

Hazardous Waste Facility Emergency Action Levels

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Hazardous Waste Management Facility (HWMF)

Issue



- Cannot develop a planning inventory for HWMF because inventories are unpredictable and fluctuate.
- A standard EPHA cannot be developed without planning inventory

Solution



- Use the Emergency Response Guidebook (ERG)
- Protective Actions for Toxic Inhalation Hazards (TIH)
 - ERG Green Tables

HWMF Buildings



HWMF Operations

- 🗑️ Chemical Wastes Transported to 959
- 🗑️ Packaged, DOT regulations
- 🗑️ Stored in 958 pending shipment
- 🗑️ Shipped Offsite

Essentially HWMF = Transportation Activity



Inventory Characteristics

- 🗑️ Tracked by Location in the Facility, not by individual chemical or product
- 🗑️ Bays Segregated by DOT Hazard Class
 - 🗑️ Acid Bay, Class 8
 - 🗑️ Caustic Bay, Class 8
 - 🗑️ Flammable Liquid, Class 3
 - 🗑️ Combustible/Flammable Gas, Class 2
 - 🗑️ Etc, Etc

Inventory Characteristics (cont'd)

-  Most packages and drums contain > 1 chemical
-  Total weight of contents are known, however, individual chemical quantities are not known
-  The inventory is tracked in Waste Information Management System (WIMS)



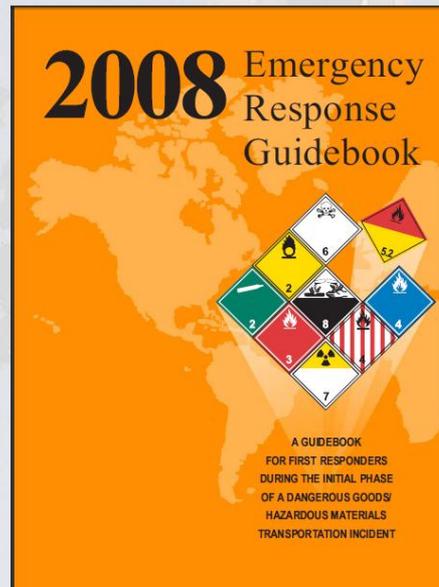
WIMS Inventory Report Sample

Cntr Barcode / ID: **SNLA111735** / 1462230 Pack L Container DF20X Approval HN593141 Waste Accum 30 AUG 2011 Gross 23KG
 Type: Type: Number: Start Date: Weight:
 DOT Shipping Name: UN1992, WASTE FLAMMABLE LIQUIDS, TOXIC, N.O.S., 3, (6.1), I (ACETONE, CARBON DISULFIDE)
 Drum EPA Codes: D001,D005,D018,D022,F002,F003,F005 UDM: T07

Package No.	DR-Line	Waste ID	Solid Stream Name	Weight	EPA Codes
P1461999	DR2079286-4	A94039	ACETONE/DIOXANE, SPENT MIXTURE	.3 KG	D001,F003
P1462001	DR2079286-6	A47436	ACETONE/TETRAHYDROFURAN	1 KG	D001,F003
P1462003	DR2079286-8	A40641	ACETONE/METHYLENE CHLORIDE SOLVENT MIX	4 KG	D001,F002,F003
P1462004	DR2079286-9	A69820	CHLOROFORM/METHANOL/TOLUENE SPENT MIXTURE	3.7 KG	D001,D022,F003,F005
P1462006	DR2079404-1	A44067	ACETONE/BENZENE MIXTURE	1.2 KG	D001,D018,F003,F005
P1462010	DR2079404-5	A94081	METHANOL/METHYLENE CHLORIDE/ THALLIUM (TRACE)	1.1 KG	D001,F002,F003
P1462018	DR2079405-5	A45510	TETRAHYDROFURAN/WATER FLAMMABLE MIXTURE	.4 KG	D001
P1462019	DR2079405-6	A54362	CARBON DISULFIDE/ETHYL ETHER SPENT MIXTURE	.5 KG	D001,F003,F005
P1462024	DR2079406-1	A93924	HEXANE CONTAMINATED WITH BARIUM OXIDE	.9 KG	D001,D005
P1462025	DR2079406-2	A93925	CARBON DISULFIDE/ETHYL ETHER/TOLUENE	.8 KG	D001,F003,F005
P1462026	DR2079406-3	A40179	ACETONE MIXTURES	.4 KG	D001,F003
P1462033	DR2079406-10	A93927	ACETONE/WATER/ZINC BIS(TRIMETHYLSILYL)AMIDE	.1 KG	D001,F003
P1462052	DR2079788-7	A94142	PROPYLENE GLYCOL PROPYL ETHER	1.1 KG	D001

ERG Overview

- 📄 Aid First Responders to a HazMat Transportation Incident
 - Dangerous Goods Incident on Highway or Railroad



ERG Overview (cont'd)

CASRAM, Chemical Accident Statistical Risk Assessment Model

- Statistical Analysis of HazMat Release Problems/Data
- Construct Accident Scenarios
- Execute Consequence Models

ERG Overview (cont'd)

- 📄 1,000,000 Sets of Hypothetical Incidents Developed for Each Material on the TIH List (Green Tables)
- 📄 Small (200 l/300 kg, or less) and Large Spills
- 📄 Protective Action Distance (PAD)
 - 📄 90% Percentile PAD for each chemical & category to be in Table 1
 - 📄 Rounded next 0.1 mile
- 📄 Initial Isolation Distances (IID)
 - 📄 15% Daytime PAD = Gases
 - 📄 7.5% Daytime PAD = Liquids

Why Are EALs Needed

Potential Releases

-  Packages and Drums Contain > 1 Chemical
-  Quantity of Individual Chemicals Not Known

EALs Chemical-Independent

-  Material ID Numbers Allowed in Bays
-  DOT Hazard Class
-  Release Location/Bay

Creation of EALs

- Chemicals of primary interest are Toxic Inhalation Hazards (TIH)
- HWMF personnel provided historical data of UN numbers according to each bay
- For each bay a median of PADs was established
- Bay not considered a TIH/hazmat zone, no PADs

TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

ID	NAME OF MATERIAL	SMALL SPILLS <i>(From a small package or small bulk bag, from package)</i>				LARGE SPILLS <i>(From a large package or from small bulk bag)</i>			
		ISOLATE		PROTECT		ISOLATE		PROTECT	
		in all Directions		persons Downwind during:		in all Directions		persons Downwind during:	
		DAY	NIGHT	DAY	NIGHT	DAY	NIGHT	DAY	NIGHT
		Meters (Feet)	Kilometers (Miles)	Kilometers (Miles)	Meters (Feet)	Kilometers (Miles)	Kilometers (Miles)	Meters (Feet)	Kilometers (Miles)
1005	Arsenic, anhydrous	30m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	150m (500 ft)			0.8 km (0.5 mi)	2.3 km (1.4 mi)
1006	Arsenic trioxide								
1008	Boron trifluoride	30m (100 ft)	0.1 km (0.1 mi)	0.6 km (0.4 mi)	300m (1000 ft)	1.9 km (1.2 mi)	4.8 km (3.0 mi)		
1009	Boron trifluoride, compressed								
1016	Carbon monoxide	30m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	150m (500 ft)	0.7 km (0.5 mi)	2.7 km (1.7 mi)		
1018	Carbon monoxide, compressed								
1017	Chlorine	60m (200 ft)	0.4 km (0.3 mi)	1.6 km (1.0 mi)	600m (2000 ft)	3.5 km (2.2 mi)	8.0 km (5.0 mi)		
1023	Coal gas	30m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	60m (200 ft)	0.3 km (0.2 mi)	0.4 km (0.3 mi)		
1025	Coal gas, compressed								
1028	Oxygen	30m (100 ft)	0.2 km (0.1 mi)	0.9 km (0.5 mi)	150m (500 ft)	1.0 km (0.7 mi)	3.5 km (2.2 mi)		
1029	Compressed gas								
1040	Ethylene oxide	30m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	150m (500 ft)	0.8 km (0.5 mi)	2.5 km (1.6 mi)		
1042	Ethylene oxide with nitrogen								
1046	Fluorine	30m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	150m (500 ft)	0.8 km (0.5 mi)	3.1 km (1.9 mi)		
1048	Fluorine, compressed								
1048	Hydrogen bromide, anhydrous	30m (100 ft)	0.1 km (0.1 mi)	0.4 km (0.3 mi)	300m (1000 ft)	1.3 km (0.8 mi)	4.8 km (3.0 mi)		
1050	Hydrogen chloride, anhydrous	30m (100 ft)	0.1 km (0.1 mi)	0.4 km (0.3 mi)	400m (1300 ft)	0.3 km (0.2 mi)	1.4 km (0.9 mi)		
1051	AC (when used as a weapon)	100m (300 ft)	0.3 km (0.2 mi)	1.1 km (0.7 mi)	1000m (3000 ft)	3.8 km (2.4 mi)	7.2 km (4.5 mi)		
1051	Hydrocyanic acid, aqueous solution, with more than 20% hydrogen cyanide	60m (200 ft)	0.2 km (0.1 mi)	0.6 km (0.4 mi)	400m (1300 ft)	1.6 km (1.0 mi)	4.1 km (2.5 mi)		
1051	Hydrogen cyanide								
1051	Hydrogen cyanide, anhydrous, stabilized								
1051	Hydrogen cyanide, stabilized								
1052	Hydrogen fluoride, anhydrous	30m (100 ft)	0.1 km (0.1 mi)	0.5 km (0.3 mi)	300m (1000 ft)	1.7 km (1.1 mi)	3.6 km (2.2 mi)		

Initial Isolation & Protective Action Distances

- 621 UN ID Numbers Included:

1	2 UN ID No.	Name of Material	Small Spills			Large Spills		
			First Isolate in all Directions (ft)	Then Protect Downwind during		First Isolate in all Directions	Then Protect Downwind during	
				Day (mi)	Night (mi)		Day (mi)	Night (mi)
4	0							
5	1005	Ammonia, anhydrous	100	0.1	0.1	500	0.5	1.4
6	1005	Anhydrous ammonia	100	0.1	0.1	500	0.5	1.4
7	1008	Boron trifluoride	100	0.1	0.4	1000	1.2	3
8	1008	Boron trifluoride, compressed	100	0.1	0.4	1000	1.2	3
9	1016	Carbon monoxide	100	0.1	0.1	500	0.5	1.7
10	1016	Carbon monoxide, compressed	100	0.1	0.1	500	0.5	1.7
11	1017	Chlorine	200	0.3	1	2000	2.2	5
12	1023	Coal gas	100	0.1	0.1	200	0.2	0.3
13	1023	Coal gas, compressed	100	0.1	0.1	200	0.2	0.3
14	1026	Cyanogen	100	0.1	0.5	500	0.7	2.2
15	1026	Cyanogen gas	100	0.1	0.5	500	0.7	2.2
16	1040	Ethylene oxide	100	0.1	0.1	500	0.5	1.6
17	1040	Ethylene oxide with Nitrogen	100	0.1	0.1	500	0.5	1.6
18	1045	Fluorine	100	0.1	0.2	500	0.5	1.9
19	1045	Fluorine, compressed	100	0.1	0.2	500	0.5	1.9

EALs

Zone/Bay Protective Actions

Equal

Specific Protective Actions Median Value



	Incident	Hazardous Material	First Isolate in all Directions	Then Protect Downwind		PA Plan	Class	EAL #	
				Day	Night				
9	Small Spill, Small Fire, or Explosion	DOT Class 2 (Gases)	100 ft	Day	530 ft (0.1 mi)	530	SAE	HWMF-009-Typ	9
				Night	2,380 ft (0.45 mi)	2640	GE	HWMF-009-WC	
10	Large Spill, Large Fire, or Zone-Wide Explosion		1,250 ft	Day	6,340 ft (1.2 mi)	6870	GE	HWMF-010-Typ	10
				Night	15,840 ft (3.0 mi)	15840	GE	HWMF-010-WC	

Any
Questions?

