●	●	●				●	●		●	●	●	●	●		●		●	●	●	●				●			●			●	●	●	●	●	●	●	●	●	●
ATWIR	SR	SR-W027-221H-HOM	CH	●	●	●	●				●	●		●	●	●	●	●		●		●	●	●	●				●			●			●	●	●	●	●	●	●	●	●	●
ATWIR	SR	SR-W027-235F-HOM	CH	●	●	●	●				●	●		●	●	●	●	●		●		●	●	●	●				●			●			●	●	●	●	●	●	●	●	●	●
WDS	SR	SR2001.001.00	CH	●	●	●	●				●	●			●	●	●	●		●		●	●	●	●				●			●			●	●	●	●	●	●	●	●	●	●

CH- and RH-TRU Waste Streams and Associated EPA Reactivity Group Numbers (Continued)

Source	Site	Waste Stream Identifier	TRU Type	EPA Reactivity Group Number																																								
				1	2	3	4	5	6	7	8	10	11	13	14	15	16	17	18	19	20	21	22	23	24	25	27	28	29	30	31	32	33	34	101	102	103	104	105	106	107	OI	OO	OSMA
WDS	SR	SR2002.002.00	CH	●	●	●	●				●	●			●	●	●	●		●		●	●	●	●				●			●			●	●	●	●	●	●	●	●	●	●
WDS	SR	SR-W027-221H-HET-D	CH	●	●	●	●				●	●			●	●	●	●		●		●	●	●	●				●			●			●	●	●	●	●	●	●	●	●	●
ATWIR	WV	WV-T004	CH	●	●	●	●				●	●	●	●	●	●	●	●	●	●		●	●	●	●	●		●	●	●		●			●		●	●	●	●	●	●	●	●
ATWIR	WV	WV-M010a	CH	●	●	●	●				●	●	●	●	●	●	●	●	●	●		●	●	●	●	●		●	●	●		●			●		●	●	●	●	●	●	●	●
ATWIR	WV	WV-T006a	CH	●	●	●	●					●				●	●	●		●		●	●	●	●		●		●			●			●	●		●	●	●	●	●	●	●
ATWIR	WV	WV-W024a	CH	●	●	●	●					●				●	●	●		●		●	●	●	●		●		●			●			●	●		●	●	●	●	●	●	●
WDS	AE	AERHDM	RH	●	●	●	●					●			●	●	●	●		●		●	●	●	●			●	●			●			●	●		●	●		●	●	●	●
ATWIR	AE	AE-T009	RH	●	●	●	●					●			●	●	●	●		●		●	●	●	●			●	●			●			●	●		●	●		●	●	●	●
ATWIR	AW	AW-IN-TRA-BE-01	RH													●		●		●				●	●										●							●		●
ATWIR	AW	AW-W018	RH													●		●		●				●	●										●							●		●
ATWIR	AW	AW-W019	RH													●		●		●				●	●										●							●		●
ATWIR	AW	AW-T031.1322	RH	●	●	●	●					●				●	●	●		●		●	●	●	●		●		●			●			●	●		●	●	●	●	●	●	●
ATWIR	AW	AW-W020.13	RH	●	●	●	●					●				●	●	●		●		●	●	●	●		●		●			●			●	●		●	●	●	●	●	●	●
BOTH	BT	BT-T001	RH	●	●	●	●				●	●				●	●	●		●		●	●	●	●				●						●			●	●	●	●	●	●	●
ATWIR	IN	IN-ID-BTO-030	RH	●	●	●	●					●			●	●	●	●		●			●	●	●			●	●			●			●			●	●	●	●	●	●	●
ATWIR	IN	IN-ID-MFC-SOLID	RH	●	●	●	●					●			●	●	●	●		●			●	●	●			●	●			●			●			●	●	●	●	●	●	●
ATWIR	IN	IN-TRA-150	RH	●	●	●	●					●			●	●	●	●		●			●	●	●			●	●			●			●			●	●	●	●	●	●	●
ATWIR	IN	IN-W216R	RH	●	●	●	●					●			●	●	●	●		●			●	●	●			●	●			●			●			●	●	●	●	●	●	●
ATWIR	IN	IN-W228R	RH	●	●	●	●					●			●	●	●	●		●			●	●	●			●	●			●			●			●	●	●	●	●	●	●
ATWIR	IN	IN-W169R	RH													●		●				●		●	●										●							●		●
ATWIR	IN	IN-W197R	RH													●		●				●		●	●										●							●		●
ATWIR	IN	IN-W252R	RH													●		●				●		●	●										●							●		●
ATWIR	IN	IN-W254R	RH													●		●				●		●	●										●							●		●
ATWIR	IN	IN-W294R	RH													●		●		●				●	●										●							●		●
ATWIR	IN	IN-W296R	RH													●		●		●				●	●										●							●		●
ATWIR	IN	IN-W298R	RH													●		●		●				●	●										●							●		●
ATWIR	IN	IN-W360R	RH													●		●		●				●	●										●							●		●
ATWIR	IN	IN-W243R	RH		●													●						●	●										●							●		●
ATWIR	IN	IN-W245R	RH		●													●						●	●										●							●		●
ATWIR	IN	IN-W247R	RH		●													●						●	●										●							●		●
ATWIR	IN	IN-W208R	RH		●							●						●						●											●			●				●		●
ATWIR	IN	IN-W342R	RH														●	●		●		●		●	●										●							●		●
ATWIR	IN	IN-W350	RH														●	●		●		●		●	●										●							●		●
ATWIR	IN	IN-W359R	RH														●	●		●		●		●	●										●							●		●
WDS	IN	ID-ANLE-S5000	RH	●	●	●	●					●		●	●	●	●	●	●	●		●	●	●	●			●	●			●			●	●	●	●	●		●	●	●	●
ATWIR	IN	IN-AE-AGHC-02	RH	●	●	●	●					●		●	●	●	●	●	●	●		●	●	●	●			●	●			●			●	●	●	●	●		●	●	●	●
ATWIR	IN	IN-ID-EBR-S5000	RH	●	●	●	●					●		●	●	●	●	●	●	●		●	●	●	●			●	●			●			●	●	●	●	●		●	●	●	●
ATWIR	IN	IN-ID-INL-152	RH	●	●	●	●					●		●	●	●	●	●	●	●		●	●	●	●			●	●			●			●	●	●	●	●		●	●	●	●

CH- and RH-TRU Waste Streams and Associated EPA Reactivity Group Numbers (Continued)

Source	Site	Waste Stream Identifier	TRU Type	EPA Reactivity Group Number																																								
				1	2	3	4	5	6	7	8	10	11	13	14	15	16	17	18	19	20	21	22	23	24	25	27	28	29	30	31	32	33	34	101	102	103	104	105	106	107	OI	OO	OSMA
ATWIR	IN	IN-ID-INL-152M	RH	●	●	●	●					●		●	●	●	●	●	●	●		●	●	●	●			●	●			●			●	●	●	●	●		●	●	●	●
ATWIR	IN	IN-INTEC-SFS-01	RH	●	●	●	●					●		●	●	●	●	●	●	●		●	●	●	●			●	●			●			●	●	●	●	●		●	●	●	●
ATWIR	IN	IN-NRF-153	RH	●	●	●	●					●		●	●	●	●	●	●	●		●	●	●	●			●	●			●			●	●	●	●	●		●	●	●	●
ATWIR	IN	IN-NRF-SPC	RH	●	●	●	●					●		●	●	●	●	●	●	●		●	●	●	●			●	●			●			●	●	●	●	●		●	●	●	●
ATWIR	IN	IN-W198R	RH	●	●	●	●					●		●	●	●	●	●	●	●		●	●	●	●			●	●			●			●	●	●	●	●		●	●	●	●
ATWIR	IN	IN-W283R	RH	●	●	●	●					●		●	●	●	●	●	●	●		●	●	●	●			●	●			●			●	●	●	●	●		●	●	●	●
ATWIR	IN	IN-W364R	RH	●	●	●	●					●			●	●	●	●		●		●	●	●	●										●			●	●		●	●	●	●
ATWIR	IN	IN-W365R	RH	●	●	●	●					●			●	●	●	●		●		●	●	●	●										●			●	●		●	●	●	●
ATWIR	IN	IN-NRF-SPC-103	RH	●	●	●	●	●		●		●		●	●	●	●	●	●	●		●	●	●	●			●	●			●			●	●	●	●	●		●	●	●	●
ATWIR	IN	IN-SBW-01B	RH	●	●	●	●	●		●		●		●	●	●	●	●	●	●		●	●	●	●			●	●			●			●	●	●	●	●		●	●	●	●
ATWIR	IN	IN-SBW-01A	RH				●										●	●		●		●		●	●										●					●		●		●
ATWIR	IN	IN-W317R	RH				●										●	●		●		●		●	●										●					●		●		●
WDS	IN	ID-GEVNC.01	RH	●	●	●	●					●				●	●	●		●		●		●	●				●						●			●	●		●	●	●	●
WDS	IN	ID-MFC-S5400-RH	RH	●	●	●	●					●		●	●	●	●	●	●	●		●	●	●	●			●	●			●			●	●	●	●	●		●	●	●	●
WDS	IN	ID-INTEC-RH	RH	●	●	●	●					●			●	●	●	●		●		●	●	●	●							●			●			●	●		●	●		●
WDS	IN	ID-HFEF-S5400-RH	RH	●	●	●	●					●			●	●	●	●		●		●	●	●	●										●			●	●		●	●		●
WDS	IN	IN-ID-NRF-153	RH				●										●			●		●	●	●	●										●						●	●	●	●
WDS	IN	IN-ID-NRF-SPC	RH				●										●			●		●	●	●	●										●						●	●	●	●
WDS	IN	ID-RTC-S3000	RH	●	●	●	●	●				●				●	●	●		●		●	●	●	●				●		●	●		●	●			●	●	●	●	●	●	●
ATWIR	KA	KA-T001	RH	●	●	●	●					●				●	●	●		●		●	●	●	●		●		●			●			●	●		●	●	●	●	●	●	●
ATWIR	KA	KA-W016	RH	●	●	●	●					●				●	●	●		●		●	●	●	●		●		●			●			●	●		●	●	●	●	●	●	●
ATWIR	LA	LA-TA-00-03	RH	●	●	●	●					●		●		●	●	●		●		●		●	●										●			●	●		●	●	●	●
WDS	LA	LA-MHD03.002	RH	●	●	●	●					●		●		●	●	●		●		●		●	●										●			●	●		●	●	●	●
ATWIR	OR	OR-W213-RH-SOILS	RH		●	●	●					●	●					●				●	●	●	●								●		●	●		●			●	●		●
ATWIR	OR	OR-GENR-RH-HET	RH	●	●	●	●		●	●	●	●			●	●	●	●		●		●	●	●	●			●	●		●	●			●	●		●	●		●	●	●	●
ATWIR	OR	OR-ISTP-RH-HET	RH	●	●	●	●		●	●	●	●			●	●	●	●		●		●	●	●	●			●	●		●	●			●	●		●	●		●	●	●	●
ATWIR	OR	OR-RADP-RH-HET	RH	●	●	●	●		●	●	●	●			●	●	●	●		●		●	●	●	●			●	●		●	●			●	●		●	●		●	●	●	●
ATWIR	OR	OR-RF-RH-HET	RH	●	●	●	●		●	●	●	●			●	●	●	●		●		●	●	●	●			●	●		●	●			●	●		●	●		●	●	●	●
ATWIR	OR	OR-TBD-RH-HET	RH	●	●	●	●		●	●	●	●			●	●	●	●		●		●	●	●	●			●	●		●	●			●	●		●	●		●	●	●	●
BOTH	OR	OR-REDC-RH-HET	RH			●	●		●	●	●	●			●		●	●		●		●	●	●	●			●	●		●	●			●	●		●	●		●	●	●	●
ATWIR	RL	RL105-09	RH		●		●					●				●						●	●	●	●							●			●			●	●	●	●	●		●
ATWIR	RL	RLPFP-10	RH		●		●					●				●						●	●	●	●							●			●			●	●	●	●	●		●
ATWIR	RL	RL105-08	RH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
ATWIR	RL	RL209E-08	RH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
ATWIR	RL	RL222S-08	RH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
ATWIR	RL	RL300-08	RH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
ATWIR	RL	RL300-11	RH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
ATWIR	RL	RL308-08	RH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
ATWIR	RL	RL325-08	RH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●

CH- and RH-TRU Waste Streams and Associated EPA Reactivity Group Numbers (Continued)

Source	Site	Waste Stream Identifier	TRU Type	EPA Reactivity Group Number																																								
				1	2	3	4	5	6	7	8	10	11	13	14	15	16	17	18	19	20	21	22	23	24	25	27	28	29	30	31	32	33	34	101	102	103	104	105	106	107	OI	OO	OSMA
ATWIR	RL	RL618-08	RH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
ATWIR	RL	RLBART-08	RH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
ATWIR	RL	RLBAT-08	RH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
ATWIR	RL	RLBET-08	RH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
ATWIR	RL	RLBW-08	RH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
ATWIR	RL	RLCH2-08	RH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
ATWIR	RL	RLESG-08	RH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
ATWIR	RL	RLFFTF-08	RH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
ATWIR	RL	RLGEV-08	RH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
ATWIR	RL	RLHAN-08	RH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
ATWIR	RL	RLMLB-08	RH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
ATWIR	RL	RLPFP-08	RH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
ATWIR	RL	RLPURX-08	RH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
ATWIR	RL	RLSWO-08	RH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
ATWIR	RL	RLWTP-08	RH	●	●	●	●			●		●	●	●		●	●	●		●		●	●	●	●			●	●		●	●		●	●			●	●	●	●	●		●
ATWIR	SA	SA-W135	RH	●	●	●	●					●				●	●	●		●		●	●	●	●		●		●			●			●	●		●	●	●	●	●	●	●
WDS	SA	SNL-HCF-S5400-RH	RH	●	●	●	●					●				●	●	●		●			●	●	●		●	●				●			●	●		●	●	●	●	●	●	●
ATWIR	SR	SR-RH-773A.01	RH	●	●	●	●				●	●			●	●	●	●		●		●	●	●	●			●	●			●	●		●	●	●	●	●	●	●	●	●	●
ATWIR	SR	SR-RH-221H.01	RH	●	●	●	●					●			●	●	●	●		●		●	●	●	●				●						●			●	●		●	●	●	●
ATWIR	SR	SR-RH-221H.02	RH	●	●	●	●					●			●	●	●	●		●		●	●	●	●				●						●			●	●		●	●	●	●
ATWIR	SR	SR-RH-235F.01	RH	●	●	●	●					●			●	●	●	●		●		●	●	●	●				●						●			●	●		●	●	●	●
ATWIR	SR	SR-RH-772F.01	RH	●	●	●	●					●			●	●	●	●		●		●	●	●	●				●						●			●	●		●	●	●	●
ATWIR	SR	SR-RH-FTF.01	RH	●	●	●	●					●			●	●	●	●		●		●	●	●	●				●						●			●	●		●	●	●	●
ATWIR	SR	SR-RH-MNDPAD1.01	RH	●	●	●	●					●			●	●	●	●		●		●	●	●	●				●						●			●	●		●	●	●	●
ATWIR	SR	SR-RH-SDD.01	RH	●	●	●	●					●			●	●	●	●		●		●	●	●	●				●						●			●	●		●	●	●	●
ATWIR	SR	SR-RH-SWD.01	RH	●	●	●	●					●			●	●	●	●		●		●	●	●	●				●						●			●	●		●	●	●	●
WDS	SR	SR-BCLDP.004.002	RH	●	●	●	●					●			●	●	●	●		●		●	●	●	●				●						●			●	●		●	●	●	●
WDS	SR	SR-BCLDP.001.002	RH	●	●	●	●					●			●	●	●	●		●		●	●	●	●				●						●			●	●		●	●	●	●
WDS	SR	SR-BCLDP.004.003	RH	●	●	●	●					●			●	●	●	●		●		●	●	●	●				●						●			●	●		●	●	●	●
WDS	SR	SR-RL-BCLDP.001	RH	●	●	●	●					●			●	●	●	●		●		●	●	●	●				●						●			●	●		●	●	●	●
BOTH	SR	SR-RH-FBL.01	RH	●	●	●	●				●	●			●	●	●	●		●		●	●	●	●			●	●			●	●		●	●	●	●	●	●	●	●	●	●
BOTH	SR	SR-RL-BCLDP.002	RH	●	●	●	●					●			●	●	●	●		●		●	●	●	●				●						●			●	●		●	●	●	●
WDS	SR	SR-BCLDP.001.001	RH	●	●	●	●					●			●	●	●	●		●		●	●	●	●				●						●			●	●		●	●	●	●
WDS	SR	SR-BCLDP.002	RH	●	●	●	●					●			●	●	●	●		●		●	●	●	●				●						●			●	●		●	●	●	●
WDS	SR	SR-BCLDP.003	RH	●	●	●	●					●			●	●	●	●		●		●	●	●	●				●						●			●	●		●	●	●	●

CH- and RH-TRU Waste Streams and Associated EPA Reactivity Group Numbers (Continued)

				EPA Reactivity Group Number																																								
Source	Site	Waste Stream Identifier	TRU Type	1	2	3	4	5	6	7	8	10	11	13	14	15	16	17	18	19	20	21	22	23	24	25	27	28	29	30	31	32	33	34	101	102	103	104	105	106	107	OI	OO	OSMA
ATWIR	WV	WV-T017b	RH		●							●						●						●											●			●				●		●
ATWIR	WV	WV-T006b	RH	●	●	●	●					●				●	●	●		●		●	●	●	●		●		●			●			●	●		●	●	●	●	●	●	●
ATWIR	WV	WV-W024b	RH	●	●	●	●					●				●	●	●		●		●	●	●	●		●		●			●			●	●		●	●	●	●	●	●	●

Source

ATWIR = "Annual Transuranic Waste Inventory Report - 2011 (Data Cutoff Date 12/30/2010)," DOE/TRU-11-3425, Revision 0, U.S. Department of Energy (DOE), 2011.
WDS = Waste Data System database.
BOTH = Waste stream identified in both the ATWIR and WDS.

Acronyms/Abbreviations

AE = Argonne National Laboratory – East.
AW = Material and Fuels Complex or Argonne National Laboratory – West.
BL = Babcock and Wilcox Nuclear Energy Services.
BT = Bettis Atomic Power Laboratory.
CH = Contact-handled transuranic waste.
IN = Idaho National Laboratory.
KA = Knolls Atomic Power Laboratory – Schenectady.
KN = Knolls Atomic Power Laboratory – Nuclear Fuels Service.
LA = Los Alamos National Laboratory.
LB = Lawrence Berkeley National Laboratory.
LL = Lawrence Livermore National Laboratory.
MC = U. S. Army Materiel Command.
MU = University of Missouri Research Reactor.
ND = Nuclear Radiation Development Site.
NT = Nevada National Security Site.
OI = Other Inorganics – other non-reactive inorganic materials.
OO = Other Organics – other non-reactive organic materials.
OR = Oak Ridge National Laboratory.
OSMA = Other Solidification Materials and Absorbents – other previously reacted or non-reactive solidification and absorbent materials.
PA = Paducah Gaseous Diffusion Plant.
RF = Rocky Flats Environmental Technology Site.
RH = Remote-handled transuranic waste.
RL = Hanford (Richland Operations) Site.
RP = Hanford (Office of River Protection).
SA = Sandia National Laboratories.
SR = Savannah River Site.
TRU = Transuranic.
WV = West Valley Demonstration Project.

Appendix B
Potential Chemical Reactions within CH- and RH-TRU Waste Streams and Reaction Explanations

Potential Chemical Reactions within CH- and RH-TRU Waste Streams and Reaction Explanations

Combination of EPA Reactivity Groups		Reaction Result (A x B)	Explanation of Potential Incompatibility
Group A	Group B		
1	4	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
1	5	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
1	5	Violent Polymerization	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
1	6	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
1	7	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
1	8	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
1	8	Innocuous and Non-Flammable Gas Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
1	10	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping; Bases/caustic materials are neutralized and solidified/immobilized prior to shipping
1	11	Toxic Gas Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
1	11	Flammable Gas Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
1	13	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
1	14	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
1	15	Toxic Gas Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
1	17	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
1	17	Toxic Gas Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
1	18	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
1	18	Innocuous and Non-Flammable Gas Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping

Potential Chemical Reactions within CH- and RH-TRU Waste Streams and Reaction Explanations (Continued)

Combination of EPA Reactivity Groups		Reaction Result (A x B)	Explanation of Potential Incompatibility
Group A	Group B		
1	19	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
1	20	Toxic Gas Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
1	20	Flammable Gas Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
1	21	Flammable Gas Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
1	21	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
1	21	Fire	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
1	22	Flammable Gas Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
1	22	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
1	22	Fire	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
1	23	Flammable Gas Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
1	23	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
1	23	Fire	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
1	24	Solubilization of Toxic Substances	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
1	25	Flammable Gas Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
1	25	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
1	25	Fire	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
1	26	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
1	26	Toxic Gas Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping

Potential Chemical Reactions within CH- and RH-TRU Waste Streams and Reaction Explanations (Continued)

Combination of EPA Reactivity Groups		Reaction Result (A x B)	Explanation of Potential Incompatibility
Group A	Group B		
1	26	Flammable Gas Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
1	28	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
1	30	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
1	30	Innocuous and Non-Flammable Gas Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
1	31	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
1	32	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
1	32	Toxic Gas Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
1	33	Toxic Gas Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
1	33	Flammable Gas Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
1	34	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
1	34	Violent Polymerization	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
1	101	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
1	101	Innocuous and Non-Flammable Gas Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
1	102	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping; Explosives are not allowed, explosive compounds will be reacted prior to being placed in the waste/shipped.
1	102	Explosion	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping; Explosives are not allowed, explosive compounds will be reacted prior to being placed in the waste/shipped.
1	103	Violent Polymerization	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping

Potential Chemical Reactions within CH- and RH-TRU Waste Streams and Reaction Explanations (Continued)

Combination of EPA Reactivity Groups		Reaction Result (A x B)	Explanation of Potential Incompatibility
Group A	Group B		
1	103	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
1	104	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping; oxidizing agents are reacted prior to being placed in the waste/shipped.
1	104	Toxic Gas Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping; oxidizing agents are reacted prior to being placed in the waste/shipped.
1	105	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping; reducing agents are reacted prior to being placed in the waste/shipped.
1	105	Flammable Gas Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping; reducing agents are reacted prior to being placed in the waste/shipped.
1	106	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping; residual liquid content is limited to less than 1% of waste volume
1	107	Highly Reactive	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping; residual liquid content is limited to less than 1% of waste volume; water reactive substances are reacted prior to being placed in the waste/shipped. Lime in Portland cement is most common water reactive substance expected in the waste. Portland cement is used as an absorbent and solidification agent for the wastes.
2	3	Innocuous and Non-Flammable Gas Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	3	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	4	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	4	Fire	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	5	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	5	Fire	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping

Potential Chemical Reactions within CH- and RH-TRU Waste Streams and Reaction Explanations (Continued)

Combination of EPA Reactivity Groups		Reaction Result (A x B)	Explanation of Potential Incompatibility
Group A	Group B		
2	6	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	6	Toxic Gas Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	7	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	7	Toxic Gas Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	8	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	8	Toxic Gas Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	10	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping; Bases/caustic materials are neutralized and solidified/immobilized prior to shipping
2	11	Toxic Gas Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	11	Flammable Gas Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	13	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	13	Fire	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	14	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	14	Fire	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	15	Toxic Gas Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	16	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	16	Fire	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	17	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping

Potential Chemical Reactions within CH- and RH-TRU Waste Streams and Reaction Explanations (Continued)

Combination of EPA Reactivity Groups		Reaction Result (A x B)	Explanation of Potential Incompatibility
Group A	Group B		
2	17	Fire	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	17	Toxic Gas Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	18	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	18	Fire	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	18	Toxic Gas Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	19	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	19	Fire	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	20	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	20	Fire	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	20	Toxic Gas Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	21	Flammable Gas Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	21	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	21	Fire	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	22	Flammable Gas Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	22	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	22	Fire	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	23	Flammable Gas Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	23	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping

Potential Chemical Reactions within CH- and RH-TRU Waste Streams and Reaction Explanations (Continued)

Combination of EPA Reactivity Groups		Reaction Result (A x B)	Explanation of Potential Incompatibility
Group A	Group B		
2	23	Fire	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	24	Solubilization of Toxic Substances	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping.
2	25	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	25	Fire	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	25	Explosion	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	26	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	26	Fire	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	26	Toxic Gas Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	27	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	27	Fire	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	27	Toxic Gas Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	28	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	28	Fire	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	29	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	29	Fire	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	30	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	30	Explosion	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	31	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping

Potential Chemical Reactions within CH- and RH-TRU Waste Streams and Reaction Explanations (Continued)

Combination of EPA Reactivity Groups		Reaction Result (A x B)	Explanation of Potential Incompatibility
Group A	Group B		
2	31	Fire	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	32	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	32	Toxic Gas Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	33	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	33	Fire	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	33	Flammable Gas Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	34	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	34	Violent Polymerization	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	101	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	101	Fire	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	101	Toxic Gas Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	102	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping; Explosives are not allowed, explosive compounds will be reacted prior to being placed in the waste/shipped.
2	102	Explosion	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping; Explosives are not allowed, explosive compounds will be reacted prior to being placed in the waste/shipped.
2	103	Violent Polymerization	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	103	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
2	105	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping; reducing agents are reacted prior to being placed in the waste/shipped.

Potential Chemical Reactions within CH- and RH-TRU Waste Streams and Reaction Explanations (Continued)

Combination of EPA Reactivity Groups		Reaction Result (A x B)	Explanation of Potential Incompatibility
Group A	Group B		
2	105	Fire	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping; reducing agents are reacted prior to being placed in the waste/shipped.
2	105	Toxic Gas Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping; reducing agents are reacted prior to being placed in the waste/shipped.
2	106	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping; residual liquid content is limited to less than 1% of waste volume
2	107	Highly Reactive	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping; residual liquid content is limited to less than 1% of waste volume; water reactive substances are reacted prior to being placed in the waste/shipped. Lime in Portland cement is most common water reactive substance expected in the waste. Portland cement is used as an absorbent and solidification agent for the wastes.
3	4	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
3	4	Violent Polymerization	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
3	5	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
3	5	Violent Polymerization	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
3	7	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
3	8	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
3	8	Innocuous and Non-Flammable Gas Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
3	10	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping; Bases/caustic materials are neutralized and solidified/immobilized prior to shipping
3	11	Toxic Gas Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping

Potential Chemical Reactions within CH- and RH-TRU Waste Streams and Reaction Explanations (Continued)

Combination of EPA Reactivity Groups		Reaction Result (A x B)	Explanation of Potential Incompatibility
Group A	Group B		
3	11	Flammable Gas Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
3	15	Toxic Gas Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
3	18	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
3	18	Innocuous and Non-Flammable Gas Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
3	21	Flammable Gas Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
3	21	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
3	21	Fire	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
3	22	Innocuous and Non-Flammable Gas Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
3	22	Fire	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
3	24	Solubilization of Toxic Substances	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
3	25	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
3	25	Flammable Gas Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
3	26	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
3	33	Toxic Gas Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
3	34	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
3	34	Violent Polymerization	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
3	102	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping; Explosives are not allowed, explosive compounds will be reacted prior to being placed in the waste/shipped.

Potential Chemical Reactions within CH- and RH-TRU Waste Streams and Reaction Explanations (Continued)

Combination of EPA Reactivity Groups		Reaction Result (A x B)	Explanation of Potential Incompatibility
Group A	Group B		
3	102	Explosion	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping; Explosives are not allowed, explosive compounds will be reacted prior to being placed in the waste/shipped.
3	103	Violent Polymerization	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
3	103	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping
3	104	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping; oxidizing agents are reacted prior to being placed in the waste/shipped.
3	104	Toxic Gas Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping; oxidizing agents are reacted prior to being placed in the waste/shipped.
3	105	Heat Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping; reducing agents are reacted prior to being placed in the waste/shipped.
3	105	Flammable Gas Generation	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping; reducing agents are reacted prior to being placed in the waste/shipped.
3	107	Highly Reactive	Reaction will not occur – Acids are neutralized and solidified/immobilized prior to shipping; residual liquid content is limited to less than 1% of waste volume; water reactive substances are reacted prior to being placed in the waste/shipped. Lime in Portland cement is most common water reactive substance expected in the waste. Portland cement is used as an absorbent and solidification agent for the wastes.
4	8	Heat Generation	Reaction will not occur – Alcohols and Glycols are solidified/immobilized prior to shipping
4	8	Innocuous and Non-Flammable Gas Generation	Reaction will not occur – Alcohols and Glycols are solidified/immobilized prior to shipping
4	18	Heat Generation	Reaction will not occur – Alcohols and Glycols are solidified/immobilized prior to shipping
4	18	Violent Polymerization	Reaction will not occur – Alcohols and Glycols are solidified/immobilized prior to shipping
4	21	Flammable Gas Generation	Reaction will not occur – Alcohols and Glycols are solidified/immobilized prior to shipping

Potential Chemical Reactions within CH- and RH-TRU Waste Streams and Reaction Explanations (Continued)

Combination of EPA Reactivity Groups		Reaction Result (A x B)	Explanation of Potential Incompatibility
Group A	Group B		
4	21	Heat Generation	Reaction will not occur – Alcohols and Glycols are solidified/immobilized prior to shipping
4	21	Fire	Reaction will not occur – Alcohols and Glycols are solidified/immobilized prior to shipping
4	25	Flammable Gas Generation	Reaction will not occur – Alcohols and Glycols are solidified/immobilized prior to shipping
4	25	Heat Generation	Reaction will not occur – Alcohols and Glycols are solidified/immobilized prior to shipping
4	25	Explosion	Reaction will not occur – Alcohols and Glycols are solidified/immobilized prior to shipping
4	30	Heat Generation	Reaction will not occur – Alcohols and Glycols are solidified/immobilized prior to shipping
4	30	Fire	Reaction will not occur – Alcohols and Glycols are solidified/immobilized prior to shipping
4	34	Heat Generation	Reaction will not occur – Alcohols and Glycols are solidified/immobilized prior to shipping
4	34	Violent Polymerization	Reaction will not occur – Alcohols and Glycols are solidified/immobilized prior to shipping
4	104	Heat Generation	Reaction will not occur – Alcohols and Glycols are solidified/immobilized prior to shipping; oxidizing agents are reacted prior to being placed in the waste/shipped.
4	104	Fire	Reaction will not occur – Alcohols and Glycols are solidified/immobilized prior to shipping; oxidizing agents are reacted prior to being placed in the waste/shipped.
4	105	Heat Generation	Reaction will not occur – Alcohols and Glycols are solidified/immobilized prior to shipping; reducing agents are reacted prior to being placed in the waste/shipped.
4	105	Flammable Gas Generation	Reaction will not occur – Alcohols and Glycols are solidified/immobilized prior to shipping; reducing agents are reacted prior to being placed in the waste/shipped.
4	105	Fire	Reaction will not occur – Alcohols and Glycols are solidified/immobilized prior to shipping; reducing agents are reacted prior to being placed in the waste/shipped.

Potential Chemical Reactions within CH- and RH-TRU Waste Streams and Reaction Explanations (Continued)

Combination of EPA Reactivity Groups		Reaction Result (A x B)	Explanation of Potential Incompatibility
Group A	Group B		
4	107	Highly Reactive	Reaction will not occur – Alcohols and Glycols are solidified/immobilized prior to shipping; residual liquid content is limited to less than 1% of waste volume; water reactive substances are reacted prior to being placed in the waste/shipped. Lime in Portland cement is most common water reactive substance expected in the waste. Portland cement is used as an absorbent and solidification agent for the wastes.
5	7	Heat Generation	Reaction will not occur – Aldehydes are solidified/immobilized prior to shipping
5	8	Heat Generation	Reaction will not occur – Aldehydes are solidified/immobilized prior to shipping
5	10	Heat Generation	Reaction will not occur – Aldehydes are solidified/immobilized prior to shipping; bases/caustic materials are neutralized and solidified/immobilized prior to shipping
5	21	Flammable Gas Generation	Reaction will not occur – Aldehydes are solidified/immobilized prior to shipping
5	21	Heat Generation	Reaction will not occur – Aldehydes are solidified/immobilized prior to shipping
5	21	Fire	Reaction will not occur – Aldehydes are solidified/immobilized prior to shipping
5	25	Flammable Gas Generation	Reaction will not occur – Aldehydes are solidified/immobilized prior to shipping
5	25	Heat Generation	Reaction will not occur – Aldehydes are solidified/immobilized prior to shipping
5	27	Heat Generation	Reaction will not occur – Aldehydes are solidified/immobilized prior to shipping
5	28	Heat Generation	Reaction will not occur – Aldehydes are solidified/immobilized prior to shipping
5	30	Heat Generation	Reaction will not occur – Aldehydes are solidified/immobilized prior to shipping
5	30	Innocuous and Non-Flammable Gas Generation	Reaction will not occur – Aldehydes are solidified/immobilized prior to shipping
5	33	Heat Generation	Reaction will not occur – Aldehydes are solidified/immobilized prior to shipping

Potential Chemical Reactions within CH- and RH-TRU Waste Streams and Reaction Explanations (Continued)

Combination of EPA Reactivity Groups		Reaction Result (A x B)	Explanation of Potential Incompatibility
Group A	Group B		
5	34	May be Hazardous, But Unknown	Reaction will not occur – Aldehydes are solidified/immobilized prior to shipping
5	104	Heat Generation	Reaction will not occur – Aldehydes are solidified/immobilized prior to shipping; oxidizing agents are reacted prior to being placed in the waste/shipped.
5	104	Fire	Reaction will not occur – Aldehydes are solidified/immobilized prior to shipping; oxidizing agents are reacted prior to being placed in the waste/shipped.
5	105	Flammable Gas Generation	Reaction will not occur – Aldehydes are solidified/immobilized prior to shipping; reducing agents are reacted prior to being placed in the waste/shipped.
5	105	Heat Generation	Reaction will not occur – Aldehydes are solidified/immobilized prior to shipping; reducing agents are reacted prior to being placed in the waste/shipped.
5	105	Fire	Reaction will not occur – Aldehydes are solidified/immobilized prior to shipping; reducing agents are reacted prior to being placed in the waste/shipped.
5	107	Highly Reactive	Reaction will not occur – Aldehydes are solidified/immobilized prior to shipping; residual liquid content is limited to less than 1% of waste volume; water reactive substances are reacted prior to being placed in the waste/shipped. Lime in Portland cement is most common water reactive substance expected in the waste. Portland cement is used as an absorbent and solidification agent for the wastes.
6	21	Flammable Gas Generation	Reaction will not occur – Amides are solidified/immobilized prior to shipping
6	21	Heat Generation	Reaction will not occur – Amides are solidified/immobilized prior to shipping
6	24	Solubilization of Toxic Substances	Reaction will not occur – Amides are solidified/immobilized prior to shipping.
6	104	Heat Generation	Reaction will not occur – Amides are solidified/immobilized prior to shipping; oxidizing agents are reacted prior to being placed in the waste/shipped.

Potential Chemical Reactions within CH- and RH-TRU Waste Streams and Reaction Explanations (Continued)

Combination of EPA Reactivity Groups		Reaction Result (A x B)	Explanation of Potential Incompatibility
Group A	Group B		
6	104	Fire	Reaction will not occur – Amides are solidified/immobilized prior to shipping; oxidizing agents are reacted prior to being placed in the waste/shipped.
6	104	Toxic Gas Generation	Reaction will not occur – Amides are solidified/immobilized prior to shipping; oxidizing agents are reacted prior to being placed in the waste/shipped.
6	105	Flammable Gas Generation	Reaction will not occur – Amides are solidified/immobilized prior to shipping; reducing agents are reacted prior to being placed in the waste/shipped.
6	105	Heat Generation	Reaction will not occur – Amides are solidified/immobilized prior to shipping; reducing agents are reacted prior to being placed in the waste/shipped.
6	107	Highly Reactive	Reaction will not occur – Amides are solidified/immobilized prior to shipping; residual liquid content is limited to less than 1% of waste volume; water reactive substances are reacted prior to being placed in the waste/shipped. Lime in Portland cement is most common water reactive substance expected in the waste. Portland cement is used as an absorbent and solidification agent for the wastes.
7	17	Heat Generation	Reaction will not occur – Aliphatic and aromatic amines are reacted/solidified/immobilized prior to shipping; Halogenated organics are solidified/immobilized prior to shipping
7	17	Toxic Gas Generation	Reaction will not occur – Aliphatic and aromatic amines are reacted/solidified/immobilized prior to shipping; Halogenated organics are solidified/immobilized prior to shipping
7	18	Heat Generation	Reaction will not occur – Aliphatic and aromatic amines are reacted/solidified/immobilized prior to shipping; Isocyanates are reacted/solidified/immobilized prior to shipping
7	18	Violent Polymerization	Reaction will not occur – Aliphatic and aromatic amines are reacted/solidified/immobilized prior to shipping; Isocyanates are reacted/solidified/immobilized prior to shipping
7	21	Flammable Gas Generation	Reaction will not occur – Aliphatic and aromatic amines are reacted/solidified/immobilized prior to shipping; metals are typically in oxide form

Potential Chemical Reactions within CH- and RH-TRU Waste Streams and Reaction Explanations (Continued)

Combination of EPA Reactivity Groups		Reaction Result (A x B)	Explanation of Potential Incompatibility
Group A	Group B		
7	21	Heat Generation	Reaction will not occur – Aliphatic and aromatic amines are reacted/solidified/immobilized prior to shipping; metals are typically in oxide form
7	24	Solubilization of Toxic Substances	Reaction will not occur – Aliphatic and aromatic amines are reacted/solidified/immobilized prior to shipping
7	30	Heat Generation	Reaction will not occur – Aliphatic and aromatic amines are reacted/solidified/immobilized prior to shipping; Peroxides and Hydroperoxides are reacted/solidified/immobilized prior to shipping
7	30	Toxic Gas Generation	Reaction will not occur – Aliphatic and aromatic amines are reacted/solidified/immobilized prior to shipping; Peroxides and Hydroperoxides are reacted/solidified/immobilized prior to shipping
7	34	Heat Generation	Reaction will not occur – Aliphatic and aromatic amines are reacted/solidified/immobilized prior to shipping; Epoxides are solidified/immobilized prior to shipping
7	34	Violent Polymerization	Reaction will not occur – Aliphatic and aromatic amines are reacted/solidified/immobilized prior to shipping; Epoxides are solidified/immobilized prior to shipping
7	104	Heat Generation	Reaction will not occur – Aliphatic and aromatic amines are reacted/solidified/immobilized prior to shipping; Oxidizing agents are reacted prior to being placed in the waste/shipped.
7	104	Fire	Reaction will not occur – Aliphatic and aromatic amines are reacted/solidified/immobilized prior to shipping; Oxidizing agents are reacted prior to being placed in the waste/shipped.
7	104	Toxic Gas Generation	Reaction will not occur – Aliphatic and aromatic amines are reacted/solidified/immobilized prior to shipping; Oxidizing agents are reacted prior to being placed in the waste/shipped.
7	105	Heat Generation	Reaction will not occur – Aliphatic and aromatic amines are reacted/solidified/immobilized prior to shipping; Reducing agents are reacted prior to being placed in the waste/shipped.

Potential Chemical Reactions within CH- and RH-TRU Waste Streams and Reaction Explanations (Continued)

Combination of EPA Reactivity Groups		Reaction Result (A x B)	Explanation of Potential Incompatibility
Group A	Group B		
7	105	Innocuous and Non-Flammable Gas Generation	Reaction will not occur – Aliphatic and aromatic amines are reacted/solidified/immobilized prior to shipping; Reducing agents are reacted prior to being placed in the waste/shipped.
7	107	Highly Reactive	Reaction will not occur – Aliphatic and aromatic amines are reacted/solidified/immobilized prior to shipping; residual liquid content is limited to less than 1% of waste volume; water reactive substances are reacted prior to being placed in the waste/shipped. Lime in Portland cement is most common water reactive substance expected in the waste. Portland cement is used as an absorbent and solidification agent for the wastes.
8	11	Innocuous and Non-Flammable Gas Generation	Reaction will not occur – Azo, Diazo, and Hydrazine compounds are reacted/solidified/immobilized prior to shipping
8	13	Heat Generation	Reaction will not occur – Azo, Diazo, and Hydrazine compounds are reacted/solidified/immobilized prior to shipping; Esters are solidified/immobilized prior to shipping
8	13	Innocuous and Non-Flammable Gas Generation	Reaction will not occur – Azo, Diazo, and Hydrazine compounds are reacted/solidified/immobilized prior to shipping; Esters are solidified/immobilized prior to shipping
8	17	Heat Generation	Reaction will not occur – Azo, Diazo, and Hydrazine compounds are reacted/solidified/immobilized prior to shipping
8	17	Innocuous and Non-Flammable Gas Generation	Reaction will not occur – Azo, Diazo, and Hydrazine compounds are reacted/solidified/immobilized prior to shipping
8	18	Heat Generation	Reaction will not occur – Azo, Diazo, and Hydrazine compounds are reacted/solidified/immobilized prior to shipping; Isocyanates are reacted/solidified/immobilized prior to shipping
8	18	Innocuous and Non-Flammable Gas Generation	Reaction will not occur – Azo, Diazo, and Hydrazine compounds are reacted/solidified/immobilized prior to shipping; Isocyanates are reacted/solidified/immobilized prior to shipping

Potential Chemical Reactions within CH- and RH-TRU Waste Streams and Reaction Explanations (Continued)

Combination of EPA Reactivity Groups		Reaction Result (A x B)	Explanation of Potential Incompatibility
Group A	Group B		
8	19	Heat Generation	Reaction will not occur – Azo, Diazo, and Hydrazine compounds are reacted/solidified/immobilized prior to shipping; Ketones are solidified/immobilized prior to shipping
8	19	Innocuous and Non-Flammable Gas Generation	Reaction will not occur – Azo, Diazo, and Hydrazine compounds are reacted/solidified/immobilized prior to shipping; Ketones are solidified/immobilized prior to shipping
8	20	Heat Generation	Reaction will not occur – Azo, Diazo, and Hydrazine compounds are reacted/solidified/immobilized prior to shipping; Mercaptans are reacted/solidified/immobilized prior to shipping
8	20	Innocuous and Non-Flammable Gas Generation	Reaction will not occur – Azo, Diazo, and Hydrazine compounds are reacted/solidified/immobilized prior to shipping; Mercaptans are reacted/solidified/immobilized prior to shipping
8	21	Flammable Gas Generation	Reaction will not occur – Azo, Diazo, and Hydrazine compounds are reacted/solidified/immobilized prior to shipping; metals are typically in oxide form
8	21	Heat Generation	Reaction will not occur – Azo, Diazo, and Hydrazine compounds are reacted/solidified/immobilized prior to shipping; metals are typically in oxide form
8	22	Heat Generation	Reaction will not occur – Azo, Diazo, and Hydrazine compounds are reacted/solidified/immobilized prior to shipping
8	22	Fire	Reaction will not occur – Azo, Diazo, and Hydrazine compounds are reacted/solidified/immobilized prior to shipping
8	22	Toxic Gas Generation	Reaction will not occur – Azo, Diazo, and Hydrazine compounds are reacted/solidified/immobilized prior to shipping
8	23	Heat Generation	Reaction will not occur – Azo, Diazo, and Hydrazine compounds are reacted/solidified/immobilized prior to shipping
8	23	Fire	Reaction will not occur – Azo, Diazo, and Hydrazine compounds are reacted/solidified/immobilized prior to shipping
8	23	Innocuous and Non-Flammable Gas Generation	Reaction will not occur – Azo, Diazo, and Hydrazine compounds are reacted/solidified/immobilized prior to shipping

Potential Chemical Reactions within CH- and RH-TRU Waste Streams and Reaction Explanations (Continued)

Combination of EPA Reactivity Groups		Reaction Result (A x B)	Explanation of Potential Incompatibility
Group A	Group B		
8	25	May be Hazardous, But Unknown	Reaction will not occur – Azo, Diazo, and Hydrazine compounds are reacted/solidified/immobilized prior to shipping
8	30	Heat Generation	Reaction will not occur – Azo, Diazo, and Hydrazine compounds are reacted/solidified/immobilized prior to shipping; Peroxides and Hydroperoxides are reacted/solidified/immobilized prior to shipping
8	30	Fire	Reaction will not occur – Azo, Diazo, and Hydrazine compounds are reacted/solidified/immobilized prior to shipping; Peroxides and Hydroperoxides are reacted/solidified/immobilized prior to shipping
8	30	Explosion	Reaction will not occur – Azo, Diazo, and Hydrazine compounds are reacted/solidified/immobilized prior to shipping; Peroxides and Hydroperoxides are reacted/solidified/immobilized prior to shipping
8	31	Heat Generation	Reaction will not occur – Azo, Diazo, and Hydrazine compounds are reacted/solidified/immobilized prior to shipping
8	31	Innocuous and Non-Flammable Gas Generation	Reaction will not occur – Azo, Diazo, and Hydrazine compounds are reacted/solidified/immobilized prior to shipping
8	32	May be Hazardous, But Unknown	Reaction will not occur – Azo, Diazo, and Hydrazine compounds are reacted/solidified/immobilized prior to shipping
8	33	Explosion	Reaction will not occur – Azo, Diazo, and Hydrazine compounds are reacted/solidified/immobilized prior to shipping
8	34	Heat Generation	Reaction will not occur – Azo, Diazo, and Hydrazine compounds are reacted/solidified/immobilized prior to shipping; Epoxides are reacted/solidified/immobilized prior to shipping
8	34	Violent Polymerization	Reaction will not occur – Azo, Diazo, and Hydrazine compounds are reacted/solidified/immobilized prior to shipping; Epoxides are reacted/solidified/immobilized prior to shipping
8	102	Heat Generation	Reaction will not occur – Azo, Diazo, and Hydrazine compounds are reacted/solidified/immobilized prior to shipping; Explosives are not allowed, explosive compounds will be reacted prior to being placed in the waste/shipped.

Potential Chemical Reactions within CH- and RH-TRU Waste Streams and Reaction Explanations (Continued)

Combination of EPA Reactivity Groups		Reaction Result (A x B)	Explanation of Potential Incompatibility
Group A	Group B		
8	102	Explosion	Reaction will not occur – Azo, Diazo, and Hydrazine compounds are reacted/solidified/immobilized prior to shipping; Explosives are not allowed, explosive compounds will be reacted prior to being placed in the waste/shipped.
8	103	Violent Polymerization	Reaction will not occur – Azo, Diazo, and Hydrazine compounds are reacted/solidified/immobilized prior to shipping
8	103	Heat Generation	Reaction will not occur – Azo, Diazo, and Hydrazine compounds are reacted/solidified/immobilized prior to shipping
8	104	Heat Generation	Reaction will not occur – Azo, Diazo, and Hydrazine compounds are reacted/solidified/immobilized prior to shipping; Oxidizing agents are reacted prior to being placed in the waste/shipped.
8	104	Explosion	Reaction will not occur – Azo, Diazo, and Hydrazine compounds are reacted/solidified/immobilized prior to shipping; Oxidizing agents are reacted prior to being placed in the waste/shipped.
8	106	Innocuous and Non-Flammable Gas Generation	Reaction will not occur – Azo, Diazo, and Hydrazine compounds are reacted/solidified/immobilized prior to shipping; residual liquid content is limited to less than 1% of waste volume
8	107	Highly Reactive	Reaction will not occur – Azo, Diazo, and Hydrazine compounds are reacted/solidified/immobilized prior to shipping; residual liquid content is limited to less than 1% of waste volume; water reactive substances are reacted prior to being placed in the waste/shipped. Lime in Portland cement is most common water reactive substance expected in the waste. Portland cement is used as an absorbent and solidification agent for the wastes.
10	13	Heat Generation	Reaction will not occur – Caustics/bases are neutralized and solidified/immobilized prior to shipping
10	17	Heat Generation	Reaction will not occur – Caustics/bases are neutralized and solidified/immobilized prior to shipping
10	17	Flammable Gas Generation	Reaction will not occur – Caustics/bases are neutralized and solidified/immobilized prior to shipping

Potential Chemical Reactions within CH- and RH-TRU Waste Streams and Reaction Explanations (Continued)

Combination of EPA Reactivity Groups		Reaction Result (A x B)	Explanation of Potential Incompatibility
Group A	Group B		
10	18	Heat Generation	Reaction will not occur – Caustics/bases are neutralized and solidified/immobilized prior to shipping
10	18	Violent Polymerization	Reaction will not occur – Caustics/bases are neutralized and solidified/immobilized prior to shipping
10	18	Innocuous and Non-Flammable Gas Generation	Reaction will not occur – Caustics/bases are neutralized and solidified/immobilized prior to shipping
10	19	Heat Generation	Reaction will not occur – Caustics/bases are neutralized and solidified/immobilized prior to shipping
10	21	Flammable Gas Generation	Reaction will not occur – Caustics/bases are neutralized and solidified/immobilized prior to shipping
10	21	Heat Generation	Reaction will not occur – Caustics/bases are neutralized and solidified/immobilized prior to shipping
10	22	Flammable Gas Generation	Reaction will not occur – Caustics/bases are neutralized and solidified/immobilized prior to shipping
10	22	Heat Generation	Reaction will not occur – Caustics/bases are neutralized and solidified/immobilized prior to shipping
10	24	Solubilization of Toxic Substances	Reaction will not occur – Caustics/bases are neutralized and solidified/immobilized prior to shipping.
10	25	May be Hazardous, But Unknown	Reaction will not occur – Caustics/bases are neutralized and solidified/immobilized prior to shipping
10	26	May be Hazardous, But Unknown	Reaction will not occur – Caustics/bases are neutralized and solidified/immobilized prior to shipping
10	27	Heat Generation	Reaction will not occur – Caustics/bases are neutralized and solidified/immobilized prior to shipping
10	27	Explosion	Reaction will not occur – Caustics/bases are neutralized and solidified/immobilized prior to shipping
10	32	Heat Generation	Reaction will not occur – Caustics/bases are neutralized and solidified/immobilized prior to shipping
10	32	Explosion	Reaction will not occur – Caustics/bases are neutralized and solidified/immobilized prior to shipping
10	34	Heat Generation	Reaction will not occur – Caustics/bases are neutralized and solidified/immobilized prior to shipping
10	34	Violent Polymerization	Reaction will not occur – Caustics/bases are neutralized and solidified/immobilized prior to shipping

Potential Chemical Reactions within CH- and RH-TRU Waste Streams and Reaction Explanations (Continued)

Combination of EPA Reactivity Groups		Reaction Result (A x B)	Explanation of Potential Incompatibility
Group A	Group B		
10	102	Heat Generation	Reaction will not occur – Caustics/bases are neutralized and solidified/immobilized prior to shipping; Explosives are not allowed, explosive compounds will be reacted prior to being placed in the waste/shipped.
10	102	Explosion	Reaction will not occur – Caustics/bases are neutralized and solidified/immobilized prior to shipping; Explosives are not allowed, explosive compounds will be reacted prior to being placed in the waste/shipped.
10	103	Violent Polymerization	Reaction will not occur – Caustics/bases are neutralized and solidified/immobilized prior to shipping
10	103	Heat Generation	Reaction will not occur – Caustics/bases are neutralized and solidified/immobilized prior to shipping
10	107	Highly Reactive	Reaction will not occur – Caustics/bases are neutralized and solidified/immobilized prior to shipping; residual liquid content is limited to less than 1% of waste volume; water reactive substances are reacted prior to being placed in the waste/shipped. Lime in Portland cement is most common water reactive substance expected in the waste. Portland cement is used as an absorbent and solidification agent for the wastes.
11	17	Heat Generation	Reaction will not occur – Cyanides are solid/solidified/immobilized prior to shipping
11	18	Heat Generation	Reaction will not occur – Isocyanates are reacted/solidified/immobilized prior to shipping
11	18	Innocuous and Non-Flammable Gas Generation	Reaction will not occur – Isocyanates are reacted/solidified/immobilized prior to shipping
11	19	Heat Generation	Reaction will not occur – Ketones are solidified/immobilized prior to shipping
11	21	Flammable Gas Generation	Reaction will not occur – Cyanides are solid/solidified/immobilized prior to shipping; metals are typically in oxide form
11	21	Heat Generation	Reaction will not occur – Cyanides are solid/solidified/immobilized prior to shipping; metals are typically in oxide form
11	25	Flammable Gas Generation	Reaction will not occur – Cyanides are solid/solidified/immobilized prior to shipping
11	25	Heat Generation	Reaction will not occur – Cyanides are solid/solidified/immobilized prior to shipping

Potential Chemical Reactions within CH- and RH-TRU Waste Streams and Reaction Explanations (Continued)

Combination of EPA Reactivity Groups		Reaction Result (A x B)	Explanation of Potential Incompatibility
Group A	Group B		
11	30	Heat Generation	Reaction will not occur – Cyanides are solid/solidified/immobilized prior to shipping; Peroxides and Hydroperoxides are reacted/solidified/immobilized prior to shipping
11	30	Explosion	Reaction will not occur – Cyanides are solid/solidified/immobilized prior to shipping; Peroxides and Hydroperoxides are reacted/solidified/immobilized prior to shipping
11	30	Toxic Gas Generation	Reaction will not occur – Cyanides are solid/solidified/immobilized prior to shipping; Peroxides and Hydroperoxides are reacted/solidified/immobilized prior to shipping
11	34	Heat Generation	Reaction will not occur – Cyanides are solid/solidified/immobilized prior to shipping; Epoxides are reacted/solidified/immobilized prior to shipping
11	34	Violent Polymerization	Reaction will not occur – Cyanides are solid/solidified/immobilized prior to shipping; Epoxides are reacted/solidified/immobilized prior to shipping
11	103	Violent Polymerization	Reaction will not occur – Cyanides are solid/solidified/immobilized prior to shipping
11	103	Heat Generation	Reaction will not occur – Cyanides are solid/solidified/immobilized prior to shipping
11	104	Heat Generation	Reaction will not occur – Cyanides are solid/solidified/immobilized prior to shipping; oxidizing agents are reacted prior to being placed in the waste/shipped.
11	104	Explosion	Reaction will not occur – Cyanides are solid/solidified/immobilized prior to shipping; oxidizing agents are reacted prior to being placed in the waste/shipped.
11	104	Toxic Gas Generation	Reaction will not occur – Cyanides are solid/solidified/immobilized prior to shipping; oxidizing agents are reacted prior to being placed in the waste/shipped.

Potential Chemical Reactions within CH- and RH-TRU Waste Streams and Reaction Explanations (Continued)

Combination of EPA Reactivity Groups		Reaction Result (A x B)	Explanation of Potential Incompatibility
Group A	Group B		
11	105	Heat Generation	Reaction will not occur – Cyanides are solid/solidified/immobilized prior to shipping; strong reducing agents are reacted prior to being placed in the waste/shipped.
11	105	Toxic Gas Generation	Reaction will not occur – Cyanides are solid/solidified/immobilized prior to shipping; strong reducing agents are reacted prior to being placed in the waste/shipped.
11	107	Highly Reactive	Reaction will not occur – Cyanides are solid/solidified/immobilized prior to shipping; residual liquid content is limited to less than 1% of waste volume; water reactive substances are reacted prior to being placed in the waste/shipped. Lime in Portland cement is most common water reactive substance expected in the waste. Portland cement is used as an absorbent and solidification agent for the wastes.
13	21	Flammable Gas Generation	Reaction will not occur – Esters are solidified/immobilized prior to shipping
13	21	Heat Generation	Reaction will not occur – Esters are solidified/immobilized prior to shipping
13	25	Flammable Gas Generation	Reaction will not occur – Esters are solidified/immobilized prior to shipping
13	25	Heat Generation	Reaction will not occur – Esters are solidified/immobilized prior to shipping
13	102	Heat Generation	Reaction will not occur – Esters are solidified/immobilized prior to shipping; Explosives are not allowed, explosive compounds will be reacted prior to being placed in the waste/shipped.
13	102	Explosion	Reaction will not occur – Esters are solidified/immobilized prior to shipping; Explosives are not allowed, explosive compounds will be reacted prior to being placed in the waste/shipped.
13	104	Heat Generation	Reaction will not occur – Esters are solidified/immobilized prior to shipping; oxidizing agents are reacted prior to being placed in the waste/shipped.
13	104	Fire	Reaction will not occur – Esters are solidified/immobilized prior to shipping; oxidizing agents are reacted prior to being placed in the waste/shipped.

Potential Chemical Reactions within CH- and RH-TRU Waste Streams and Reaction Explanations (Continued)

Combination of EPA Reactivity Groups		Reaction Result (A x B)	Explanation of Potential Incompatibility
Group A	Group B		
13	107	Highly Reactive	Reaction will not occur – Esters are solidified/immobilized prior to shipping; residual liquid content is limited to less than 1% of waste volume; water reactive substances are reacted prior to being placed in the waste/shipped. Lime in Portland cement is most common water reactive substance expected in the waste. Portland cement is used as an absorbent and solidification agent for the wastes.
14	104	Heat Generation	Reaction will not occur – Ethers are solidified / immobilized prior to shipping. Oxidizing agents are reacted prior to being placed in the waste/shipped.
14	104	Fire	Reaction will not occur – Ethers are solidified / immobilized prior to shipping. Oxidizing agents are reacted prior to being placed in the waste/shipped.
14	107	Highly Reactive	Reaction will not occur – Ethers are solidified / immobilized prior to shipping. Residual liquid content is limited to less than 1% of waste volume; water reactive substances are reacted prior to being placed in the waste/shipped. Lime in Portland cement is most common water reactive substance expected in the waste. Portland cement is used as an absorbent and solidification agent for the wastes.
15	107	Highly Reactive	Reaction will not occur – Inorganic fluorides are reacted during use and processing; Residual liquid content is limited to less than 1% of waste volume; water reactive substances are reacted prior to being placed in the waste/shipped. Lime in Portland cement is most common water reactive substance expected in the waste. Portland cement is used as an absorbent and solidification agent for the wastes.
16	104	Heat Generation	Reaction will not occur – Aromatic hydrocarbons are solidified/immobilized prior to shipping. Oxidizing agents are reacted prior to being placed in the waste/shipped.
16	104	Fire	Reaction will not occur – Aromatic hydrocarbons are solidified/immobilized prior to shipping. Oxidizing agents are reacted prior to being placed in the waste/shipped.

Potential Chemical Reactions within CH- and RH-TRU Waste Streams and Reaction Explanations (Continued)

Combination of EPA Reactivity Groups		Reaction Result (A x B)	Explanation of Potential Incompatibility
Group A	Group B		
16	105	Heat Generation	Reaction will not occur – Aromatic hydrocarbons are solidified/immobilized prior to shipping. Strong reducing agents are reacted prior to being placed in the waste/shipped.
16	105	Fire	Reaction will not occur – Aromatic hydrocarbons are solidified/immobilized prior to shipping. Strong reducing agents are reacted prior to being placed in the waste/shipped.
16	105	Explosion	Reaction will not occur – Aromatic hydrocarbons are solidified/immobilized prior to shipping. Strong reducing agents are reacted prior to being placed in the waste/shipped.
16	107	Highly Reactive	Reaction will not occur – Aromatic hydrocarbons are solidified/immobilized prior to shipping. Residual liquid content is limited to less than 1% of waste volume; water reactive substances are reacted prior to being placed in the waste/shipped. Lime in Portland cement is most common water reactive substance expected in the waste. Portland cement is used as an absorbent and solidification agent for the wastes.
17	20	Heat Generation	Reaction will not occur – Halogenated organics are solidified/immobilized prior to shipping
17	21	Heat Generation	Reaction will not occur – Halogenated organics are solidified/immobilized prior to shipping
17	21	Explosion	Reaction will not occur – Halogenated organics are solidified/immobilized prior to shipping
17	22	Heat Generation	Reaction will not occur – Halogenated organics are solidified/immobilized prior to shipping
17	22	Explosion	Reaction will not occur – Halogenated organics are solidified/immobilized prior to shipping
17	23	Heat Generation	Reaction will not occur – Halogenated organics are solidified/immobilized prior to shipping
17	23	Fire	Reaction will not occur – Halogenated organics are solidified/immobilized prior to shipping
17	25	Flammable Gas Generation	Reaction will not occur – Halogenated organics are solidified/immobilized prior to shipping
17	25	Heat Generation	Reaction will not occur – Halogenated organics are solidified/immobilized prior to shipping

Potential Chemical Reactions within CH- and RH-TRU Waste Streams and Reaction Explanations (Continued)

Combination of EPA Reactivity Groups		Reaction Result (A x B)	Explanation of Potential Incompatibility
Group A	Group B		
17	30	Heat Generation	Reaction will not occur – Halogenated organics are solidified/immobilized prior to shipping
17	30	Explosion	Reaction will not occur – Halogenated organics are solidified/immobilized prior to shipping
17	104	Heat Generation	Reaction will not occur – Halogenated organics are solidified/immobilized prior to shipping; oxidizing agents are reacted prior to being placed in the waste/shipped.
17	104	Toxic Gas Generation	Reaction will not occur – Halogenated organics are solidified/immobilized prior to shipping; oxidizing agents are reacted prior to being placed in the waste/shipped.
17	105	Heat Generation	Reaction will not occur – Halogenated organics are solidified/immobilized prior to shipping; reducing agents are reacted prior to being placed in the waste/shipped.
17	105	Explosion	Reaction will not occur – Halogenated organics are solidified/immobilized prior to shipping; reducing agents are reacted prior to being placed in the waste/shipped.
17	107	Highly Reactive	Reaction will not occur – Halogenated organics are solidified/immobilized prior to shipping; residual liquid content is limited to less than 1% of waste volume; water reactive substances are reacted prior to being placed in the waste/shipped. Lime in Portland cement is most common water reactive substance expected in the waste. Portland cement is used as an absorbent and solidification agent for the wastes.
18	20	Heat Generation	Reaction will not occur – Isocyanates are reacted/solid/immobilized prior to shipping; Mercaptans are reacted/solidified/immobilized prior to shipping
18	21	Flammable Gas Generation	Reaction will not occur – Isocyanates are reacted/solid /immobilized prior to shipping; metals are typically in oxide form
18	21	Heat Generation	Reaction will not occur – Isocyanates are reacted/solid /immobilized prior to shipping; metals are typically in oxide form
18	22	Flammable Gas Generation	Reaction will not occur – Isocyanates are reacted/solid /immobilized prior to shipping
18	22	Heat Generation	Reaction will not occur – Isocyanates are reacted/solid /immobilized prior to shipping

Potential Chemical Reactions within CH- and RH-TRU Waste Streams and Reaction Explanations (Continued)

Combination of EPA Reactivity Groups		Reaction Result (A x B)	Explanation of Potential Incompatibility
Group A	Group B		
18	25	May be Hazardous, But Unknown	Reaction will not occur – Isocyanates are reacted/solid /immobilized prior to shipping
18	30	Heat Generation	Reaction will not occur – Isocyanates are reacted/solid/immobilized prior to shipping; Peroxides and Hydroperoxides are reacted/solidified/immobilized prior to shipping
18	31	Heat Generation	Reaction will not occur – Isocyanates are reacted/solid /immobilized prior to shipping
18	31	Violent Polymerization	Reaction will not occur – Isocyanates are reacted/solid /immobilized prior to shipping
18	33	Heat Generation	Reaction will not occur – Isocyanates are reacted/solid/immobilized prior to shipping; Inorganic sulfides are reacted/solidified/immobilized prior to shipping
18	104	Heat Generation	Reaction will not occur – Isocyanates are reacted/solid/immobilized prior to shipping; oxidizing agents are reacted prior to being placed in the waste/shipped.
18	104	Fire	Reaction will not occur – Isocyanates are reacted/solid/immobilized prior to shipping; oxidizing agents are reacted prior to being placed in the waste/shipped.
18	104	Toxic Gas Generation	Reaction will not occur – Isocyanates are reacted/solid/immobilized prior to shipping; oxidizing agents are reacted prior to being placed in the waste/shipped.
18	105	Flammable Gas Generation	Reaction will not occur – Isocyanates are reacted/solid/immobilized prior to shipping; Reducing agents are reacted prior to being placed in the waste/shipped.
18	105	Heat Generation	Reaction will not occur – Isocyanates are reacted/solid/immobilized prior to shipping; Reducing agents are reacted prior to being placed in the waste/shipped.
18	106	Heat Generation	Reaction will not occur – Isocyanates are reacted/solid/immobilized prior to shipping; residual liquid content is limited to less than 1% of waste volume
18	106	Innocuous and Non-Flammable Gas Generation	Reaction will not occur – Isocyanates are reacted/solid/immobilized prior to shipping; residual liquid content is limited to less than 1% of waste volume

Potential Chemical Reactions within CH- and RH-TRU Waste Streams and Reaction Explanations (Continued)

Combination of EPA Reactivity Groups		Reaction Result (A x B)	Explanation of Potential Incompatibility
Group A	Group B		
18	107	Highly Reactive	Reaction will not occur – Isocyanates are reacted/solid/immobilized prior to shipping; residual liquid content is limited to less than 1% of waste volume; water reactive substances are reacted prior to being placed in the waste/shipped. Lime in Portland cement is most common water reactive substance expected in the waste. Portland cement is used as an absorbent and solidification agent for the wastes.
19	20	Heat Generation	Reaction will not occur – Ketones are solidified/immobilized prior to shipping
19	21	Flammable Gas Generation	Reaction will not occur – Ketones are solidified/immobilized prior to shipping
19	21	Heat Generation	Reaction will not occur – Ketones are solidified/immobilized prior to shipping
19	25	Flammable Gas Generation	Reaction will not occur – Ketones are solidified/immobilized prior to shipping
19	25	Heat Generation	Reaction will not occur – Ketones are solidified/immobilized prior to shipping
19	30	Explosion	Reaction will not occur – Ketones are solidified/immobilized prior to shipping
19	104	Heat Generation	Reaction will not occur –Ketones are solidified/immobilized prior to shipping; oxidizing agents are reacted prior to being placed in the waste/shipped.
19	104	Fire	Reaction will not occur –Ketones are solidified/immobilized prior to shipping; oxidizing agents are reacted prior to being placed in the waste/shipped.
19	105	Flammable Gas Generation	Reaction will not occur –Ketones are solidified/immobilized prior to shipping; reducing agents are reacted prior to being placed in the waste/shipped.
19	105	Heat Generation	Reaction will not occur –Ketones are solidified/immobilized prior to shipping; reducing agents are reacted prior to being placed in the waste/shipped.

Potential Chemical Reactions within CH- and RH-TRU Waste Streams and Reaction Explanations (Continued)

Combination of EPA Reactivity Groups		Reaction Result (A x B)	Explanation of Potential Incompatibility
Group A	Group B		
19	107	Highly Reactive	Reaction will not occur – Ketones are solidified/immobilized prior to shipping; residual liquid content is limited to less than 1% of waste volume; water reactive substances are reacted prior to being placed in the waste/shipped. Lime in Portland cement is most common water reactive substance expected in the waste. Portland cement is used as an absorbent and solidification agent for the wastes.
20	21	Flammable Gas Generation	Reaction will not occur – Mercaptans are reacted/solidified/immobilized prior to shipping; metals are typically in oxide form
20	21	Heat Generation	Reaction will not occur – Mercaptans are reacted/solidified/immobilized prior to shipping; metals are typically in oxide form
20	22	Heat Generation	Reaction will not occur – Mercaptans are reacted/solidified/immobilized prior to shipping
20	22	Flammable Gas Generation	Reaction will not occur – Mercaptans are reacted/solidified/immobilized prior to shipping
20	22	Fire	Reaction will not occur – Mercaptans are reacted/solidified/immobilized prior to shipping
20	25	Flammable Gas Generation	Reaction will not occur – Mercaptans are reacted/solidified/immobilized prior to shipping
20	25	Heat Generation	Reaction will not occur – Mercaptans are reacted/solidified/immobilized prior to shipping
20	30	Heat Generation	Reaction will not occur – Mercaptans are reacted/solidified/immobilized prior to shipping; Peroxides and Hydroperoxides are reacted/solidified/immobilized prior to shipping
20	30	Fire	Reaction will not occur – Mercaptans are reacted/solidified/immobilized prior to shipping; Peroxides and Hydroperoxides are reacted/solidified/immobilized prior to shipping
20	30	Toxic Gas Generation	Reaction will not occur – Mercaptans are reacted/solidified/immobilized prior to shipping; Peroxides and Hydroperoxides are reacted/solidified/immobilized prior to shipping
20	34	Heat Generation	Reaction will not occur – Mercaptans are reacted/solidified/immobilized prior to shipping; Epoxides are reacted/solidified/immobilized prior to shipping

Potential Chemical Reactions within CH- and RH-TRU Waste Streams and Reaction Explanations (Continued)

Combination of EPA Reactivity Groups		Reaction Result (A x B)	Explanation of Potential Incompatibility
Group A	Group B		
20	34	Violent Polymerization	Reaction will not occur – Mercaptans are reacted/solidified/immobilized prior to shipping; Epoxides are reacted/solidified/immobilized prior to shipping
20	104	Heat Generation	Reaction will not occur – Mercaptans are reacted/solidified/immobilized prior to shipping; oxidizing agents are reacted prior to being placed in the waste/shipped.
20	104	Fire	Reaction will not occur – Mercaptans are reacted/solidified/immobilized prior to shipping; oxidizing agents are reacted prior to being placed in the waste/shipped.
20	104	Toxic Gas Generation	Reaction will not occur – Mercaptans are reacted/solidified/immobilized prior to shipping; oxidizing agents are reacted prior to being placed in the waste/shipped.
20	105	Flammable Gas Generation	Reaction will not occur – Mercaptans are reacted/solidified/immobilized prior to shipping; reducing agents are reacted prior to being placed in the waste/shipped.
20	105	Heat Generation	Reaction will not occur – Mercaptans are reacted/solidified/immobilized prior to shipping; reducing agents are reacted prior to being placed in the waste/shipped.
20	107	Highly Reactive	Reaction will not occur – Mercaptans are reacted/solidified/immobilized prior to shipping; residual liquid content is limited to less than 1% of waste volume; water reactive substances are reacted prior to being placed in the waste/shipped. Lime in Portland cement is most common water reactive substance expected in the waste. Portland cement is used as an absorbent and solidification agent for the wastes.
21	25	Explosion	Reaction will not occur – Nitrides are reacted prior to shipping; metals are typically in oxide form
21	26	Heat Generation	Reaction will not occur – Nitriles are reacted prior to shipping; metals are typically in oxide form
21	26	Violent Polymerization	Reaction will not occur – Nitriles are reacted prior to shipping; metals are typically in oxide form
21	27	Heat Generation	Reaction will not occur – Nitro compounds are reacted prior to shipping; metals are typically in oxide form

Potential Chemical Reactions within CH- and RH-TRU Waste Streams and Reaction Explanations (Continued)

Combination of EPA Reactivity Groups		Reaction Result (A x B)	Explanation of Potential Incompatibility
Group A	Group B		
21	27	Flammable Gas Generation	Reaction will not occur – Nitro compounds are reacted prior to shipping; metals are typically in oxide form
21	27	Explosion	Reaction will not occur – Nitro compounds are reacted prior to shipping; metals are typically in oxide form
21	30	Heat Generation	Reaction will not occur – Peroxides and Hydroperoxides are reacted/solidified/immobilized prior to shipping; metals are typically in oxide form
21	30	Explosion	Reaction will not occur – Peroxides and Hydroperoxides are reacted/solidified/immobilized prior to shipping; metals are typically in oxide form
21	31	Flammable Gas Generation	Reaction will not occur – Phenols and Creosols are solidified/immobilized prior to shipping; metals are typically in oxide form
21	31	Heat Generation	Reaction will not occur – Phenols and Creosols are solidified/immobilized prior to shipping; metals are typically in oxide form
21	32	Heat Generation	Reaction will not occur – Organophosphates are solidified/immobilized prior to shipping; metals are typically in oxide form
21	34	Heat Generation	Reaction will not occur – Epoxides are reacted/solidified/immobilized prior to shipping; metals are typically in oxide form
21	34	Violent Polymerization	Reaction will not occur – Epoxides are reacted/solidified/immobilized prior to shipping; metals are typically in oxide form
21	101	Heat Generation	Reaction will not occur – Combustible materials are dry; residual liquid content is limited to less than 1% of waste volume; metals are typically in oxide form
21	101	Innocuous and Non-Flammable Gas Generation	Reaction will not occur – Combustible materials are dry; residual liquid content is limited to less than 1% of waste volume; metals are typically in oxide form
21	101	Fire	Reaction will not occur – Combustible materials are dry; residual liquid content is limited to less than 1% of waste volume; metals are typically in oxide form

Potential Chemical Reactions within CH- and RH-TRU Waste Streams and Reaction Explanations (Continued)

Combination of EPA Reactivity Groups		Reaction Result (A x B)	Explanation of Potential Incompatibility
Group A	Group B		
21	102	Heat Generation	Reaction will not occur – explosives are not allowed, explosive compounds will be reacted prior to being placed in the waste/shipped.
21	102	Explosion	Reaction will not occur – explosives are not allowed, explosive compounds will be reacted prior to being placed in the waste/shipped.
21	103	Violent Polymerization	Reaction will not occur – Polymerizable compounds are reacted or immobilized/solidified prior to shipping; metals are typically in oxide form
21	103	Heat Generation	Reaction will not occur – Polymerizable compounds are reacted or immobilized/solidified prior to shipping; metals are typically in oxide form
21	104	Heat Generation	Reaction will not occur –Oxidizing agents are reacted prior to being placed in the waste/shipped; metals are typically in oxide form
21	104	Fire	Reaction will not occur –Oxidizing agents are reacted prior to being placed in the waste/shipped; metals are typically in oxide form
21	104	Explosion	Reaction will not occur –Oxidizing agents are reacted prior to being placed in the waste/shipped; metals are typically in oxide form
21	106	Flammable Gas Generation	Reaction will not occur – Residual liquids are limited to less than 1% of waste volume; metals are typically in oxide form.
21	106	Heat Generation	Reaction will not occur – Residual liquids are limited to less than 1% of waste volume; metals are typically in oxide form.
21	107	Highly Reactive	Reaction will not occur – Metals are typically in oxide form; residual liquid content is limited to less than 1% of waste volume; water reactive substances are reacted prior to being placed in the waste/shipped. Lime in Portland cement is most common water reactive substance expected in the waste. Portland cement is used as an absorbent and solidification agent for the wastes.
22	28	Heat Generation	Reaction will not occur – Unsaturated aliphatic hydrocarbons are solidified/immobilized prior to shipping

Potential Chemical Reactions within CH- and RH-TRU Waste Streams and Reaction Explanations (Continued)

Combination of EPA Reactivity Groups		Reaction Result (A x B)	Explanation of Potential Incompatibility
Group A	Group B		
22	28	Explosion	Reaction will not occur – Unsaturated aliphatic hydrocarbons are solidified/immobilized prior to shipping
22	30	Heat Generation	Reaction will not occur – Peroxides and Hydroperoxides are reacted/solidified/immobilized prior to shipping.
22	30	Innocuous and Non-Flammable Gas Generation	Reaction will not occur – Peroxides and Hydroperoxides are reacted/solidified/immobilized prior to shipping.
22	34	Heat Generation	Reaction will not occur – Epoxides are reacted/solidified/immobilized prior to shipping.
22	34	Violent Polymerization	Reaction will not occur – Epoxides are reacted/solidified/immobilized prior to shipping.
22	102	Heat Generation	Reaction will not occur – explosives are not allowed, explosive compounds will be reacted prior to being placed in the waste/shipped.
22	102	Explosion	Reaction will not occur – explosives are not allowed, explosive compounds will be reacted prior to being placed in the waste/shipped.
22	103	Violent Polymerization	Reaction will not occur – Polymerizable compounds are reacted or immobilized/solidified prior to shipping
22	103	Heat Generation	Reaction will not occur – Polymerizable compounds are reacted or immobilized/solidified prior to shipping
22	104	Heat Generation	Reaction will not occur – Oxidizing agents are reacted prior to being placed in the waste/shipped
22	104	Fire	Reaction will not occur – Oxidizing agents are reacted prior to being placed in the waste/shipped
22	104	Explosion	Reaction will not occur – Oxidizing agents are reacted prior to being placed in the waste/shipped
22	106	Flammable Gas Generation	Reaction will not occur – Residual liquids are limited to less than 1% of waste volume; water reactive metals are reacted prior to shipping
22	106	Heat Generation	Reaction will not occur – Residual liquids are limited to less than 1% of waste volume; water reactive metals are reacted prior to shipping

Potential Chemical Reactions within CH- and RH-TRU Waste Streams and Reaction Explanations (Continued)

Combination of EPA Reactivity Groups		Reaction Result (A x B)	Explanation of Potential Incompatibility
Group A	Group B		
22	107	Highly Reactive	Reaction will not occur – Residual liquid content is limited to less than 1% of waste volume; water reactive substances are reacted prior to being placed in the waste/shipped. Lime in Portland cement is most common water reactive substance expected in the waste. Portland cement is used as an absorbent and solidification agent for the wastes.
23	102	Heat Generation	Reaction will not occur – explosives are not allowed, explosive compounds will be reacted prior to being placed in the waste/shipped.
23	102	Explosion	Reaction will not occur – explosives are not allowed, explosive compounds will be reacted prior to being placed in the waste/shipped.
23	103	Violent Polymerization	Reaction will not occur – Polymerizable compounds are reacted or immobilized/solidified prior to shipping
23	103	Heat Generation	Reaction will not occur – Polymerizable compounds are reacted or immobilized/solidified prior to shipping
23	104	Heat Generation	Reaction will not occur – Oxidizing agents are reacted prior to being placed in the waste/shipped
23	104	Fire	Reaction will not occur – Oxidizing agents are reacted prior to being placed in the waste/shipped
23	107	Highly Reactive	Reaction will not occur – Residual liquid content is limited to less than 1% of waste volume; water reactive substances are reacted prior to being placed in the waste/shipped. Lime in Portland cement is most common water reactive substance expected in the waste. Portland cement is used as an absorbent and solidification agent for the wastes.
24	26	Solubilization of Toxic Substances	Reaction will not occur – Nitriles are reacted/solidified/immobilized prior to shipping.
24	30	Heat Generation	Reaction will not occur – Peroxides and Hydroperoxides are reacted/solidified/immobilized prior to shipping.
24	30	Innocuous and Non-Flammable Gas Generation	Reaction will not occur – Peroxides and Hydroperoxides are reacted/solidified/immobilized prior to shipping.
24	34	Heat Generation	Reaction will not occur – Epoxides are solidified/immobilized prior to shipping.

Potential Chemical Reactions within CH- and RH-TRU Waste Streams and Reaction Explanations (Continued)

Combination of EPA Reactivity Groups		Reaction Result (A x B)	Explanation of Potential Incompatibility
Group A	Group B		
24	34	Violent Polymerization	Reaction will not occur – Epoxides are solidified/immobilized prior to shipping.
24	102	Explosion	Reaction will not occur – explosives are not allowed, explosive compounds will be reacted prior to being placed in the waste/shipped.
24	103	Violent Polymerization	Reaction will not occur – Polymerizable compounds are reacted or immobilized/solidified prior to shipping
24	103	Heat Generation	Reaction will not occur – Polymerizable compounds are reacted or immobilized/solidified prior to shipping
24	106	Solubilization of Toxic Substances	Reaction is unlikely – Residual liquid content is limited to less than 1% of waste volume.
24	107	Highly Reactive	Reaction will not occur – Residual liquid content is limited to less than 1% of waste volume; water reactive substances are reacted prior to being placed in the waste/shipped. Lime in Portland cement is most common water reactive substance expected in the waste. Portland cement is used as an absorbent and solidification agent for the wastes.
25	26	Flammable Gas Generation	Reaction will not occur – Nitrides are reacted prior to shipping
25	26	Heat Generation	Reaction will not occur – Nitrides are reacted prior to shipping
25	27	Heat Generation	Reaction will not occur – Nitrides are reacted prior to shipping; Nitro compounds are reacted prior to shipping.
25	27	Flammable Gas Generation	Reaction will not occur – Nitrides are reacted prior to shipping; Nitro compounds are reacted prior to shipping.
25	27	Explosion	Reaction will not occur – Nitrides are reacted prior to shipping; Nitro compounds are reacted prior to shipping.
25	30	Heat Generation	Reaction will not occur – Nitrides are reacted prior to shipping; Peroxides and Hydroperoxides are reacted/solidified/immobilized prior to shipping.
25	30	Flammable Gas Generation	Reaction will not occur – Nitrides are reacted prior to shipping; Peroxides and Hydroperoxides are reacted/solidified/immobilized prior to shipping.

Potential Chemical Reactions within CH- and RH-TRU Waste Streams and Reaction Explanations (Continued)

Combination of EPA Reactivity Groups		Reaction Result (A x B)	Explanation of Potential Incompatibility
Group A	Group B		
25	30	Explosion	Reaction will not occur – Nitrides are reacted prior to shipping; Peroxides and Hydroperoxides are reacted/solidified/immobilized prior to shipping.
25	31	Flammable Gas Generation	Reaction will not occur – Nitrides are reacted prior to shipping; Phenols and creosols are solidified/immobilized prior to shipping.
25	31	Heat Generation	Reaction will not occur – Nitrides are reacted prior to shipping; Phenols and creosols are solidified/immobilized prior to shipping.
25	34	Heat Generation	Reaction will not occur – Nitrides are reacted prior to shipping; Epoxides are solidified/immobilized prior to shipping.
25	34	Violent Polymerization	Reaction will not occur – Nitrides are reacted prior to shipping; Epoxides are solidified/immobilized prior to shipping.
25	101	Heat Generation	Reaction will not occur – Nitrides are reacted prior to shipping; Combustible materials are dry; residual liquid content is limited to less than 1% of waste volume
25	101	Flammable Gas Generation	Reaction will not occur – Nitrides are reacted prior to shipping; Combustible materials are dry; residual liquid content is limited to less than 1% of waste volume
25	101	Fire	Reaction will not occur – Nitrides are reacted prior to shipping; Combustible materials are dry; residual liquid content is limited to less than 1% of waste volume
25	102	Explosion	Reaction will not occur – explosives are not allowed, explosive compounds will be reacted prior to being placed in the waste/shipped.
25	103	Violent Polymerization	Reaction will not occur – Nitrides are reacted prior to shipping
25	103	Heat Generation	Reaction will not occur – Nitrides are reacted prior to shipping
25	104	Heat Generation	Reaction will not occur – oxidizing agents are reacted prior to being placed in the waste/shipped.
25	104	Fire	Reaction will not occur – oxidizing agents are reacted prior to being placed in the waste/shipped.
25	104	Explosion	Reaction will not occur – oxidizing agents are reacted prior to being placed in the waste/shipped.

Potential Chemical Reactions within CH- and RH-TRU Waste Streams and Reaction Explanations (Continued)

Combination of EPA Reactivity Groups		Reaction Result (A x B)	Explanation of Potential Incompatibility
Group A	Group B		
25	106	Flammable Gas Generation	Reaction will not occur – Nitrides are reacted prior to shipping; Residual liquids are limited to less than 1% of waste volume
25	106	Heat Generation	Reaction will not occur – Nitrides are reacted prior to shipping; Residual liquids are limited to less than 1% of waste volume
25	107	Highly Reactive	Reaction will not occur – Residual liquid content is limited to less than 1% of waste volume; water reactive substances are reacted prior to being placed in the waste/shipped. Lime in Portland cement is most common water reactive substance expected in the waste. Portland cement is used as an absorbent and solidification agent for the wastes.
26	30	Heat Generation	Reaction will not occur – Nitriles are reacted prior to shipping; Peroxides and Hydroperoxides are reacted/solidified/immobilized prior to shipping.
26	30	Violent Polymerization	Reaction will not occur – Nitriles are reacted prior to shipping; Peroxides and Hydroperoxides are reacted/solidified/immobilized prior to shipping.
26	30	Toxic Gas Generation	Reaction will not occur – Nitriles are reacted prior to shipping; Peroxides and Hydroperoxides are reacted/solidified/immobilized prior to shipping.
26	104	Heat Generation	Reaction will not occur – Nitriles are reacted prior to shipping; oxidizing agents are reacted prior to being placed in the waste/shipped.
26	104	Fire	Reaction will not occur – Nitriles are reacted prior to shipping; oxidizing agents are reacted prior to being placed in the waste/shipped.
26	104	Toxic Gas Generation	Reaction will not occur – Nitriles are reacted prior to shipping; oxidizing agents are reacted prior to being placed in the waste/shipped.
26	105	Heat Generation	Reaction will not occur – Nitriles are reacted prior to shipping; reducing agents are reacted prior to being placed in the waste/shipped.
26	105	Flammable Gas Generation	Reaction will not occur – Nitriles are reacted prior to shipping; reducing agents are reacted prior to being placed in the waste/shipped.

Potential Chemical Reactions within CH- and RH-TRU Waste Streams and Reaction Explanations (Continued)

Combination of EPA Reactivity Groups		Reaction Result (A x B)	Explanation of Potential Incompatibility
Group A	Group B		
26	107	Highly Reactive	Reaction will not occur – Residual liquid content is limited to less than 1% of waste volume; water reactive substances are reacted prior to being placed in the waste/shipped. Lime in Portland cement is most common water reactive substance expected in the waste. Portland cement is used as an absorbent and solidification agent for the wastes.
27	104	Heat Generation	Reaction will not occur – Nitro compounds are reacted/solidified/immobilized prior to shipping; oxidizing agents are reacted prior to being placed in the waste/shipped.
27	104	Explosion	Reaction will not occur – Nitro compounds are reacted/solidified/immobilized prior to shipping; oxidizing agents are reacted prior to being placed in the waste/shipped.
27	105	Heat Generation	Reaction will not occur – Nitro compounds are reacted/solidified/immobilized prior to shipping; reducing agents are reacted prior to being placed in the waste/shipped.
27	105	Explosion	Reaction will not occur – Nitro compounds are reacted/solidified/immobilized prior to shipping; reducing agents are reacted prior to being placed in the waste/shipped.
27	107	Highly Reactive	Reaction will not occur – Nitro compounds are reacted/solidified/immobilized prior to shipping; Residual liquid content is limited to less than 1% of waste volume; water reactive substances are reacted prior to being placed in the waste/shipped. Lime in Portland cement is most common water reactive substance expected in the waste. Portland cement is used as an absorbent and solidification agent for the wastes.
28	30	Heat Generation	Reaction will not occur – Unsaturated aliphatic hydrocarbons are immobilized/solidified prior to shipping; peroxides and hydroperoxides are reacted/immobilized prior to shipping
28	30	Violent Polymerization	Reaction will not occur – Unsaturated aliphatic hydrocarbons are immobilized/solidified prior to shipping; peroxides and hydroperoxides are reacted/immobilized prior to shipping

Potential Chemical Reactions within CH- and RH-TRU Waste Streams and Reaction Explanations (Continued)

Combination of EPA Reactivity Groups		Reaction Result (A x B)	Explanation of Potential Incompatibility
Group A	Group B		
28	104	Heat Generation	Reaction will not occur – Unsaturated aliphatic hydrocarbons are immobilized/solidified prior to shipping; oxidizing agents are reacted prior to being placed in the waste/shipped
28	104	Fire	Reaction will not occur – Unsaturated aliphatic hydrocarbons are immobilized/solidified prior to shipping; oxidizing agents are reacted prior to being placed in the waste/shipped
28	107	Highly Reactive	Reaction will not occur – Unsaturated aliphatic hydrocarbons are immobilized/solidified prior to shipping; residual liquid content is limited to less than 1% of waste volume; water reactive substances are reacted prior to being placed in the waste/shipped. Lime in Portland cement is most common water reactive substance expected in the waste. Portland cement is used as an absorbent and solidification agent for the wastes.
29	104	Heat Generation	Reaction will not occur – Saturated aliphatic hydrocarbons are immobilized/solidified prior to shipping; oxidizing agents are reacted prior to being placed in the waste/shipped
29	104	Fire	Reaction will not occur – Saturated aliphatic hydrocarbons are immobilized/solidified prior to shipping; oxidizing agents are reacted prior to being placed in the waste/shipped
29	107	Highly Reactive	Reaction will not occur – Saturated aliphatic hydrocarbons are immobilized/solidified prior to shipping; residual liquid content is limited to less than 1% of waste volume; water reactive substances are reacted prior to being placed in the waste/shipped. Lime in Portland cement is most common water reactive substance expected in the waste. Portland cement is used as an absorbent and solidification agent for the wastes.
30	31	Heat Generation	Reaction will not occur – Phenols and creosols are immobilized/solidified prior to shipping; Peroxides and Hydroperoxides are reacted/solidified/immobilized prior to shipping.

Potential Chemical Reactions within CH- and RH-TRU Waste Streams and Reaction Explanations (Continued)

Combination of EPA Reactivity Groups		Reaction Result (A x B)	Explanation of Potential Incompatibility
Group A	Group B		
30	32	May be Hazardous, But Unknown	Reaction will not occur – Organophosphates are immobilized/solidified prior to shipping; Peroxides and Hydroperoxides are reacted/solidified/immobilized prior to shipping.
30	33	Heat Generation	Reaction will not occur – Peroxides and Hydroperoxides are reacted/solidified/immobilized prior to shipping.
30	33	Toxic Gas Generation	Reaction will not occur – Peroxides and Hydroperoxides are reacted/solidified/immobilized prior to shipping.
30	34	Heat Generation	Reaction will not occur – Epoxides are reacted/solidified/immobilized prior to shipping; Peroxides and Hydroperoxides are reacted/solidified/immobilized prior to shipping.
30	34	Violent Polymerization	Reaction will not occur – Epoxides are reacted/solidified/immobilized prior to shipping; Peroxides and Hydroperoxides are reacted/solidified/immobilized prior to shipping.
30	101	Heat Generation	Reaction will not occur – Peroxides and Hydroperoxides are reacted/solidified/immobilized prior to shipping; Combustible materials are dry; residual liquid content is limited to less than 1% of waste volume
30	101	Fire	Reaction will not occur – Peroxides and Hydroperoxides are reacted/solidified/immobilized prior to shipping; Combustible materials are dry; residual liquid content is limited to less than 1% of waste volume
30	101	Toxic Gas Generation	Reaction will not occur – Peroxides and Hydroperoxides are reacted/solidified/immobilized prior to shipping; Combustible materials are dry; residual liquid content is limited to less than 1% of waste volume
30	102	Heat Generation	Reaction will not occur – explosives are not allowed, explosive compounds will be reacted prior to being placed in the waste/shipped.
30	102	Explosion	Reaction will not occur – explosives are not allowed, explosive compounds will be reacted prior to being placed in the waste/shipped.
30	103	Violent Polymerization	Reaction will not occur – Peroxides and Hydroperoxides are reacted/solidified/immobilized prior to shipping.
30	103	Heat Generation	Reaction will not occur – Peroxides and Hydroperoxides are reacted/solidified/immobilized prior to shipping.

Potential Chemical Reactions within CH- and RH-TRU Waste Streams and Reaction Explanations (Continued)

Combination of EPA Reactivity Groups		Reaction Result (A x B)	Explanation of Potential Incompatibility
Group A	Group B		
30	104	Heat Generation	Reaction will not occur – Peroxides and Hydroperoxides are reacted/solidified/immobilized prior to shipping; oxidizing agents are reacted prior to being placed in the waste/shipped.
30	104	Innocuous and Non-Flammable Gas Generation	Reaction will not occur – Peroxides and Hydroperoxides are reacted/solidified/immobilized prior to shipping; oxidizing agents are reacted prior to being placed in the waste/shipped.
30	105	Heat Generation	Reaction will not occur – Peroxides and Hydroperoxides are reacted/solidified/immobilized prior to shipping; reducing agents are reacted prior to being placed in the waste/shipped.
30	105	Explosion	Reaction will not occur – Peroxides and Hydroperoxides are reacted/solidified/immobilized prior to shipping; reducing agents are reacted prior to being placed in the waste/shipped.
30	107	Highly Reactive	Reaction will not occur – Peroxides and Hydroperoxides are reacted/solidified/immobilized prior to shipping; Residual liquid content is limited to less than 1% of waste volume; water reactive substances are reacted prior to being placed in the waste/shipped. Lime in Portland cement is most common water reactive substance expected in the waste. Portland cement is used as an absorbent and solidification agent for the wastes.
31	34	Heat Generation	Reaction will not occur – Phenols and creosols are immobilized/solidified prior to shipping; Epoxides are reacted/solidified/immobilized prior to shipping
31	34	Violent Polymerization	Reaction will not occur – Phenols and creosols are immobilized/solidified prior to shipping; Epoxides are reacted/solidified/immobilized prior to shipping
31	102	Heat Generation	Reaction will not occur – explosives are not allowed, explosive compounds will be reacted prior to being placed in the waste/shipped.
31	102	Explosion	Reaction will not occur – explosives are not allowed, explosive compounds will be reacted prior to being placed in the waste/shipped.

Potential Chemical Reactions within CH- and RH-TRU Waste Streams and Reaction Explanations (Continued)

Combination of EPA Reactivity Groups		Reaction Result (A x B)	Explanation of Potential Incompatibility
Group A	Group B		
31	103	Violent Polymerization	Reaction will not occur – Polymerizable compounds are reacted or immobilized/solidified prior to shipping; phenols and creosols are immobilized/solidified prior to shipping
31	103	Heat Generation	Reaction will not occur – Polymerizable compounds are reacted or immobilized/solidified prior to shipping; phenols and creosols are immobilized/solidified prior to shipping
31	104	Heat Generation	Reaction will not occur – Phenols and creosols are immobilized/solidified prior to shipping; oxidizing agents are reacted prior to being placed in the waste/shipped
31	104	Fire	Reaction will not occur – Phenols and creosols are immobilized/solidified prior to shipping; oxidizing agents are reacted prior to being placed in the waste/shipped
31	105	Flammable Gas Generation	Reaction will not occur – Phenols and creosols are immobilized/solidified prior to shipping; reducing agents are reacted prior to being placed in the waste/shipped
31	105	Heat Generation	Reaction will not occur – Phenols and creosols are immobilized/solidified prior to shipping; reducing agents are reacted prior to being placed in the waste/shipped
31	107	Highly Reactive	Reaction will not occur – Phenols and creosols are immobilized/solidified prior to shipping; residual liquid content is limited to less than 1% of waste volume; water reactive substances are reacted prior to being placed in the waste/shipped. Lime in Portland cement is most common water reactive substance expected in the waste. Portland cement is used as an absorbent and solidification agent for the wastes.
32	34	May be Hazardous, But Unknown	Reaction will not occur – Organophosphates are immobilized/solidified prior to shipping; Epoxides are reacted/solidified/immobilized prior to shipping
32	104	Heat Generation	Reaction will not occur – Organophosphates are immobilized/solidified prior to shipping; oxidizing agents are reacted prior to being placed in the waste/shipped
32	104	Fire	Reaction will not occur – Organophosphates are immobilized/solidified prior to shipping; oxidizing agents are reacted prior to being placed in the waste/shipped

Potential Chemical Reactions within CH- and RH-TRU Waste Streams and Reaction Explanations (Continued)

Combination of EPA Reactivity Groups		Reaction Result (A x B)	Explanation of Potential Incompatibility
Group A	Group B		
32	104	Toxic Gas Generation	Reaction will not occur – Organophosphates are immobilized/solidified prior to shipping; oxidizing agents are reacted prior to being placed in the waste/shipped
32	105	Toxic Gas Generation	Reaction will not occur – Organophosphates are immobilized/solidified prior to shipping; reducing agents are reacted prior to being placed in the waste/shipped
32	105	Flammable Gas Generation	Reaction will not occur – Organophosphates are immobilized/solidified prior to shipping; reducing agents are reacted prior to being placed in the waste/shipped
32	105	Heat Generation	Reaction will not occur – Organophosphates are immobilized/solidified prior to shipping; reducing agents are reacted prior to being placed in the waste/shipped
32	107	Highly Reactive	Reaction will not occur – Organophosphates are immobilized/solidified prior to shipping; residual liquid content is limited to less than 1% of waste volume; water reactive substances are reacted prior to being placed in the waste/shipped. Lime in Portland cement is most common water reactive substance expected in the waste. Portland cement is used as an absorbent and solidification agent for the wastes.
33	34	Heat Generation	Reaction will not occur – Epoxides are reacted/solidified/immobilized prior to shipping
33	34	Violent Polymerization	Reaction will not occur – Epoxides are reacted/solidified/immobilized prior to shipping
33	102	Heat Generation	Reaction will not occur – explosives are not allowed, explosive compounds will be reacted prior to being placed in the waste/shipped.
33	102	Explosion	Reaction will not occur – explosives are not allowed, explosive compounds will be reacted prior to being placed in the waste/shipped.
33	103	Violent Polymerization	Reaction will not occur – Polymerizable compounds are reacted or immobilized/solidified prior to shipping
33	103	Heat Generation	Reaction will not occur – Polymerizable compounds are reacted or immobilized/solidified prior to shipping
33	104	Heat Generation	Reaction will not occur – oxidizing agents are reacted prior to being placed in the waste/shipped.
33	104	Fire	Reaction will not occur – oxidizing agents are reacted prior to being placed in the waste/shipped.

Potential Chemical Reactions within CH- and RH-TRU Waste Streams and Reaction Explanations (Continued)

Combination of EPA Reactivity Groups		Reaction Result (A x B)	Explanation of Potential Incompatibility
Group A	Group B		
33	104	Toxic Gas Generation	Reaction will not occur – oxidizing agents are reacted prior to being placed in the waste/shipped.
33	106	Toxic Gas Generation	Reaction is unlikely – Residual liquids are limited to less than 1% of waste volume
33	106	Flammable Gas Generation	Reaction is unlikely – Residual liquids are limited to less than 1% of waste volume
33	107	Highly Reactive	Reaction is unlikely – residual liquid content is limited to less than 1% of waste volume; water reactive substances are reacted prior to being placed in the waste/shipped. Lime in Portland cement is most common water reactive substance expected in the waste. Portland cement is used as an absorbent and solidification agent for the wastes.
34	102	Heat Generation	Reaction will not occur – explosives are not allowed, explosive compounds will be reacted prior to being placed in the waste/shipped.
34	102	Explosion	Reaction will not occur – explosives are not allowed, explosive compounds will be reacted prior to being placed in the waste/shipped.
34	104	Heat Generation	Reaction will not occur – Epoxides are reacted/solidfied/immobilized prior to shipping; oxidizing agents are reacted prior to being placed in the waste/shipped.
34	104	Fire	Reaction will not occur – Epoxides are reacted/solidfied/immobilized prior to shipping; oxidizing agents are reacted prior to being placed in the waste/shipped.
34	104	Innocuous and Non-Flammable Gas Generation	Reaction will not occur – Epoxides are reacted/solidfied/immobilized prior to shipping; oxidizing agents are reacted prior to being placed in the waste/shipped.
34	105	Heat Generation	Reaction will not occur – Epoxides are reacted/solidfied/immobilized prior to shipping; reducing agents are reacted prior to being placed in the waste/shipped.

Potential Chemical Reactions within CH- and RH-TRU Waste Streams and Reaction Explanations (Continued)

Combination of EPA Reactivity Groups		Reaction Result (A x B)	Explanation of Potential Incompatibility
Group A	Group B		
34	107	Highly Reactive	Reaction will not occur – Epoxides are reacted/solidfied/immobilized prior to shipping; Residual liquid content is limited to less than 1% of waste volume; water reactive substances are reacted prior to being placed in the waste/shipped. Lime in Portland cement is most common water reactive substance expected in the waste. Portland cement is used as an absorbent and solidification agent for the wastes.
101	102	Heat Generation	Reaction will not occur – explosives are not allowed, explosive compounds will be reacted prior to being placed in the waste/shipped.
101	102	Explosion	Reaction will not occur – explosives are not allowed, explosive compounds will be reacted prior to being placed in the waste/shipped.
101	104	Heat Generation	Reaction will not occur – Combustible materials are dry; oxidizing agents are reacted prior to being placed in the waste/shipped
101	104	Fire	Reaction will not occur – Combustible materials are dry; oxidizing agents are reacted prior to being placed in the waste/shipped
101	104	Innocuous and Non-Flammable Gas Generation	Reaction will not occur – Combustible materials are dry; oxidizing agents are reacted prior to being placed in the waste/shipped
101	105	Flammable Gas Generation	Reaction will not occur – Combustible materials are dry; reducing agents are reacted prior to being placed in the waste/shipped
101	105	Heat Generation	Reaction will not occur – Combustible materials are dry; reducing agents are reacted prior to being placed in the waste/shipped

Potential Chemical Reactions within CH- and RH-TRU Waste Streams and Reaction Explanations (Continued)

Combination of EPA Reactivity Groups		Reaction Result (A x B)	Explanation of Potential Incompatibility
Group A	Group B		
101	107	Highly Reactive	Reaction will not occur – Combustible materials are dry; residual liquid content is limited to less than 1% of waste volume; water reactive substances are reacted prior to being placed in the waste/shipped. Lime in Portland cement is most common water reactive substance expected in the waste. Portland cement is used as an absorbent and solidification agent for the wastes.
102	103	Heat Generation	Reaction will not occur – explosives are not allowed, explosive compounds will be reacted prior to being placed in the waste/shipped.
102	103	Explosion	Reaction will not occur – explosives are not allowed, explosive compounds will be reacted prior to being placed in the waste/shipped.
102	104	Heat Generation	Reaction will not occur – explosives are not allowed, explosive compounds will be reacted prior to being placed in the waste/shipped.
102	104	Explosion	Reaction will not occur – explosives are not allowed, explosive compounds will be reacted prior to being placed in the waste/shipped.
102	105	Heat Generation	Reaction will not occur – explosives are not allowed, explosive compounds will be reacted prior to being placed in the waste/shipped.
102	105	Explosion	Reaction will not occur – explosives are not allowed, explosive compounds will be reacted prior to being placed in the waste/shipped.
102	107	Highly Reactive	Reaction will not occur – explosives are not allowed, explosive compounds will be reacted prior to being placed in the waste/shipped.
103	104	Heat Generation	Reaction will not occur – Polymerizable compounds are reacted or immobilized/solidified prior to shipping; oxidizing agents are reacted prior to being placed in the waste/shipped
103	104	Fire	Reaction will not occur – Polymerizable compounds are reacted or immobilized/solidified prior to shipping; oxidizing agents are reacted prior to being placed in the waste/shipped

Potential Chemical Reactions within CH- and RH-TRU Waste Streams and Reaction Explanations (Continued)

Combination of EPA Reactivity Groups		Reaction Result (A x B)	Explanation of Potential Incompatibility
Group A	Group B		
103	104	Toxic Gas Generation	Reaction will not occur – Polymerizable compounds are reacted or immobilized/solidified prior to shipping; oxidizing agents are reacted prior to being placed in the waste/shipped
103	105	Heat Generation	Reaction will not occur – Polymerizable compounds are reacted or immobilized/solidified prior to shipping; reducing agents are reacted prior to being placed in the waste/shipped
103	105	Violent Polymerization	Reaction will not occur – Polymerizable compounds are reacted or immobilized/solidified prior to shipping; reducing agents are reacted prior to being placed in the waste/shipped
103	105	Flammable Gas Generation	Reaction will not occur – Polymerizable compounds are reacted or immobilized/solidified prior to shipping; reducing agents are reacted prior to being placed in the waste/shipped
103	107	Highly Reactive	Reaction will not occur – Polymerizable compounds are reacted or immobilized/solidified prior to shipping; residual liquid content is limited to less than 1% of waste volume; water reactive substances are reacted prior to being placed in the waste/shipped. Lime in Portland cement is most common water reactive substance expected in the waste. Portland cement is used as an absorbent and solidification agent for the wastes.
104	105	Heat Generation	Reaction will not occur – Oxidizing agents are reacted prior to being placed in the waste/shipped; reducing agents are reacted prior to being placed in the waste/shipped
104	105	Fire	Reaction will not occur – Oxidizing agents are reacted prior to being placed in the waste/shipped; reducing agents are reacted prior to being placed in the waste/shipped
104	105	Explosion	Reaction will not occur – Oxidizing agents are reacted prior to being placed in the waste/shipped; reducing agents are reacted prior to being placed in the waste/shipped

Potential Chemical Reactions within CH- and RH-TRU Waste Streams and Reaction Explanations (Continued)

Combination of EPA Reactivity Groups		Reaction Result (A x B)	Explanation of Potential Incompatibility
Group A	Group B		
104	107	Highly Reactive	Reaction will not occur – Oxidizing agents are reacted prior to being placed in the waste/shipped; residual liquid content is limited to less than 1% of waste volume; water reactive substances are reacted prior to being placed in the waste/shipped. Lime in Portland cement is most common water reactive substance expected in the waste. Portland cement is used as an absorbent and solidification agent for the wastes.
105	106	Flammable Gas Generation	Reaction will not occur – Reducing agents are reacted prior to being placed in the waste/shipped; residual liquid content is limited to less than 1% of waste volume
105	106	Toxic Gas Generation	Reaction will not occur – Reducing agents are reacted prior to being placed in the waste/shipped; residual liquid content is limited to less than 1% of waste volume
105	107	Highly Reactive	Reaction will not occur – Reducing agents are reacted prior to being placed in the waste/shipped; residual liquid content is limited to less than 1% of waste volume; water reactive substances are reacted prior to being placed in the waste/shipped. Lime in Portland cement is most common water reactive substance expected in the waste. Portland cement is used as an absorbent and solidification agent for the wastes.
106	107	Highly Reactive	Reaction will not occur – Residual liquid content is limited to less than 1% of waste volume; water reactive substances are reacted prior to being placed in the waste/shipped. Lime in Portland cement is most common water reactive substance expected in the waste. Portland cement is used as an absorbent and solidification agent for the wastes.

EPA = U.S. Environmental Protection Agency.