WASTE ANALYSIS PLAN

NASA GODDARD SPACE FLIGHT CENTER
WALLOPS FLIGHT FACILITY
WALLOPS ISLAND, VIRGINIA 23337

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1.0 INTRODUCTION

Generators of solid waste are required to determine whether solid wastes are hazardous by using analytical testing or by applying knowledge of the waste generating process, per 40 CFR 262.11. In addition, generators must keep records of any test results, waste analysis data, or other determinations used to characterize hazardous waste (HW), per 40 CFR 262.40. The Wallops Flight Facility (WFF) Waste Analysis Plan presents a brief overview of typical WFF waste streams, provides guidelines for annual testing and analysis of the waste streams, and establishes a system for maintaining waste analysis records on site.

1.1 Facility Description

The WFF is located in Accomack County, Virginia, on the Atlantic Coast of the Delmarva Peninsula. It is located approximately 145 kilometers (90 miles) north of Norfolk, Virginia, and is comprised of three separate landmasses: Wallops Main Base, Wallops Mainland, and Wallops Island.

Since 1945, the WFF has been responsible for planning and launching scientific payloads, sounding rockets, and various other test vehicles. NASA operates a vehicle maintenance shop, several paint booths, fabrication shops, machine shops, a digital photography studio, antennae and radars, a grounds maintenance shop, a chemistry laboratory, cafeteria, office buildings and custodial services. NASA also operates an airfield with three active runways, and has host-tenant agreements with the U. S. Navy, the U. S. Coast Guard, and the National Oceanic and Atmospheric Administration (NOAA).

2.0 WASTE STREAMS

WFF authorizes and inspects each area that accumulates waste in a container regardless of whether the waste is hazardous or nonhazardous. These areas are designated satellite accumulation areas (SAA).

2.1 Satellite Accumulation Areas

Table 2.1 lists the various SAAs, waste streams, waste generating processes, and waste codes associated with each waste stream at WFF. This table which is updated frequently is only meant as a guide. The most current version of this table can be found on the Environmental Office Shared Drive (E:35.01.01.2710). Please refer to the waste profile generated for each bulk waste stream for more specific information. Waste profiles are discussed in greater detail in Section 2.2.

Table 2.1 WFF Satellite Accumulation Areas

Bldg	POC	NASA SUPER	Type of area					Codes	Description
			HW	Oil/Oily rags	Universal	Project	Parts Washer		
A1 301	Justin Benner 1306				●			UW	Batteries (1x5G)
A41 100 and 101	Dan Rothwell 1207 Zach 1406	840 Robert Jameson	●					D008, D001	Solder (1 can, room 100), Aerosol cans (1x5G room 101),
A41A	Dan Rothwell 1207	840 Robert Jameson		●		●		Non	Hydraulic oil from antenna changes(project), oily rags (1x5G)
B29 Cage	Rodney Godwin	228 Don Lilly	●					D001	Aerosols from locating (1x30G)
B31 102 GM	John Conquest 1485	228 Don Lilly		●				Non	Used oil from mowers (1x55G), Oily rags (1x55G)
B31 101	Chuck Amrhein 1430	840 Robert Jameson		●					Oily rags (1x5G)
B129 101	Tim McCready 1508	803 Carolyn Turner	●	●	●			D001F002 F003, D001,UW, Non	Solvent rags (3x5G), Aerosols (1x5G), Batteries (1x5G), Used oil(1x5G)
C15 102	Blake Tomlinso n 7028	830 Rich Rogers	●					D001, D001 F001, F003 F005	Aerosols (1x5G), Solvent rags (1x5G)
C15 103	Billy Young 1939 Robert Windsor	228 Don Lilly	●				●	D001, F001 F003 F005, Non	Aerosols (1x5G), Solvent rags (1x30G), Simple green partswasher
D1 Hangar	Blake Tomlinso n 7028	830 Rich Rogers	●	●				D001, Non, D001, D001	Jet A (1x5G), Used Oil(1x55G), Solvent rags (1x30G, 2x55G), Aerosols (1x20G), Flamm Labpacks (1x5G)
D1 2nd flr N kitchen	Jennifer Neeb 1233	830 Rich Rogers			●			UW	Batteries (1x5G)
D50 108 Garage	Bobby Wilt 1083	228 Don Lilly	●	●				D001 F001 F003 F005, Non	Solvent rags with methylene chloride, TCE, toluene, xylene, (1x5G) Used oil from maintenance at FOTW (1x55G)
E2 N110	Dean Morris 1362	840 Robert Jameson			●			UW	Batteries (1x5G)

Bldg	POC	NASA SUPER	Type of area					Codes	Description
			HW	Oil/Oily rags	Universal	Project	Parts Washer		
E2 C150	Chris Perry 2275	840 Robert Jameson	●					D001 F001 F003 F005	Solvent rags (1x5G), 1X5G USED OIL
E2 N125A	Matt Griffin 1382	840 Robert Jameson	●					D008, D001	Solder, (1 can) Alcohol rags (1x5G)
E2 N117	Dean Morris 1362	840 Robert Jameson	●					D008, D001	Solder (1 can), Alcohol rags (1x5G)
E104 100	Susan Rodgers 2391				●			UW	Batteries (1x5G)
E106 Room 101	Steve Annis 1542	840 Robert Jameson			●			UW	Batteries (1x5G)
E107 206 2nd Fl Kit	Roland Wescott 1624	803 Carolyn Turner			●			UW	Batteries (1x5G)
E109 170	Tom Gadson 1080	598	●		●			D008, D001, UW	Solder (3 cans), Aerosols (1x5G), Batteries (1x5G)
E109 144	Gabe Garde 2598 Nathan Cordrey	548			●			UW	Batteries (1X5G)
E109 149	Gabe Garde 2598 Nathan Cordrey	548	●					D001	acetone (1x5G)
E109 152	Gabe Garde 2598 Nathan Cordrey	548	●		●			D001, F002, F003, F005, D008	Acetone/epoxy rags (1x5G)
E109 272	Alex Coleman 1976	569 Lissette Martinez	●		●			D001 D008, UW	Alcohol wipes solder rags (1x5G), Batteries (1x5G), Solder (1 can)

Bldg	POC	NASA SUPER	Type of area					Codes	Description
			HW	Oil/Oily rags	Universal	Project	Parts Washer		
E109 273	Alex Coleman 1976	569 Lissette Martinez	●		●			D001 D008, UW, D008	Alcohol wipes solder rags (1x5G), Batteries (1x5G), Solder(4 cans)
E109 276	Ricky Satterfield 1877	840 Robert Jameson	●					D001, D008,	Alcohol wipes (1x5G), Solder (2 cans)
F5 Dining	Debbie Toth 1697	200						Non	Alkaline batteries
F6 211	Rebecca Chew 1275	802 Gary Letchworth						Non	Alkaline batteries
F7 140	Steve Lang 1490	598	●					D001 F001 F003	Methylene Chloride, Acetone and MIBK rags (2x5G)
F7 141	569 Con Duer 1189	569	●					D008	Solder (can)
F10 machine shop 10SAA	Logan Wright 854-4621 Harold Farrington 1239 Robert Windsor 854-7564	810	●	●			●	D001 F003, Non, Non	Acetone alcohol rags (10 x5G), Nonhaz cutting fluid (1x55G), Used oil (1x55G)
F10 machine shop	Logan Wright 854-4621 Harold Farrington 1239 Robert Windsor 854-7564	810	●					D006	Blast grit from machine shop for rocket assembly (1x55G)
F10 machine shop (outside stockroom)	Ryan McCready 2462	810	●		●			UW, D001	Nicad batteries (1x5G, Aerosols (1x5G)
F10 S130	Harold Farrington 1239	810 e	●					D001F003F005 D035	Acetone rags alcohol rags (1 x5G)
F10B	Charlie Cathell 2461	810	●					D001 F003F005, D001 F003F005	Petroleum naptha, toluene, n-Butyl alcohol from cleaning paint gun (1x30G), rags associated with above (1x20G)
F10 S144	Charlie Cathell 2461	810	●					D001 F003	Acetone oily rags (1x5G)

Bldg	POC	NASA SUPER	Type of area					Codes	Description
			HW	Oil/Oily rags	Universal	Project	Parts Washer		
F10 S264 mezzanine	Melissa Waterfield 1842	810	●					D008, D001F003	Solder (5 cans), Alcohol,acetone solder rags (1x5G)
F10 N111	Melissa Smith 1842 Logan Wright 854-4621	810	●					D001 F003 D008, D008	Acetone solder rags (1x5G), Solder (3 cans)
F10 W100	John Doughty 1866	810	●					D008, D001 F003	Solder (2 cans) Alcohol acetone rags (1x5G),
F10 N101	John Doughty 1866	810	●					D008, D001 F003	Solder (1 can), Alcohol acetone rags (1x5G)
F10 N103	John Doughty 1866	810	●					D008, D001 F003 D008	Solder (1 can), Solder alcohol, acetone rags (1x5G)
F10 N103A	Andrew Muesler 1830	810	●					D008	Solder (1 can)
F10 N130 and N130A ACS 2SAA	Tim Wilson 1100 Terri Snyder 2181	810	●					D008, D001 F003 D008,D001, Non	Solder (2 cans), Alcohol acetone lead rags (1x5G) , Isopropanol (1x5G), Branson (1x5G)
F10 N125 Env/T&E 4SAA	Rob Marshall 1431	810	●					D001 F003	Alcohol acetone rags (4x5G)
F10 N119	Rob Marshall 1431	810	●	●				Non, D001 F003, D001D008	Used oil (1x5G), Alcohol acetone rags (2x5G), Aerosols(1x5G), Solder(1 can)
F10 N203	Scott Blake 1042	810	●					D008	Solder (1 can)
F10 N213	Scott Blake 1042	810	●					D008	Solder (1 can)
F10 N230, N234, N235, N236 5SAA	Terri Snyder 2181	810	●					D001 D008 F003, D008	Alcohol solder rags(1x5G N230), Solder (1 can each room)
F10 W302	Tim Sherman 1187	810	●		●			D001 F003, UW, D008, D001	Alcohol acetone, wipes from circuit board for rockets, (2x5G) Nicad batteries(1x5G), Solder (13 cans), Aerosols(1x5G)

Bldg	POC	NASA SUPER	Type of area					Codes	Description
			HW	Oil/Oily rags	Universal	Project	Parts Washer		
F10 W301	Tim Sherman 1187	810	●					D001 D008 F003, D008	Solder paste and wipes alcohol, acetone (2x5G), Solder (5 cans)
F10 W301A	Tim Sherman 1187		●					D001 D008	Solder paste and wipes alcohol, acetone (1x5G)
F10 W301B	Tim Sherman 1187		●					D008	Solder (2 cans)
F29 Shed	Harold Farrington 1239	810		●				Non	Oily rags (1x5G)
F16 128 Garage 3SAA	Gene Merritt 1939	228 Don Lilly	●	●			●	Non, D001D018, Non, D001 F003 F002F005, D008, D001, UW, D008, D006	Used oil (1x55G), Fuel filters(1x5G), Nonhaz PW, Solvent rags (tetrachloroethane, Bladeen) (1x55G), Lead tire weights (1x5G), Aerosols (1x5G), Batteries (1x5G), Solder (1 can)
F16 106 Electric Shop	Phil Crofton 1446	228 Don Lilly	●		●			UW, D001 F001 F003, D001, Non	Lamps (1x4', 1x8') U tubes (1x4') CFL (1x5G), Batteries (1x5G),Solvent rags (1x5G), Aerosols (1x5G) Lead acid batteries
F16 105 ECS Shop	Phil Crofton 1446	228 Don Lilly	●					D008	Solder (1 can)
F16 103 AC Shop	Prestine Crosby 1753	228 Don Lilly	●	●	●			Non, D001F002 F003 F005, UW, D001	Refrigerant oil (1x55G), Rags contaminated with TCE, petroleum distillates (1x30G), Batteries (1x5G), Thermostats from change-outs(1x5G), Aerosols(1x5G)
F16 124 Paint Shop	Gene Merritt 1939	228 Don Lilly	●					D001 D035 F003 F005, D001 D035 F003 F005	Paint related materials thinner (1x5G), Paint rags (1x5G), Aerosols (2x5G)
F26	Lenell Reid	270	●					D001	Aerosols (1x55G)
F-160 C125	Ed Woodring 2368 Daniel Simes	569 Lissette Martinez	●		●			D001, UW	Alcohol wipes (1x5G), Batteries (1x5G)
F160 C107	Susan Savage 2183	840 Robert Jameson	●					D001 D008, D008	Alcohol solder rags(1x5G), Solder (10 cans)

Bldg	POC	NASA SUPER	Type of area					Codes	Description
			HW	Oil/Oily rags	Universal	Project	Parts Washer		
F160 C120	Susan Savage 2183 Ralph Hickman	840 Robert Jameson	●					D001	Alcohol (1 x5G)
F160 E114	Jason Freischlag 2352	250 TJ Meyer	●					D001 F003	Jet Fuel /Acetone rags (1x 5G)
F160 E115	Jason Freischlag 2352	250 TJ Meyer	●	●	●			D001, D001 F003, UW, D009	Fuel samples, oil + ethanol (1x5G), JP8, JetA, oil, ethylene glycol, IPA, solvent rags, acetone rags (1x5G), Batteries (1 can), Thermometers (1 can)
F160 E113	Jason Freischlag 2352	250 TJ Meyer	●					D001 RCRA 8 metals , D002, RCRA 8 metals	Oil alcohol and possible metals from ICP analytical machine (1x5G) Acid and possible metals from ICP analytical machine (1x5G)
F160 E110	Brian Cornwell 1155	250 TJ Meyer	●					D001 F003	Acetone rags (1x5G)
F160 E108	Brian Cornwell 1155	250 TJ Meyer	●					D002 D007 D009 D011, D001 F003	COD vials containing sulfuric acid, mercury sulfate, Silver sulfate, chromic acid(1x5G) Acetone, alcohol rags (1x5G)
F160 W148	Lari Ann Gentry 1766	250 TJ Meyer			●			UW	Batteries I1x1qt)
H-100 105	Joe Ruffing 1255 757-894-6028	548 Jerome Sterling			●	●		UW	Batteries (1x5G)
H-100 101	Joe Ruffing 1255 Jeff Matthews 757-894-9883	548 Jerome Sterling	●					D001F002 F003 F005	Solvent rags from processing Cygnus (2x5G)
J-20 Hallway	Kim Check 1148							NON	Alkaline battery 1x small can
M15 104	Larry Rovin 1112	810 Emmett Ransone	●					D001F002 F003 F005, UW	Alcohol acetone rags/ Ensolve rags(1x5G), UW batteries (1x5G)

Bldg	POC	NASA SUPER	Type of area					Codes	Description
			HW	Oil/Oily rags	Universal	Project	Parts Washer		
M15 108	Larry Rovin 1112	810	●					D001	Aerosols (2x5G), Alcohol acetone rags/ Ensolve rags(1x5G)
M16 104	Larry Rovin 1112	810	●			●		F002 F003 D001	Alcohol acetone rags (1x5G),
M-16 102	Larry Rovin 1112	810	●		●				Aerosols(1x5G), UW batteries (1x5G)
N-159 Hangar (5 SAA)	Ed Townsend 4610	830 Rich Rogers	●	●			●	D001F003 F005 D035, Non; D001	Solvent rags (3x55G), Oil (2x55G), Aerosols (1x5G)
N-159 W143	Ed Townsend 4610	830 Rich Rogers			●			UW	Batteries(1x5G)
N159 W142	Gary King 1038	610 Dave Wolff	●					D008	Solder (1 can)
N159 PB	Ed Townsend 4610	830 Rich Rogers	●					D001D035F003 F005, D001D035F003 F005, D001	Paint Rags(1x5G), Paint Thinner(1x5G), Aerosols(1x5G)
N-159 E106	Matt Linkswile r 1020 Kyle Krabill 1432	610 Dave Wolff	●		●			UW, D008	Batteries (1x5G), Solder (1 can)
N-159 E108	Ed Townsend 4610	830 Rich Rogers	●					D008	Solder (1 can)
N159 E113	Gary King 1038	610 Dave Wolff	●					D008	Solder (1 can)
N-159 E114A	Ted Miles	610 Dave Wolff	●					D008	Solder (1 can)
N-159 E121	Rhonnie Wolffe 2029	610 Dave Wolff	●					D008	Solder (1 can)
N161 Hall	Ginger Lamberso n 1136	228 Don Lilly			●			UW	Batteries (1x5G)
N162 Rm 104	Bob Ross 2371	840 Robert Jameson	●		●			UW, D008	Batteries (1x5G), Solder (1 can)
N162 Rm 114	Janel Strand 1621	840 Robert Jameson			●			UW	NiCad batteries from antennae controls change-outs(1x5G)
N162 Rm 115	John VanKleef 1447	840 Robert Jameson	●					D008	Solder (2 cans)

Bldg	POC	NASA SUPER	Type of area					Codes	Description
			HW	Oil/Oily rags	Universal	Project	Parts Washer		
N162 Rm 202	Jim Evans 1509	840 Robert Jameson	●					D008, D001	Solder (1 can), Alcohol rags (1x5G)
N162 Rm 203	Jim Evans 1509	840 Robert Jameson	●					D008	Solder (1 can)
N165	William Kambarn 1260	840 Robert Jameson	●	●	●		●	Non, Non, D001 F003 F005 D035,UW, D001	Used oil from antenna changes(1x55G), PW Nonhaz, Solvent rags(1x30G), Batteries (1x5G), aerols (1x5G)
U25	Ray Davis 2630	840 Robert Jameson	●	●				D008, Non, D001	Solder (1 can), Oily rags (1x20G), aerosols (1x5G)
U30 100, 110	Ray Davis 2630	840 Robert Jameson	●	●				D008, UW, Non	Solder (1 can), Batteries (1x5G), Oily rags (1x55G)
U40 107	Tom Singer 2611	840 Robert Jameson	●		●			D001 F003 F005, D008, D001	Rags with oil, grease, CRC 2-26, CRC3-36, alcohol, crud cutter; (1x30G), Solder(1 can), Aerosols (1x5G), Nicd batteries, Lithium batteries and alkaline batteries (3 cans total)
U55	William Wallace 2751	840 Robert Jameson	●					D008, non	Solder(1 can), Alkaline batteries(1x1qt), Oily rags (1x5G)
U70, U72	Bill Dize 2789	840 Robert Jameson	●	●	●	●		Non, D008, UW	Used oil (1x5G),Solder(1 can room 101), Nicd batteries (1x5G)
V27 Fire truck bat	Capt. On duty			●				Non	Alkaline batteries 1x5g, 1x5g oily rags, 1x5g grill grease
V-55	Mark Macaione 894-9866 Michael Fields	840 Robert Jameson	●			●		D001	Alcohol rags(1x55G)
ASR 8 (near V66)	Kevin Downing 2858 Norm Reasonover	840 Robert Jameson	●	●				Non, D008	Used oil (1x55G), Oily rags (2x5G), Solder (1 can)
W15	Kevin Midder 824-6578			●				Non	Used oil (1x55G)
W40	Mick Sharpe 1418	840 Robert Jameson	●		●			UW, D001, D008, D001 F003 F002 F001 F005 D035	Batteries(1x5G), Aerosols(1x5G), Solvent rags (1x30G) solder (1 can)
X15	David Justice 1753		●					D001F002F003	Solvent rags (1x30G)

Bldg	POC	NASA SUPER	Type of area					Codes	Description
			HW	Oil/Oily rags	Universal	Project	Parts Washer		
X30 Hood Room	Mark Marsh 2133		●					D001 F003 F005 D035, D001 F003 F005 D035, D001 F003 F005 D035, non	Thinner(1x5G), Paint rags(1x55G), Spray gun clean (1x5G), Blast grit
X35 100	Adam Mason 2133	840 Robert Jameson	●	●				Non, D001 F003 F005 D035, D001	Used oil (1x5G), Solvent rags (1x55G), Aerosols(1x 5G) from launcher maintenance
X55 106	Justin Revell 2607	840 Robert Jameson			●			UW	UW batteries
X79 Bay and logistics	Barbara Huffman 824-6520 Kevin Midder 824-6578 Chris Spiva 6580		●	●	●			Non,UW,D001, D001 F003, D001, Non,	UW batteries (1x5G logistics area), Flamm Lab packs (1x5G), Acetone, alcohol, and AK225 rags (1x30G), Aerosols (1x5G),
Y55 101/200 2SAA	Charles Knitter 2653	840 Robert Jameson	●	●				D008, F002F003 F005 D035, Non	Solder(1 can room 200), Rags with crc 226 paint simple green IPA oil grease (1x5G), Used oil (1 x5G)
Z65	Darrell Gheen 757-894-7900 321-544-1635	Shawn Mulligan @vaspace.org			●			UW	Batteries (1x5G)
Z40	Daryl Moore Cell: 540-450-4044	Shawn Mulligan	●		●			D001, D001 F002 F003 F005, D008, Non, UW	Aerosols(1x5G), Solvent rags(1x10G), Solder (1 can), Blast grit (1x20G), Batteries (1X5G)
Temporary HSWFR			●					D011	Silver Solder
Less–than-90-day-Accumulation-Area at B-29, U-81, and N-223 Treatment area at the Open Burning Area. OB records stored at X-55. Source: Environmental Drive: \\35.01.01.2710									

2.2 Waste Profiles

Waste profiles contain physical and chemical information necessary for storage, transportation, and disposal of waste. Generator knowledge is the primary source of waste profile information. However, field tests and laboratory analyses are used to supplement generator knowledge and verify profile information. WFF generates waste profiles for all bulk waste streams. In addition, each hazardous waste transporter, broker, or disposal facility may require profiles in their own company format. All profiles generated by offsite contractors are approved by a NASA federal employee. All active profiles are verified and updated at least annually.

All profiles and all Land Disposal Restriction (LDR) notices will list all constituents the waste is reasonably expected to contain including those listed in 40 CFR 268.48. The definition of a Underlying Hazardous Constituent (UHC) found at 40 CFR 268.2 reads: "UHC means any constituent listed in 268.48, Table Universal Treatment Standards (UTS), except fluoride, selenium, sulfides, vanadium, and zinc, which can reasonably be expected to be present at the point of generation of the hazardous waste at a concentration above the constituent-specific UTS treatment standards. Only waste codes in the Treatment Standards Table found at 40 CFR 268.40 that have the following statement in their treatment standard: "…and meet 268.48 standards" must be treated for UHC. Only some characteristic waste codes and none of the listed waste codes require treatment for UHC.

All WFF waste profiles are located electronically in the folder E:35.01.03. PROFILES.

2.3 Hazardous Waste Management Units

WFF does operate one Hazardous Waste Management Unit (HMU) on Wallops Island. This unit is an Open Burning Area used for the thermal treatment of waste rocket motors. WFF has a separate Waste Analysis plan for this area: therefore, waste generated from this process is not discussed in this plan.

Neither Central Accumulation Areas nor SAAs are considered HMUs; however, hazardous waste flow from one area to another would be as follows:

> Hazardous waste generated at a satellite area is moved from the SAA before 55 gallons is reached and before the container is full. Hazardous waste is also removed if the generator has completed a process and does not intend to accumulate 55 gallon or fill the container. Hazardous waste which meets any of the previous conditions must be removed from the SAA within three days. From the SAA, waste is temporarily stored for less-than-90-days at Building B-29 on the Main Base or Building U-81 on the Mainland or Wallops Island. All hazardous waste sent off site will be transported via a licensed hazardous waste transporter, in DOT approved containers, and accompanied by a manifest and land disposal restriction notification which lists the applicable treatment standard.

3.0 WASTE SCREENING

To ensure that wastes are properly identified and managed, the nature of all waste streams are verified visually, through generator interview, through Safety Data Sheet (SDS) and/or by comparison to existing profiles prior to acceptance.

Generator knowledge is the primary source of information for determining whether or not a waste is hazardous. If the waste is expired or otherwise unused material, the manufacturer's SDS is usually a sufficient source of information. Waste resulting from a specific generating process requires more detailed information from the generator. In all cases, the *Hazardous Waste Disposal Inventory (HWDI) Form (GSFC 23-54)* will act as the official record of generator knowledge. Information for all containers of accepted waste is entered on the HWDI and transferred to a database.

3.1 Unknown Wastes

In the event that unknown wastes are discovered, steps should immediately be taken to determine the generator. Even if the exact nature of the waste is unknown, knowledge of its place of origin can greatly aid in characterizing the waste.

For any unknown waste without generator or process knowledge, characterization sampling will be performed by the hazardous waste disposal company. Until a chemical analysis is available, keep unidentified materials at original location

If it is absolutely necessary that the container be moved, appropriate safety precautions must be followed. Once relocated, the unknown material would be stored with low hazard materials (within the HW storage facility) or in a clean (no spill residue), empty storage area. **Do not store unidentified materials with flammable, combustible, reactive (including corrosive), or toxic materials.**

When laboratory results are returned, complete a HW profile (see Section 2.2 Waste Profiles) based on information from the chemical analysis. Properly label and classify for storage the unidentified material.

4.0 ANALYTICAL PARAMETERS AND CHARACTERISTICS

In order to maintain current analytical data on routinely generated hazardous wastes and to provide a procedural mechanism for the identification of uncharacterized wastes, waste streams are tested annually. Each year, wastestream sampling frequency and parameters are planned using Table 4.0 as a guide

Table 4.0 Analytical Parameters

Material	Test Parameters	Characterization
waste paint-related material (solids)	TCLP Metals, Flash point	Material may contain toxic levels of metals, including lead and chromium. May also contain solvents such as MEK and Acetone.
waste paint thinner, solvents	Flash point, TCLP Metals, Total Organic Halogins (TOX), Volatile Organics (SW-846, Method 8240)	High concentrations of solvents may characterize material as ignitable. Material may contain toxic levels of lead/chromium or other metals. High levels of halogenated organics as determined by TOX and 8240.
used oil	Flash point, TOX, TCLP Metals	Sample used oil for high solvent levels via flash point and TOX. TOX must be $\leq$ 1000 ppm. Metal levels must be below EPA standards if TOX is exceeded.
soil/debris from petroleum spill clean-up	BTEX (5030/8020), TPH (418.1), TCLP Metals, TOX	TCLP metals, BTEX, TPH, and TOX must be below EPA and Virginia standards.
waste sandblaster/bead blaster grit	TCLP Metals	Material may contain toxic levels of metals, including lead and chromium. Metal levels must be below EPA standards.
waste cutting fluid	Flash point, TOX, Volatile Organics (8240), TCLP Metals	Sample cutting fluid for high solvent levels via flash point, TOX, and 8240. Metal levels must be below EPA standards.
waste jet fuel (Jet A, JP-8, JP-10,)	Flashpoint, TCLP Metals, TOX	High concentrations of solvents may characterize material as ignitable. Material may contain toxic levels of lead/chromium or other metals. High levels of halogenated organics as determined by TOX and 8240.

4.1 Analysis Requirements

RCRA wastes are characterized by Ignitability, Corrosivity, Toxicity, and Reactivity as described below.

1. Ignitability
   Waste is considered to be ignitable if the flash point is <140°F as defined in 40 CFR 261.21. A flash point test will be performed at least annually on ignitable waste by the Pensky-Martens Closed Cup Method (SW-846, Method 1010) or Setaflash Closed Cup Method (SW-846, Method 1020) to determine if the ignitable characteristic is applicable.

2. Corrosivity
   Waste is considered to be corrosive if it is aqueous and has pH ≤ 2 or ≥ 12.5 as defined in 40 CFR 261.22. Corrosive waste will be tested for pH (SW-846, Method 1110) at least annually to determine if the corrosive characteristic is still applicable to the waste stream.

3. Toxicity
   Toxic Characteristic Leach Procedure (TCLP), as defined in 40 CFR 261.24, is designed to determine the mobility of organic and inorganic contaminants in liquid, solid and multiphase waste. If the direct analysis of the waste demonstrates that individual contaminants are not present in the waste, or that contaminants are present at such low levels that regulatory thresholds are not exceeded, then the TCLP is not required.

4. Reactivity
   A solid waste exhibits the characteristic of reactivity if a representative sample of the waste has any of the following properties as defined in 40 CFR 261.23:

   - Normally unstable and readily undergoes violent change without detonating;
   - Reacts violently with water;
   - Forms potentially explosive mixtures with water;
   - Generates toxic gases when mixed with water;
   - Is a cyanide or sulfide bearing waste which, when exposed to pH conditions between 2 and 12.5, can generate toxic gases;
   - Is capable of detonation or explosive reaction/decomposition.

5.0 SAMPLING PROTOCOL

All liquid bulk waste streams which are not characterized by a SDS will be sampled annually. Liquid waste streams have the greatest possibility to vary (ex. improper mixing) or spill, causing environmental liability. One sample per drum and partswasher will be taken for each 10 55-gallon drums disposed of or recycled offsite during the year. Non bulk liquid waste streams such as outdated chemicals which do not have a SDS will be sampled on a case by case basis.
All solid bulk waste streams (industrial waste), which could reasonably involve characterization error, will be sampled annually. Solid bulk waste streams could be inadvertently contaminated

by solvents. One sample per drum will be taken for each 10 55-gallon drums disposed of or recycled offsite during the year. Non bulk solid waste streams such as outdated chemicals which do not have a SDS will be sampled on a case by case basis.

Universal wastes and manufactured articles for disposal or recycle will be sampled on a case by case basis.

5.1 Sampling Equipment and Sample Containers

The physical state of the sampled wastes varies to include dry solids, wet solids, slurries, and liquid materials. Specific sampling techniques will be employed for each type of material handled so that proper characterization of the waste occurs. Sampling device specifications, as well as appropriate sampling device decontamination procedures, are outlined in work instructions. Solids utilize composite sampling techniques and liquids will utilize grab sampling techniques.

In order to ensure proper characterization of wastes, appropriate sample containers will be selected, depending upon the nature of the sample and type of analysis required.
The following list represents the standard container types to be utilized for sampling:

1. Amber glass bottles (1 liter) - used for extractable analyses of liquid samples (TOX, TOC, etc).
2. Volatile Organic Analysis (VOA) vials, liquid - two 40-ml glass bottles per analysis.
3. Wide Mouth Glass Jars (8 oz) - metals analysis, for soil and sediment samples.
4. Polyethylene Bottles (1 liter) - analysis of metals in liquid samples.

Note: Always check with the laboratory before sampling to ensure that sample containers are suitable for the analyses being performed. Preservative may also be necessary. Avoid sampling on Friday or before 10:00 am to maintain holding times. Notify the laboratory prior to shipping containers.

5.2 Personal Protective Equipment (PPE)

To minimize any danger to the health and welfare of employees, proper protective clothing must be worn during the sampling of any hazardous waste material.

1. Prior to opening any containers or performing any sampling, the HW Manager will review the sampling list to determine proper clothing to be worn by the individuals performing the sampling.
2. At a minimum, the protective clothing/devices will consist of chemical-resistant gloves and a face shield.
3. A protective suit and respiratory protection will be worn by all personnel sampling the waste, if process knowledge of the waste exists, but the waste’s precise nature is undetermined.
4. If detailed process knowledge is not available, the HW disposal contractor will sample any unknowns for analysis.

5.3 Sample Labeling

To ensure samples are properly identified for analysis, all sample containers will be properly labeled as follows:

1. Gummed sample labels will be affixed to the sample containers prior to sampling.
2. Labels will contain the following information:
    - Sample number,
    - Name of collector,
    - Collection date/time,
    - Site of collection,
    - Location of the collection,
    - Analysis required,
    - Preservatives used, if any.

Samples will be placed in a cooler to maintain temperature. Non-combustible packing will be used as an absorbent, and to prevent breakage and spillage.

5.4 QA/QC Procedures

To establish proper documentation and trace possession of the sample, a chain-of-custody form will accompany and be completed for each sample analyzed. The chain-of-custody form will be filled out after a sample is collected and contain the following information:

1. Chain-of-custody number,
2. Initials of the collector,
3. Collection date/time,
4. Site of collection,
5. Waste type,
6. The signatures, times, and dates of all individuals having possession of the sample,
7. Number of containers collected,
8. Analytical method to be used for analysis,
9. Comments.

Duplicates will be collected as a part of the routine Quality Assurance/Quality Control (QA/QC) program. Duplicate sampling will be analyzed for comparison to its corresponding counterpart. Trip Blanks will accompany samples being analyzed for Volatile Organic Compounds (VOC).

5.5 Laboratory Selection

Laboratory selection will be the responsibility of the HW manager. However, only laboratories accredited by the Virginia Environmental Laboratory Accreditation Program shall be used.

6.0 RECORDKEEPING

The Environmental Office shall maintain the following records in Building F-160:

1. Hazardous Waste Disposal Inventory Forms,
2. Waste Profiles,
3. Field test results,
4. Laboratory analysis results