



Department of Energy  
Carlsbad Field Office  
P. O. Box 3090  
Carlsbad, New Mexico 88221

APR 17 2003

ENTERED



Mr. Steve Zappe, WIPP Project Leader  
Hazardous Waste Permits Program  
Hazardous and Radioactive Materials Bureau  
New Mexico Environment Department  
2905 E. Rodeo Park Drive, Bldg. 1  
Santa Fe, NM 87505

Subject: Transmittal of Approved Waste Stream Profile Form for Rocky Flats  
Environmental Technology Site, Waste Stream Profile Form Number  
RF101.31 – TRM Combustible and Plastic Wastes

Dear Mr. Zappe:

The Department of Energy, Carlsbad Field Office (CBFO) has approved the Rocky Flats Environmental Technology Site (RFETS), Waste Stream Profile Form RF101.31. Enclosed is a copy of the approved form as required by Section B-4(b)(1) of the WIPP Hazardous Waste Facility Permit No. NM4890139088-TSDF.

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

Sincerely,

Kerry W. Watson  
CBFO Assistant Manager  
Office of National TRU Program

Enclosure

cc: w/o enclosure  
J. Kieling, NMED  
C. Walker, TechLaw  
J. Bennett, WTS  
P. Roush, WTS  
L. Greene, WRES  
S. Calvert, CTAC  
CBFO M&RC



Waste Stream Profile Number: RF101.31Generator site name: RFETSTechnical contact: Eric D'AmicoGenerator site EPA ID: CO7890010526Phone number: (303) 966-5362Date of audit report approval by NMED: March 9, 2000 as amended February 7, 2001; June 5, 2001; April 8, 2002; August 20, 2002 and August 29, 2002Title, version number, and date of documents used for WAP certification: Rocky Flats Environmental Technology Site TRU Waste Characterization Program Quality Assurance Project Plan, 95-QAPjP-0050, Revision 6, March 2002.

Transuranic (TRU) Waste Management Manual, Revision 5, 1-MAN-008-WM-001, May 2002. Contact-Handled

Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant, Revision 0, May 2002.

Did your facility generate this waste?  Yes  No If no, provide the name and EPA ID of the original generator:**Waste Stream Information<sup>(1)</sup>**WIPP ID: RF-MR0337Summary Category Group: S5000 Waste Matrix Code Group: Combustible WasteWaste Stream Name: TRM Combustible and Plastic Wastes (F001, F002, F005)Description from the WTWBIR: This waste consists of rags, paper, cloth, coveralls, plastic, rubber, and wood.Defense TRU Waste:  Yes  NoCheck one:  CH  RH Number of SWBs 5 Number of Drums 198 Number of Canisters N/ABatch Data Report numbers supporting this waste stream characterization: See Table 7.List applicable EPA Hazardous Waste Codes<sup>(2)</sup>: F001, F002, F005Applicable TRUCON Content Codes: RF 116A, RF 116C, RF 116D, RF 116DF, RF 116E, RF 116EF, RF 116F, RF 116G, RF 116GF, RF 116H, RF 116I, RF 116J, RF 116K, RF 116KF, RF 116L, RF 116M, RF 116MF, RF 116N, RF 116P, RF 116PF, RF 116Q, RF 116R, RF 116RF, RF 116S, RF 116SF, RF 116T**Acceptable Knowledge Information<sup>(1)</sup>****Required Program Information**

- Map of site: Reference List, No. 3
- Facility mission description: Reference List, No. 3
- Description of operations that generate waste: Reference List, Nos. 1, 2, 3, 6
- Waste identification/categorization schemes: Reference List, Nos. 8, 9
- Types and quantities of waste generated: Reference List, Nos. 1, 2, 3, 6
- Correlation of waste streams generated from the same building and process, as appropriate: Reference List, Nos. 1, 2, 6
- Waste certification procedures: Reference List, No. 5

**Required Waste Stream Information**

- Area(s) and building(s) from which the waste stream was generated: Reference List, Nos. 1, 2, 6
- Waste stream volume and time period of generation: Reference List, Nos. 4, 6
- Waste generating process description for each building: Reference List, Nos. 1, 2, 6
- Process flow diagrams: Reference List, Nos. 1, 2
- Material inputs or other information identifying chemical/radionuclide content and physical waste form: Reference List, Nos. 1, 2, 3, 6

Which Defense Activity generated the waste: (Check one) Reference List, No. 3

- |  |   |
|--|---|
| <input checked="" type="checkbox"/> Weapons activities including defense inertial confinement fusion             | <input type="checkbox"/> Naval Reactors development           |
| <input type="checkbox"/> Verification and control technology   | <input type="checkbox"/> Defense research and development     |
| <input type="checkbox"/> Defense nuclear waste and material by products management                               | <input type="checkbox"/> Defense nuclear materials production |
| <input type="checkbox"/> Defense nuclear waste and materials security and safeguards and security investigations |   |

Reviewed For Classification/UCNI

By Y.S. SENESEWICKDate 10 APR 03 (MIA)

OK PUBLIC RELEASE

## REFERENCE LIST

1. Backlog Waste Reassessment Baseline Book, Waste Form 52, Combustibles, November 2002.
2. Waste Stream and Residue Identification and Characterization (WSRIC), Version 7, and archived versions.
3. RFETS TRU Waste Acceptable Knowledge Supplemental Information, RF/RMRS-97-018, Revision 10, August 2002.
4. Waste and Environmental Management System (WEMS) database.
5. Transuranic Waste Certification, PRO-X05-WC-4018, Revision 4, May 2002.
6. Acceptable Knowledge TRU/TRM Waste Stream Summaries, RMRS-WIPP-98-100, Section 7.8, Revision 0, January 2003.
7. GC/MS Determination of Volatile Organics Waste Characterization, L-4111-X, January 2002.
8. Waste Characterization, Generation, and Packaging, 1-PRO-079-WGI-001, Revision 4, May 2002.
9. Waste Characterization Program Manual, 1-MAN-036-EWQA-Section 1.6.1, Revision 3, May 2002.
10. Interoffice Memorandum from Thomas R. Galliffe to Eric L. D'Amico, Headspace Gas Analysis Data Evaluation Report For Waste Stream Profile RF101.31 (TRM Combustible and Plastic Wastes) Lot 1, TRG-019-03, January 2003.
11. Visual Examination for Confirmation of RTR, 4-H80-776-ASRF-007, Revision 5, June 2001.
12. TRU/TRM Waste Visual Verification ( $V^2$ ) and Data Review, PRO-1031-WIPP-1112, Revision 1, June 2002.
13. Real-Time Radiography Testing of Transuranic and Low-Level Waste, 4-W30-NDT-00664, Revision 5, October 2001.
14. Real-Time Radiography Testing of Transuranic and Low-Level Waste in Building 569, 4-I19-NDT-00569, Revision 6, January 2002.
15. Headspace Gas Sampling And Analysis Using An Automated Manifold, L-4231-F, March 2002.
16. Visual Examination for Confirmation of RTR, PRO-1471-VE-771, Revision 0, November 2001.
17. Residue Repack, Building 371; PRO-544-SALTREPACK-371, Revision 5, January 2002.
18. Combustible Residue Repackaging, PRO-823-REPACK-371, Revision 1, March 2001.
19. PRO-1520-Mobile-RTR, Mobile Real-Time Radiography Testing of Transuranic and Low-Level Waste, Revision 0, May 2002.

## Data Summary Report—Table 2: Headspace Gas Summary Data

WSPF # RF101.31

Sampling and Analysis Method (check one):

 100% Sampling Reduced Sampling

2A

ANALYTE <sup>a</sup>	# Samples <sup>b</sup>	Transform Applied <sup>c</sup>	Normality Test (Pass/Fail) <sup>d</sup>	Mean <sup>d</sup> (ppmV)	UCL <sub>90</sub> <sup>d</sup> (ppmV)	RTL <sup>e</sup> (ppmV)	EPA Code <sup>f</sup>
1,1-Dichloroethane	1	Log	Fail <sup>h</sup>	0.35	0.38	10	
1,2-Dichloroethane	1	Log	Fail <sup>h</sup>	0.23	0.28	10	
1,1-Dichloroethylene	1	None	Fail <sup>h</sup>	0.21	0.25	10	
cis-1,2-Dichloroethylene	0			0.199		10	
trans-1,2-Dichloroethylene	0			0.6		10	
1,1,2,2-Tetrachloroethane	0			0.18		10	
1,1,1-Trichloroethane	15	Log	Fail <sup>h</sup>	2.46	5.43	10	
1,1,2-Trichloro-1,2,2-Trifluoroethane	3	Log	Fail <sup>h</sup>	0.78	1.47	10	
1,2,4-Trimethylbenzene	0			0.206		NA	
1,3,5-Trimethylbenzene	0			0.197		NA	
Acetone	11	Log	Fail <sup>h</sup>	8.10	11.97	100	
Benzene	3	Log	Fail <sup>h</sup>	0.41	0.46	10	
Bromoform	0			0.2		10	
Butanol	0			4.362		100	
Carbon disulfide	29	Sq Rt	Pass	12.45	14.93	10	F005
Carbon tetrachloride	10	Log	Fail <sup>h</sup>	1.6	3.25	10	
Chlorobenzene	0			0.185		10	
Chloroform	5	Log	Fail <sup>h</sup>	0.41	0.57	10	
Cyclohexane	4	Log	Fail <sup>h</sup>	0.33	0.44	NA	
Ethyl benzene	1	Log	Fail <sup>h</sup>	0.26	0.34	10	
Ethyl ether	0			0.462		10	
Methanol	11	Log	Fail <sup>h</sup>	11.77	14.20	100	
Methyl ethyl ketone	4	Log	Fail <sup>h</sup>	2.72	3.35	100	
Methyl isobutyl ketone	1	Sq Rt	Fail <sup>h</sup>	1.70	1.88	100	
Methylene chloride	3	Log	Fail <sup>h</sup>	0.39	0.44	10	
o-Xylene	1	Log	Fail <sup>h</sup>	0.24	0.30	10	
m,p-Xylene	3	Log	Fail <sup>h</sup>	0.46	0.67	10	
Tetrachloroethylene	1	Log	Fail <sup>h</sup>	0.19	0.21	10	
Toluene	32	None	Pass	15.77	18.26	72.02 <sup>g</sup>	
Trichloroethylene	0			0.329		10	

## NOTES:

<sup>a</sup> A total of 33 samples were collected and analyzed. Analysis was performed for all analytes identified. Samples were not composited.

<sup>b</sup> Identifies the number of samples in which the associated analyte was detected.

<sup>c</sup> Identifies the type of data transformation used, if applicable, to achieve (or better achieve) a normal probability distribution of the data.

Data Summary Report—Table 2: Headspace Gas Summary Data (continued)

WSPF # RF101.31

2B

TENTATIVELY IDENTIFIED COMPOUND (TIC) CHEMICAL ABSTRACTS SERVICE (CAS) NUMBER	Maximum Observed Estimated Concentrations (ppmv)	# Samples Containing TIC
108-87-2 (Methylcyclohexane)	4.0	5
109-60-4 (n-Propyl acetate)	2.1	1
109-94-4 (Ethyl formate)	3.5	1
109-99-9 (Tetrahydrofuran)	4.1	1
1120-97-4 (4-Methyl-1,3-dioxane)	4.1	1
141-78-6 (Ethyl acetate)	14	2
142-82-5 (n-Heptane)	3.8	2
463-58-1 (Carbonyl sulfide)	13	1
534-22-5 (2-Methylfuran)	2.7	1
589-34-4 (3-Methylhexane)	4.4	8
591-76-4 (2-Methylhexane)	2.1	1
64-17-5 (Ethanol)	34	1
71-23-8 (1-Propanol)	4	1
766-20-1 (2,4-Dimethyl-1,3-dioxane)	4.4	2
79-20-9 (Methyl acetate)	11	3

Did the data verify the acceptable knowledge?  Yes  No

Data as reported in Data Summary Report – Table 2 confirm acceptable knowledge in that no additional EPA codes, other than those assigned by acceptable knowledge, are applicable.

If not, describe the basis for assigning the EPA Hazardous Waste Codes:

**Data Summary Report—Table 7: Correlation  
of Container Identification to Batch Data Reports**

WSPF # RF101.31

Package No.	Radioassay Data Package	Headspace Sample Batch No.	Headspace VOC Data Package	RTR Data Package <sup>a</sup>	VV Data Package <sup>b</sup>
D57381	CIQ-97-012	01W0171	HVOC-DP-00500	6T-2046	
D61134	CPN-01-020	01W0133	HVOC-DP-00459	6T-1793	
D63799	CIQ-01-055	01W0162	HVOC-DP-00491	6T-2015	
D64016	569IP1-DP-040802	02W0040	HGAS-DP-00315	5T-0294	
D64270	CIQ-97-006	01W0154	HVOC-DP-00483	6T-2016	
D67138	CIQ-97-006	01W0142	HVOC-DP-00471	6T-2018	
D67556	CPN-97-003	01W0156	HVOC-DP-00485	6T-2004	
D67639	CIQ-97-020	01W0169	HVOC-DP-00498	6T-2046	
D67647	CIQ-97-002	01W0138	HVOC-DP-00461	6T-2018	
D67649	CIQ-97-005	01W0212	HVOC-DP-00540	6T-2042	
D67898	CIQ-97-006	01W0159	HVOC-DP-00488	6T-2021	
D68171	CIQ-97-020	01W0170	HVOC-DP-00499	6T-2019	
D68781	CIQ-97-001	01W0139	HVOC-DP-00468	6T-2015	
D69182	CIQ-97-017	01W0171	HVOC-DP-00500	6T-2019	
D69516	CIQ-97-009	01W0159	HVOC-DP-00488	6T-2007	
D69638	CPN-97-008	01W0138	HVOC-DP-00461	6T-2047	
D69656	CIQ-97-001	01W0212	HVOC-DP-00540	6T-2041	
D70150	CIQ-97-006	01W0158	HVOC-DP-00487	6T-2014	
D70317	CIQ-97-007	01W0144	HVOC-DP-00472	6T-2068	
D71580	CIQ-97-014	01W0170	HVOC-DP-00499	6T-2055	
D71980	CIQ-97-001	01W0154	HVOC-DP-00483	6T-2021	
D72247	CIQ-97-020	01W0191	HVOC-DP-00516	6T-2042	
D72450	CIQ-97-017	01W0171	HVOC-DP-00500	6T-2018	
D72512	CIQ-97-008	01W0160	HVOC-DP-00489	6T-2007	
D73091	CIQ-97-012	01W0191	HVOC-DP-00516	6T-2042	
D73225	CPN-97-007	01W0191	HVOC-DP-00516	6T-2041	
D74384	CIQ-97-006	01W0138	HVOC-DP-00461	6T-2046	
D74428	CIQ-97-024	01W0158	HVOC-DP-00487	6T-2057	
D74704	569IP1-DP-041902	02W0054	HGAS-DP-00320	5T-0298	
D83076	CIQ-01-051	01W0141	HVOC-DP-00469	6T-2013	
D83382	CIQ-01-058	01W0184	HVOC-DP-00511	6T-1870	
D86594	569IP1-DP-012802	01W0142	HVOC-DP-00471	5T-0282	
S01519	440SH1-DP-040402	03W0002	HGAS-DP-00335		VV-771-00027

**NOTES:**

- <sup>a</sup> No entry indicates container underwent visual verification (VV) at the time of waste packaging using the visual examination (VE) technique.
- <sup>b</sup> No entry indicates container was examined using radiography. Containers that were examined using radiography were candidates for visual examination to confirm radiography; however, none were selected.

7.7 TRM Combustible and Plastic Wastes (F001, F002, F003)

Profile No. RF101.31

**Acceptable Knowledge Waste Stream Summary**

Waste Stream Name: TRM Combustible and Plastic Wastes (F001, F002, F005)

Generation Buildings: Buildings 371, 559, 707, 771, 776, 777, and 779<sup>(5,12)</sup>

Waste Stream Volume (Retrievably Stored): 174 55-Gallon Drums<sup>(5,12)</sup>

Generation Dates (Retrievably Stored): August 1987 - September 2001<sup>(5,12)</sup>

Waste Stream Volume (Newly Generated): 24 55-Gallon Drum and 5 Standard Waste Boxes<sup>(5,12)</sup>

Generation Dates (Newly Generated): October 2001 - September 2002<sup>(5,12)</sup>

Waste Stream Volume (Projected): None<sup>(12)</sup>

Generation Dates (Projected): None<sup>(12)</sup>

TRUCON Content Codes<sup>(1)</sup>: RF 116A, RF 116C, RF 116D, RF 116DF, RF 116E, RF 116EF, RF 116F, RF 116G, RF 116GF, RF 116H, RF 116I, RF 116J, RF 116K, RF 116KF, RF 116L, RF 116M, RF 116MF, RF 116N, RF 116P, RF 116PF, RF 116Q, RF 116R, RF 116RF, RF 116S, RF 116SF, RF 116T

Process Knowledge Demonstrates Flammable VOCs in Headspace < 500 ppm: No (see Sec. 7.8.6)

7.8.1 WIPP Transuranic Waste Baseline Inventory Report Information<sup>(2)</sup>

WIPP Identification Numbers: RF-MR0337

Summary Category Group: S5000 Waste Matrix Code Group: Combustible Waste

Waste Matrix Code: S5390 Waste Stream Name: Combustibles/TRM

Description from the WTWBIR: This waste consists of rags, paper, cloth, coveralls, plastic, rubber, and wood.

7.8.2 Waste Stream Description

This waste is generated by similar activities, and is similar in material, physical form and hazardous constituents and therefore is considered a single waste stream. TRM combustible and plastic wastes assigned EPA hazardous waste numbers F001, F002, and F005 consists of dry combustibles, wet combustibles, and plastic. Table 7.8-1

*IDC 337, Plastic:* Plastics may include polyvinyl chloride (PVC) sheeting, poly bottles, supplied air suits, polyethylene, and other plastics. Plastics are assigned IDC 337 at the point of generation and may change to IDC 825 or 833 following radioassay to designate them as being TRU waste or TRM waste. Some containers in this waste stream may be assigned IDC 825 because F-listed solvent VOCs were detected in the headspace gas but are being managed as non-mixed waste until the waste is ready for off-site shipment at which point the EPA hazardous waste numbers are applied (refer to Section 7.8.5). This IDC includes containers originally assigned to a combustible IDC that was reassigned because RTR inspection of the containers identified more than 50% plastic, by weight.<sup>(4)</sup>

### 7.8.3 Areas of Operation

TRM combustible and plastic wastes assigned EPA hazardous waste numbers F001, F002, and F005 are generated by the following defense operations in Buildings 371, 559, 707, 771, 776, 777, and 779.<sup>(3,4,5,6,7,8,9,10,12)</sup>

- Laboratory Operations
- Waste and Residue Repackaging and Treatment
- Decontamination and Decommissioning Operations (D&D)

### 7.8.4 Generation Processes

This waste stream includes combustible and plastic wastes assigned EPA hazardous waste numbers F001, F002, and F005 generated primarily from analytical laboratory operations, but also includes combustible and plastics from waste and residue repackaging and treatment operations and D&D operations.

TRM combustible and plastic wastes assigned EPA hazardous waste numbers F001, F002, and F005 in inventory were primarily generated from analytical laboratory operations in Buildings 371, 559, and 771. The laboratories provided sampling and analysis support for production activities. In addition, the laboratories supported recovery and purification, liquid waste treatment operations, and research and development operations. The Building 371 Laboratory also screened samples for radioactivity content prior to analysis in the Building 559 (high radioactivity) or Building 881 (low radioactivity) laboratories, and served as a backup facility for the Building 771 laboratory. Building 559 housed the laboratory responsible for spectrochemical, chemical, and mass spectrometric analyses of samples from plutonium production operations. Uranium, Raschig rings, solutions, waste samples, and commercial product and gas samples were also analyzed in the laboratory. Plutonium production samples, including metal and oxide, were prepared and subdivided for analysis in the sample cutting process. Processes that utilized solvents for sample extraction and cleaning included infrared analysis, gas chromatography/mass spectrometry, Karl Fischer coulometric titration, and atomic absorption.<sup>(3,4)</sup>

Historical solid waste treatment and repackaging operations were conducted in Building 776. Combustibles and plastics, including those from historical laboratory



Combustible and plastic wastes from laboratory operations may be contaminated with trace quantities of toxicity characteristic metal and organic compounds. These constituents are present as contaminants in materials sampled, or used in small quantities in the laboratory operations. Based on this process knowledge, and analytical data from comparable waste streams (i.e., analytical data from sampling of combustibles and plastics from the Building 881 low-level radioactive laboratory operations), combustible and plastic wastes from these operations do not exhibit the characteristic of toxicity for RCRA metal or organic compounds.<sup>(4)</sup>

The solid waste repackaging and treatment processes in Building 776 did not use hazardous constituents. The F001, F002, and F005 assigned to combustibles and plastics from these processes are derived from the EPA hazardous waste numbers assigned to the waste that was treated and/or repackaged.<sup>(4)</sup>

The ash and sludge residue repackaging processes did not use hazardous constituents. The F001, F002, and F005 assigned to secondary combustibles and plastics from these processes are derived from the EPA hazardous waste numbers assigned to the sludge and ash materials. Based on the small quantity of ash and sludge on combustible and plastic wastes generated from the repackaging operations, and analytical data from sampling of the ash and sludge, these materials do not exhibit a characteristic of hazardous waste.<sup>(6,7)</sup>

Hazardous constituents are not used for D&D of the waste and residue repackaging and treatment gloveboxes and equipment. The F001, F002, and F005 assigned to combustibles and plastics from these D&D operations are derived from the EPA hazardous waste numbers assigned to materials handled in these gloveboxes.<sup>(6,7,8,9,10)</sup>

This waste stream also includes containers generated in Buildings 371, 707, 771, 776, and 779 that were originally assigned to a different waste stream by acceptable knowledge (AK), but were subsequently segregated into this waste stream after completion of headspace gas sampling/analysis. EPA hazardous waste numbers F001, F002, and/or F005 were added to this waste because detectable concentrations of these listed VOCs were found in the container headspace.<sup>(4)</sup>

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

Beryllium parts were used in the manufacture/assembly of weapons components, and residual beryllium contamination of plutonium parts may have occurred. Combustibles and plastics associated with these operations may have been contaminated with beryllium and therefore, trace quantities of beryllium may be present in the waste

02/13/03

Table 7.8-2, Combustible and Plastic Wastes (F001, F002, F005) Radionuclides

IDC	Description	Radionuclides <sup>1</sup>	Rationale
330 821 831	Dry Combustibles	WG Pu, Am-241, DU, EU, Np-237, Am-243	IDC generated in nearly every TRU building; radionuclides dependent on generation process
336 822 832	Wet Combustibles	WG Pu, Am-241, DU, EU, Np-237, Am-243	IDC generated in every TRU building; radionuclides dependent on generation process
337 825 833	Plastic	WG Pu, Am-241, DU, EU, Np-237, Am-243	IDC generated in nearly every TRU building; radionuclides dependent on generation process

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

Notes:

1. Am-243 was not initially predicted to be present by AK; however, it has been identified by NDA and is therefore added as a potential radionuclide in this waste stream.