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Mr. Steve Zappe, WIPP Project Leader
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 2905 E. Rodeo Park Drive, Bldg. 1
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Subject: Transmittal of Revised Acceptable Knowledge Summary for RFETS WSPF
 Number RF036.01, TRU Blacktop, Concrete, Dirt and Sand

Dear Mr. Zappe:

Please replace the Acceptable Knowledge (AK) Summary provided with the Rocky Flats Environmental Technology Site (RFETS) Waste Stream Profile Form (WSPF) RF036.01, TRU Blacktop, Concrete, Dirt and Sand (CBFO:NTP:KWW:GS:04-2095:UFC 5822.00, dated November 9,2004), with the enclosed revised AK Summary.

As a result of telephone communication today between Mr. Steve Holmes and myself, the format of AK Summary, Section 6.16.1 was revised to more clearly identify the appropriate Waste Matrix Code.

If you have any questions on this matter, please contact me at (505) 234-7357 or (505) 706-0066.

Sincerely,

Kerry W. Watson
 Office Director
 Office of Characterization and Transportation

Enclosure

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Rocky Flats Environmental Technology Site

ACCEPTABLE KNOWLEDGE INFORMATION

**ACCEPTABLE KNOWLEDGE TRU/TRM
WASTE STREAM SUMMARIES**

RMRS-WIPP-98-100

Section 6.16

TRU Blacktop, Concrete, Dirt, and Sand

Profile No. RF036.01

Revision 0

Reviewed for Classification/UCNI
By: Unclassified Not UCNI
Reference Exemption Number CEX-032-00
Date: October 5, 2004

Approval signatures in Site Document Control history file

6.16 TRU Blacktop, Concrete, Dirt, and Sand

Profile No. RF036.01

Acceptable Knowledge (AK) Waste Stream Summary

Waste Stream Name: TRU Blacktop, Concrete, Dirt, and Sand

Generation Buildings: Buildings 371, 440, 559, 707, 771, 774, 776, 777, 779^(1,6)

Waste Stream Volume (Retrievably Stored): 18 55-gallon drums^(1,6)

Generation Dates (Retrievably Stored): November 1988 - July 2001^(1,6)

Waste Stream Volume (Newly Generated): 174 55-gallon drums^(1,6)

Generation Dates (Newly Generated): November 2001 - November 2004^(1,6)

Waste Stream Volume (Projected): 2 55-gallon drums^(1,6,19)

Generation Dates (Projected): November 2004 - April 2005^(1,6,19)

NOTE: Waste may be repackaged in Building 440 in the future.

TRUCON Content Code^(2,18): RF121A/221A, RF121D/221D, RF121DA/221DA,
RF121DAF/221DAF, RF121DF/221DF, RF121E/221E, RF121F/221F, RF121H/221H,
RF121I/221I, RF121J/221J, RF121K/221K, RF121N/221N, RF121T/221T, RF121W/221W

Process Knowledge Demonstrates Flammable VOCs in Headspace < 500 ppm: No (see Section 6.16.6)

6.16.1 Transuranic Waste Baseline Inventory Report Information⁽³⁾

WIPP Identification Number(s): RF-TT0374

Summary Category Group: S5000 Waste Matrix Code Group: Heterogeneous Debris
Waste^{See Note A}

Waste Matrix Code: S5420^{See Note A} Waste Stream Name: TRU Blacktop, Concrete,
Dirt, and Sand^{See Note A}

Description from the WTWBIR: This waste stream is construction rubble generated during
decontamination and decommissioning (D&D) activities. This waste consists of
blacktop/concrete/dirt/sand.

Note A: The WTWBIR Waste Stream Name for RF-TT0374 is Soil & Cleanup Debris/TRU. The Waste Stream Name has been changed to TRU Blacktop, Concrete, Dirt, and Sand. Waste Matrix Code S4200 identified in the WTWBIR is incorrect and has been changed to the more appropriate Waste Matrix Code S5420 since the waste is greater than 50 volume percent inorganic debris. The Waste Matrix Code Group has been expanded to

Heterogeneous Debris Waste. The Waste Stream Name, Summary Category Group, Waste Matrix Code, and Waste Matrix Code Group are based on acceptable knowledge (see Section 6.16.2).

6.16.2 Waste Stream Description

Transuranic (TRU) Blacktop, Concrete, Dirt, and Sand (IDC 374) consists of heterogeneous debris material primarily generated from D&D operations, as well as maintenance activities. This material is similar in material, physical form, and hazardous constituents, and is therefore considered a single waste stream. Table 6.16-1 presents the waste matrix code and waste material parameters for TRU Blacktop, Concrete, Dirt, and Sand. ⁽⁴⁾

Table 6.16-1, TRU Blacktop, Concrete, Dirt, and Sand

IDC	IDC Description	Waste Matrix Code	Waste Material Parameters	Weight % (Average)
374	Blacktop, Concrete, Dirt and Sand	S5420, Predominantly Inorganic Debris	Note 1	100%

Notes:

- The weight percentages for each waste material parameter are determined on a container basis by RTR and/or visual examination/verification because the variability of the waste stream does not result in a consistent average.

Blacktop, Concrete, Dirt, and Sand: This material consists of construction rubble such as concrete debris, concrete chunks with rebar, drywall (gypsum), granite tables and surface plates, marble tables, masonry, scabbled concrete, mortar, gravel, magnesium oxide sand, and small quantities of soil and blacktop (e.g., paving material consisting of asphalt, quartz, and sand). Small quantities of absorbent [oil dry or NoChar® (i.e., a polymer absorbent)] may be added when necessary during repackaging to absorb any residual liquid (from hydrolasing operations).
 (5,7,8,9,10,11,12,13,14,15,17)

6.16.3 Areas of Operation

TRU Blacktop, Concrete, Dirt, and Sand is generated by the following defense operations in Buildings 371, 440, 559, 707, 771, 774, 776, 777, and 779.^(4,5,6,7,8,9,10,11,12,13,14)

- Maintenance
- Waste Repackaging Operations
- D&D

6.16.4 Generation Processes

TRU Blacktop, Concrete, Dirt, and Sand in inventory is primarily generated during D&D activities in Buildings 371, 440, 559, 707, 771, 774, 776, 777, and 779. These buildings were utilized in the past for plutonium production, recovery, laboratory operations, maintenance, and waste and residue treatment and repackaging operations.

Contamination historically occurred in the buildings due to breaches in primary radiological containment that resulted in spills and airborne releases of radiological materials. The released materials and associated cleanup materials did not contain constituents that render the waste stream a hazardous waste (see Section 6.16.5).
(5,7,8,9,10,11,12,13,14)

D&D activities beginning in 1996 include the physical isolation and removal of contaminated gloveboxes, equipment, machinery, furnishings, and support systems. This includes removal and size reduction of granite and marble tables, surface plates and slabs; removal of drywall; removal of magnesium oxide sand (e.g., unused fire suppressant) from gloveboxes; and removal of surface contamination from building floors and walls with grinding or scraping equipment (mechanical scrubbling) and high pressure water (hydrolasing). Small quantities of soil and blacktop (e.g., paving material consisting of asphalt, quartz, and sand) may be removed and included in the waste stream. Water from hydrolasing operations is separated (by filtration, pouring, pumping, and/or aspirating) from the solid material and is recycled or disposed of separately. A portion of this waste stream is construction rubble generated from maintenance activities prior to 1997, such as boring through building surfaces including floors and walls for the installation or stripout of equipment.
(5,7,9,10,11,12,13,14,15,17,21)

Current and historical waste generation activities after 1999 also include waste drum and crate repackaging operations in Buildings 440 and 771. Containers with non-conformances or insufficient acceptable knowledge are unpacked in a containment tent, examined and compared to the existing container paperwork, and repackaged to current WIPP waste requirements.
(8,11)

Process flow diagrams for these operations can be found in the Waste Stream and Residue Identification and Characterization (WSRIC) Building Books.
(7,8,9,10,11,13,14)

6.16.5 Resource Conservation and Recovery Act (RCRA) Characterization

This waste stream is **NOT** characterized as a mixed waste. As described in Section 6.16.2, this waste is generated from similar activities; is similar in material, physical form, and hazardous constituents; and is, therefore, considered a single waste stream. The specific Backlog Waste Reassessment (BWR) Baseline Book Subpopulations and WSRIC Process Numbers associated with the TRU Blacktop, Concrete, Dirt, and Sand, waste stream are listed in the WEMS AK Waste Stream Summary for Profile Number RF036.01.
(6)

Visual examination of waste contents at the time of packaging/repackaging and/or real-time radiography (RTR) is used to verify that the waste stream is not a liquid waste and does not contain explosives, non-radionuclide pyrophoric materials, compressed gases, or reactive waste. Therefore, this waste stream does not exhibit the characteristics of ignitability (D001), corrosivity (D002), or reactivity (D003).

TRU Blacktop, Concrete, Dirt, and Sand is not RCRA-regulated hazardous waste. RCRA-regulated organic and metal compounds were not used in any of the generating or repackaging processes and the waste does not contain listed hazardous constituents. Characterization of buildings and areas within buildings for closure and demolition is conducted according to the Rocky Flats Environmental Technology Site (RFETS) D&D Characterization Protocol which mandates characterization of each building based on historical operations, historical spill data, sampling and analysis, and surveys. The analytical data collected by the D&D projects supports the acceptable knowledge that this waste stream contains no RCRA hazardous constituents and exhibits no RCRA hazardous characteristics. No discarded chemical products, off-specification species, chemical residues, and spill residues thereof (40 CFR 261.33) were included in this waste stream and no hazardous waste from specific sources (40 CFR 261.32) was generated at the site. Therefore no F, K, U, or P listings have been applied to this waste stream. ^(5,7,8,9,10,11,13,14,15,22)

Beryllium parts were used in the manufacture/assembly of weapons components, and residual beryllium contamination of plutonium parts may have occurred; therefore, the blacktop, concrete, dirt, and sand materials may have been contaminated with beryllium and residual quantities of beryllium may be present in the waste stream. Any beryllium present (less than 1 % by weight) is as a contaminant of the process and not as unused commercial chemical product, and therefore is not a P015-listed waste. ^(7,8,10,13,15)

Headspace gas sampling and analysis of containers assigned to this waste stream by AK detected 8 VOCs (acetone, carbon tetrachloride, chloroform, methanol, methylene chloride, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, and toluene). Statistics were calculated based on using one-half the method detection limit (MDL) for less-than-detectable observations with data transformation applied where appropriate. Using this "WIPP directed" method, the calculated 90 percent upper confidence limit (UCL₉₀) of the mean concentrations for none of the analytes were found to exceed their associated RTL values. Therefore, the headspace data confirms the acceptable knowledge characterization that no characteristic volatile organic or F-listed solvent EPA codes are applicable. ⁽¹⁶⁾

6.16.6 Transportation

The payload containers in the waste stream must also comply with the TRUPACT-II Authorized Methods for Payload Control (TRAMPAC) requirements. Flammable VOCs including acetone, methanol, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, and toluene were detected by headspace gas sampling and analysis. Therefore, flammable VOCs in the payload container headspace have the potential to exceed 500 ppm. All payload containers, including those that exceed 500 ppm flammable VOCs in the headspace gas, are evaluated for compliance with applicable TRAMPAC requirements using the eTRAMPAC system prior to shipment. Any containers not passing the eTRAMPAC compliance evaluation are identified and corrected through the site non-conformance reporting system. ⁽¹⁶⁾

Although one or more individual payload containers may contain greater than one weight percent depleted uranium, the waste stream as a whole does not. ^(6,20)

6.16.7 Radionuclides

Table 6.16-2 summarizes the radionuclides that may be present in TRU Blacktop, Concrete, Dirt, and Sand. ⁽⁴⁾

Table 6.16-2, TRU Blacktop, Concrete, Dirt, and Sand Radionuclides

IDC	Description	Radionuclides
374	Blacktop, Concrete, Dirt, and Sand	WG Pu, Am-241, Am-243, DU, EU, Np-237

Key: WG Pu weapons-grade plutonium
 Am-241 americium-241
 Am-243 americium-243
 DU depleted uranium
 EU enriched uranium
 Np-237 neptunium-237

6.16.8 References

1. Wastren 2004. Interoffice Memorandum from Scott Smith to Waste Records Center. Current and Projected Waste Volumes for TRU Blacktop, Concrete, Dirt, and Sand RF036.01, SMS-017-2004, November 23, 2004.
2. RFETS 2004. Transuranic (TRU) Waste Management Manual, Version 7, 1-MAN-008-WM-001.
3. DOE 1995. Transuranic Waste Baseline Inventory Report, Revision 0. DOE/CAO-95-1121.
4. RMRS 2004. RFETS TRU Waste Acceptable Knowledge Supplemental Information. RF/RMRS-97-018, Revision 14.
5. RFETS 2004. Backlog Waste Reassessment Baseline Book, Waste Form 23, Soil and Cleanup Debris.
6. Waste and Environmental Management System (WEMS) database.
7. RFETS 2004. Waste Stream and Residue Identification and Characterization Building 371, Version 7.0.
8. RFETS 2004. Waste Stream and Residue Identification and Characterization Building 440, Version 7.0.
9. RFETS 2004. Waste Stream and Residue Identification and Characterization Building 559, Version 7.0.
10. RFETS 2004. Waste Stream and Residue Identification and Characterization Building 707, Version 7.0.

11. RFETS 2004. Waste Stream and Residue Identification and Characterization Building 771, Version 7.0.
12. RFETS 2004. Waste Stream and Residue Identification and Characterization Building 774, Version 7.0.
13. RFETS 2004. Waste Stream and Residue Identification and Characterization Building 776_777, Version 7.0.
14. RFETS 1997. Waste Stream and Residue Identification and Characterization Building 779, Version 6.0.
15. RFETS 2004. Waste Stream and Residue Identification and Characterization Building D&D, Version 7.0.
16. Interoffice Memorandum from Thomas R. Gatliffe to Eric L. D'Amico, Headspace Gas Analysis Data Evaluation Report For Waste Stream Profile RF036.01 (TRU Blacktop, Concrete, Dirt, and Sand) Lot 1, TRG-287-04, September 14, 2004.
17. RFETS 2004. Solid Radioactive Waste Packing Requirements Manual, 1-M12-WO-4034, Version 10.
18. DOE 2004. TRUPACT-II Content Codes (TRUCON), Revision 15.1. DOE/WIPP 89-004.
19. WASTREN 2003. Interoffice Memorandum from Jeff Harrison to Eric D'Amico. Projected Waste Stream Volumes and Generation Dates for TRU and TRM Waste, JLH-011-2003. February 12, 2003.
20. Wastren 2004. Interoffice Memorandum from M. L. Johnson to Waste Records Center. Depleted Uranium Concentrations in Assayed Containers of TRU Blacktop, Concrete, Dirt, and Sand RF036.01, MLJ-073-2004, September 28, 2004.
21. Wastren 2004. Interview of Greg Utrecht. Hydrolasing Operation Description, October 28, 2004.
22. RFETS 2002. The D&D Characterization Protocol, MAN-077-DDCP, Revision 4.