Hazard Mitigation Plan Appendix

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Georgia Commodity Flow Study
Interstate 20
September 10-11, 2008

Prepared by
U.S. Department of Energy
Office of Environmental Management
Office of Transportation

October 30, 2008

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SUMMARY

The Department of Energy is a substantial shipper of hazardous materials, including over 10,000 shipments per year of radioactive materials, some of which travel along Interstate 20 through Georgia. The Department is committed to providing information on its transportation activities to its stakeholders.

The purpose of this commodity flow study is to help the State of Georgia and the Local Emergency Planning Committee and the first responders of Carroll and Douglas Countys' Emergency Management, and area citizens more clearly understand what hazardous commodities are being shipped near, or through their environment. Information provided by this study is also intended to serve as a tool for identifying Emergency Response needs and to aid the state and the communities in understanding and determining the risks involved with the shipment of hazardous materials and the potential impacts of these shipments to their state and community, and to state and local resources.

A highway Commodity Flow Survey was conducted on September 10-11, 2008 in Carroll and Douglas Counties along Interstate 20. The survey was conducted over a 24-hour period by the Department of Energy (DOE) Office of Packaging and Transportation in partnership with the Georgia Emergency Management Agency, the Georgia Department of Public Safety - Motor Carrier Compliance Division, the West Georgia Regional LEPC, Carroll County Emergency Management, Carroll County Fire/Rescue, Carrolton Fire Department, Douglas County Emergency Management, and Douglas County Fire Department.

The survey location was the Georgia Department of Public Safety weigh stations, located along I-20 near Milepost 15 (Westbound) and Milepost 42 (Eastbound). Illuminated highway signs were posted at the weigh stations advising all HAZMAT vehicles to keep to the right at the weigh station. Commercial vehicles were required by the DPS Motor Carrier Compliance Division to pass through the stations. HAZMAT vehicles were directed by the scale operator to proceed to a safe area of the weigh station for the survey. Vehicle information, HAZMAT placard information, and time were recorded. Also, detailed information on individual commodities, weights, and commodity origin/destination was recorded from shipping papers.

During the survey, 11,272 commercial vehicles passed through the weigh stations. Of these, 343 HAZMAT vehicles (179 eastbound/164 westbound) were recorded with 430 loads and 161 different hazardous materials. Also, over 5.56 million pounds of hazardous materials shipments were recorded.

Survey results indicate that the direction of hazardous materials flow on a weight basis, observed during the survey, was approximately 63% eastbound to 37% westbound, and that about 70% percent of the 430 loads were either HAZMAT Class 3 (Flammable Liquid) or Class 8 (Corrosive) materials. About 75% of the total tonnage was moved, in bulk, by tank trailer. Interstate traffic accounted for about 80% of the total HAZMAT traffic.

Georgia Commodity Flow Survey
September 10-11, 2008
Survey Data Table

Time	Dir	Trailer Type	Orig/ Dest	Trailer Placard	Material Hazard Class	Mat'l ID	Material PSN	Material Name	ERG Guide No.	Quantity (lbs)	Other
9:12	West	Double Van	NJ-TX	3	Flammable Liquid	1197	Extracts, flavoring, liquid	Extracts	127	5,852	
9:17	West	Van	GA-AL	8	Corrosive	1760	Corrosive liquid, NOS	Corrosive liquid, NOS	154		
				5.1	Oxidizer	2468	Trichloroisocyanuric acid, dry	Trichloroisocyanuric Acid	140		
9:24	West	MC306	GA-GA	3	Flammable Liquid	1203	Gasoline	Gasoline	128		Residue - Empty
9:24	East	MC306	GA-GA	3	Flammable Liquid	1203	Gasoline	Diesel	128	53,893	7699 gal
9:26	West	MC306	GA-GA	3	Flammable Liquid	1203	Gasoline	Gasoline	128		Did Not Stop
9:27	East	MC306	GA-GA	3	Flammable Liquid	1203	Gasoline	Ethanol	128	59,340	9007 gal
9:28	East	Van	GA-AL	4.1	Flammable Solid	1325	Flammable Solid, NOS	Haz Waste Solid (flammable)	127	900	110 Gal
				3	Flammable Liquid	1993	Flammable Liquid, NOS	Flammable Liquid	128	450	55 Gal
9:29	East	MC306	GA-TX	9	Miscellaneous	3082	Hazardous waste, liquid, NOS	Isocyanates	171	45,000	
9:36	West	Van	GA-LA	6.1	Toxic	1760	Corrosive liquid, NOS	Corrosive Liquid, Paraquat	154	7,588	
9:39	West	MC312	SC-TX	8	Corrosive	1791	Hypochlorite solution	Sodium Hypochlorite	154		Residue - Empty
9:40	West	MC307	FL-AL	8	Corrosive	2693	Bisulfites, aqueous solutions, NOS	Sodium Bisulfite	154		
9:44	West	MC307	Unknown								Did Not Stop
9:47	West	MC307	Unknown								Did Not Stop
9:48	West	MC307	GA-AL	8	Corrosive	3264	Corrosive liquid, acidic, inorganic, NOS	Aluminium Sulfate	154	25,924	50,193-24,269=25,924
9:53	West	MC312	GA-AL	8	Corrosive	3264	Corrosive liquid, acidic, inorganic, NOS	Aluminium Sulfate	154	25,391	49,163-23,772=25,391
9:56	West	Van	GA-CA	8	Corrosive	1814	Potassium hydroxide, solution	Potassium Hydroxide	154	588	
						3219	Nitrites, inorganic, aqueous solution, NOS	Nitrites	140	106	
10:00	West	Van	GA-TX	8	Corrosive	1789	Hydrochloric acid	Hydrochloric Acid	157		
10:00	West	Double Van	GA-MS	2.2	Nonflammable Gas	1005	Anhydrous ammonia	Ammonia	125	700	
10:00	West	MC307	GA-AL	8	Corrosive	2031	Nitric acid, other than red fuming	Nitric Acid	157	45,000	

Georgia Commodity Flow Survey
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Time	Dir	Trailer Type	Orig/ Dest	Trailer Placard	Material Hazard Class	Mat'l ID	Material PSN	Material Name	ERG Guide No.	Quantity (lbs)	Other
10:00	West	Van	GA-AL	3	Flammable Liquid	1133	Adhesives (flammable)	Adhesives	128	2,000	
10:01	West	Van	GA-TX	3	Flammable Liquid	1866	Resin solution	Resins	127	11,030	
				8	Corrosiive	3264	Hydrochloric acid	Hydrochloric Acid	157	302	
10:04	East	MC306	GA-IN	8	Corrosive	3265	Corrosive liquid, acidic, organic, NOS	Citric Acid	153	1,268	145 Gal
10:08	West	Double Van	GA-AL	8	Corrosive	2794	Batteries, wet, filled with acid	Batteries	154	19,000	
10:11	East	Van	GA-GA	3	Flammable Liquid	1993	Combustible liquid, NOS	Fuel Oil	128	2,940	420 Gal
10:16	West	Double Van	GA-AL	8	Corrosive	3266	Corrosive liquid, basic, inorganic, NOS	Potassium Hydroxide	154	1,100	
10:17	West	MC307	GA-GA	9	Miscellaneous	3257	Elevated temperature liquid,	Asphalt	128		
10:18	West	Double Van	SC-AL	3	Flammable Liquid	1263	Paint (flammable)	Paint	128	2,000	
				8	Corrosive	3267	Corrosive liquid, basic, organic, NOS	Monoethanolamine	153	1,400	
10:25	West	MC312	GA-AL	8	Corrosive	2582	Ferric chloride, solution	Ferric Chloride	154	39,000	
10:32	West	Double Van	GA-LA	8	Corrosive	2794	Batteries, wet, filled with acid	Batteries	154	15,000	
				2.2	Nonflammable Gas	1044	Fire extinguishers with compressed gas	Fire extinguishers	126	1,263	
10:35	East	MC306	GA-NC	3	Flammable Liquid	1203	Gasoline	Gasohol	128	56,280	9005 Gal
10:36	East	MC306	TX-GA	3	Flammable Liquid	1203	Gasoline	Diesel	126	52,507	7501 Gal
10:37	West	Double Van	GA-MS	8	Corrosive	1791	Hypochlorite solution	Sodium Hypochlorite	154	102	
				8	Corrosive	1824	Sodium hydroxide, solution	Sodium Hydroxide	154	107	
				8	Corrosive	1759	Corrosive solid, NOS	Corrosive Solids	154	105	
				8	Corrosive	1791	Hypochlorite solution	Sodium Hypochlorite	154	205	
				5.1	Oxidizer	2880	Calcium hypochlorite, hydrated, <16%water	Calcium Hypochlorite	140	117	
				8	Corrosive	1824	Sodium hydroxide, solution	Sodium Hydroxide	154	241	
10:39	West	Van	SC-TX	6.1	Toxic	1547	Aniline	Aniline	153	491	

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September 10-11, 2008
Survey Data Table

Time	Dir	Trailer Type	Orig/ Dest	Trailer Placard	Material Hazard Class	Mat'l ID	Material PSN	Material Name	ERG Guide No.	Quantity (lbs)	Other
				3	Flammable Liquid	1274	Normal propyl alcohol	Propanol	129	818	
10:39	East	MC306	TX-GA	3	Flammable Liquid	1203	Gasoline	Diesel	128	51,555	7365 Gal
10:41	West	Van	GA-TX	8	Corrosive	2794	Batteries, wet, filled with acid	Batteries	154	1,483	
				8	Corrosive	1824	Sodium hydroxide, solution	Sodium Hydroxide	154	85	
				8	Corrosive	2680	Lithium hydroxide, solid	Lithium Hydroxide	154	12,600	
10:45	East	MC306	GA-GA	3	Flammable Liquid	1203	Gasoline	Ethanol	128	49,412	7500 Gal
10:48	West	MC306	GA-AL	3	Flammable Liquid	1987	Alcohols, NOS	Ethanol	127	48,755	7400 gal
10:48	West	MC307	GA-TX	8	Corrosive	3266	Corrosive liquid, basic, inorganic, NOS	Inorganic corrosive liquid	154	45,000	
10:57	East	Van	Unknown	1	Explosives		Explosives, fire hazard, Div 1.1D	Explosives	112		
10:58	East	MC307	LA-SC	8	Corrosive	2734	Alkylamines	Alkylamines	132	72,940	
11:03	West	MC306	GA-GA	3	Flammable Liquid	1993	Combustible liquid, NOS	Diesel	128	53,900	7700 gal
11:07	East	MC307	Unknown	9	Miscellaneous	3257	Elevated temperature liquid, NOS	Elevated Temperature Liquid	128	0	Empty
11:19	West	Van	GA-TX	6.1	Flammable Liquid	2902	Pesticide, liquid, poisonous, NOS	Pesticide	151	260	
				3	Flammable Liquid	1866	Resin solution	Resins	127	9,000	
11:21	West	MC306	GA-AL	3	Flammable Liquid	1203	Gasoline	Diesel	128	0	Residue - Empty
11:28	East	MC307	AR-GA	9	Miscellaneous	3265	Elevated temperature liquid, NOS	Asphalt	128	46,180	5036 Gal
11:29	West	Double Van	NC-TX	8	Corrosive	2579	Piperazine	Piperazine	153	476	
				2.2	Nonflammable Gas	1002	Air, compressed	Compressed Air	122	160	
11:29	East	MC307	GA-GA	3	Flammable Liquid	1203	Gasoline	Gasoline	128	17,762	2842 Gal
11:34	West	Van	GA-AL	8	Corrosive	1823	Sodium hydroxide, granular	Sodium Hydroxide	154	4,200	
				3	Flammable Liquid	1263	Paint related material, flammable	Toluene/Acetone	128	776	
11:35	West	MC306	SC-TX	9	Miscellaneous	3077	Hazardous waste, solid, NOS	2,6-Di-tert-butylphenol	171	33,000	

Georgia Commodity Flow Survey
September 10-11, 2008
Survey Data Table

Time	Dir	Trailer Type	Orig/ Dest	Trailer Placard	Material Hazard Class	Mat'l ID	Material PSN	Material Name	ERG Guide No.	Quantity (lbs)	Other
11:35	East	Van	AL-GA	1	Explosives		Eplosives, Division 1.1	Ammunition	112	3	
11:35	East	Van	TX-SC	9	Miscellaneous	3077	Hazardous waste, solid, NOS	Tetrachloroethylene	171		
11:37	West	MC307	GA-GA	3	Flammable Liquid	1203	Gasoline	Gasohol	128	55,000	8800 gal
11:48	East	MC307	LA-GA	3	Flammable Liquid	1203	Gasoline	Diesel	128	3,066	438 Gal
11:50	East	MC307	GA-GA	3	Flammable Liquid	1203	Gasoline	Diesel	128	18,900	2700 Gal
11:50	East	Van	GA-GA	8	Corrosive	2794	Batteries, wet, filled with acid	Batteries	154		
11:54	West	MC307	Unknown	8	Corrosive	2218	Acrylic acid, stabilized	Acrylic Acid	132P	0	Residue - Empty
11:57	West	MC312	GA-LA	6.1	Toxic	2994	Arsenical pesticide, liquid, toxic	Arsenical Pesticide	151	48,000	
12:03	West	Double Van	GA-MS	3	Flammable Liquid	1263	Paint related material, flammable	Paint	128	5,000	
12:18	East	Van	CA-GA	3	Flammable Liquid	1263	Paint related material, flammable	Paint	128	20,489	Empty
12:20	East	MC331	GA-GA	3	Flammable Liquid	1263	Paint related material, flammable	Paint	128	0	Empty
12:21	East	Van	TX-SC	8	Corrosive	3266	Corrosive liquid, basic, inorganic, NOS	Sodium Hydroxide / Potassium Hydroxide	154	220	
				8	Corrosive	1824	Sodium hydroxide, solution	Sodium Hydroxide	154	126	
12:22	West	Tank Truck	GA-AL	3	Flammable Liquid	1993	Flammable liquid, NOS	Clay fuel filters	128		
12:29	West	Double Van	GA-AL	3	Flammable Liquid	1263	Paint related material, flammable	Paint	128	1,921	
12:30	East	MC307	AL-NJ	8	Corrosive	3265	Corrosive liquid, acidic, organic, NOS	Organic Acid	153		Empty
12:32	East	Van	GA-GA	8	Corrosive	2794	Batteries, wet, filled with acid	Batteries	154		
12:35	East	Van	TX-GA	3	Flammable Liquid	1133	Adhesives (flammable)	Adhesives	128		
				8	Corrosive	3266	Corrosive liquid, basic, inorganic, NOS	Sodium Hydroxide	154		
12:36	West	Van	GA-AL	1	Explosives	0408	Explosives, fuses, detonating, Div 1.1	Fuses	112	1	
12:50	West	Double Van	NC-AL	8	Corrosive	2735	Alkylamines, NOS	Alkylamines	153	7,785	
				3	Flammable Liquid	2163	Paint related material, flammable	Paint	128	55	

Georgia Commodity Flow Survey
September 10-11, 2008
Survey Data Table

Time	Dir	Trailer Type	Orig/ Dest	Trailer Placard	Material Hazard Class	Mat'l ID	Material PSN	Material Name	ERG Guide No.	Quantity (lbs)	Other
12:50	East	Van	AL-FL	8	Corrosive	1830	Sulfuric acid	Sulfuric Acid	137	918	
				3	Flammable Liquid	1193	Ethyl methyl ketone	Ethyl Methyl Ketone	127	512	
12:50	East	MC331	AL-SC	2.2	Nonflammable Gas	1977	Nitrogen, refrigerated liquid (cryogenic liquid)	Nitrogen	120	48,620	630,000 CF
12:52	West	Double Van	NC-AL	3	Flammable Liquid	1263	Paint related material, flammable	Paint	128	161	
						1133	Adhesives (flammable)	Adhesives	128	833	
12:55	West	MC307	Unknown	9	Miscellaneous	3257	Elevated temperature liquid, NOS		128		Did not Stop
12:55	West	Van	GA-TN	8	Corrosive	2794	Batteries, wet, filled with acid	Batteries	154	6,000	
12:55	East	Tank Truck	GA-GA	3	Flammable Liquid	1203	Gasoline	Diesel	128		
12:55	East	MC306	GA-GA	3	Flammable Liquid	1203	Gasoline	Gasoline	128		
12:56	West	MC307	SC-MO	8	Corrosive	2735	Amines, liquid, corrosive, NOS	Amines	128	19,140	
				6.1	Toxic	2019	Chloroanilines, liquid	Chloroanilines	152	22,700	
13:00	West	Van	GA-TX	3	Flammable Liquid	1263	Paint related material, flammable	Paint	128	2,900	
13:00	East	MC306	AL-GA	3	Flammable Liquid	1203	Gasoline	Diesel	128	75,000	
13:01	West	Van	GA-TN	8	Flammable Liquid	3266	Corrosive liquid, basic, inorganic, NOS	Potassium Hydroxide	154	160	
13:05	West	Van	GA-MS	3	Flammable Liquid	1263	Paint related material, flammable	Paint	128	3,000	
				8	Corrosive	1789	Hydrochloric acid	Hydrochloric Acid	157	167	
13:08	West	MC306	GA-GA	3	Flammable Liquid	1203	Gasoline	Gasoline	128	40,625	6500 gal
13:10	East	MC306	TX-NC	8	Corrosive	1760	Corrosove liquid, NOS	Buffing Polish Compound	154	810	
				3	Flammable Liquid	1263	Paint related material, flammable	Paint	128	270	
13:12	East	MC306	GA-NC	3	Flammable Liquid	1203	Gasoline	Diesel	128	17,521	2503 Gal
13:23	West	MC306	GA-GA	3	Flammable Liquid	1203	Gasoline	Gasohol	128	6,188	990 gal
13:25	West	Van	GA-AL	4.1	Flammable Solids	2556	Nitrocellulose with not less than 25% alcohol	Nitrocellulose	113	7,552	

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Time	Dir	Trailer Type	Orig/ Dest	Trailer Placard	Material Hazard Class	Mat'l ID	Material PSN	Material Name	ERG Guide No.	Quantity (lbs)	Other
13:32	East	MC306	GA-GA	3	Flammable Liquid	1203	Gasoline	Diesel	128	7,000	1000 Gal
13:36	East	MC312	GA-GA	9	Miscellaneous	3257	Elevated temperature liquid, NOS	Asphalt	128	43,570	4751 gal
13:36	West	Dry Bulk	SC-MS	8	Corrosive	1726	Aluminum chloride, anhydrous	Aluminum Chloride	128	47,000	
13:37	East	Flat Bed	AL-GA	1	Explosives		Explosives	Ammunition / Fire Works	112	1,477	Chase
13:38	East	MC331	AL-SC	2.2	Nonflammable Gas	1977	Nitrogen, refrigerated liquid (cryogenic liquid)	Nitrogen	120	0	Chase - Empty
13:38	West	Van	GA-TX	8	Corrosive	1759	Corrosive solid, NOS	Sodium Hydroxide	154	11,900	
				8	Corrosive	1791	Hypochlorite solution	Sodium Hypochlorite	154	1,600	
				8	Corrosive	1719	Caustic alkali liquid, NOS	Alkali liquid	154	1,800	
				8	Corrosive	1805	Phosphoric acid	Phosphoric Acid	154	1,400	
13:39	East	MC307	TX-GA	3	Flammable Liquid	1247	Methyl methacrylate monomer, stabilized	Methyl Methacrylate	129P	431	Chase
13:45	East	MC307	AL-VA	3	Flammable Liquid	1993	Combustible liquid, NOS	Cyclohexane ethyl acetate	128	3,540	Empty
13:50	East	MC312	TX-GA	8	Corrosive	1831	Sulfuric acid, fuming	Sulfuric Acid	137	47,500	Empty
14:03	West	Roll-Off	GA-AL	9	Miscellaneous	3077	Hazardous waste, solid, NOS	Debris/concrete	171	28,940	
14:05	East	MC312	Unknown								Did Not Stop
14:06	West	Van	GA-AZ	2.2	Nonflammable Gas	1005	Ammonia, anhydrous	Ammonia	125	2,750	
14:07	East	MC306	Unknown	3	Flammable Liquid	1993	Combustible liquid, NOS	Combustible Liquid	128		Did Not Stop
14:08	East	MC306	Unknown	9	Miscellaneous	3082	Hazardous waste, liquid, NOS	Hazardous Waste	171		Did Not Stop
14:10	West	Van	GA-AL	3	Flammable Liquid	1263	Paint related material, flammable	Paint Thinner	128	3,000	
				5.1	Oxidizer	2880	Calcium hypochlorite, hydrated, <16%water	Calcium Hypochlorite	154	14,000	
				5.1	Oxidizer	2014	Hydrogen peroxide, aqueous, 20-60%	Hydrogen Peroxide	140	4,800	
				8	Corrosive	1791	Hypochlorite solution	Sodium Hypochlorite	154	14,000	
14:12	East	MC306	IN-GA	3	Flammable Liquid	1863	Fuel, aviation, turbine engine	Jet Fuel	128	52,115	7445 Gal

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Time	Dir	Trailer Type	Orig/ Dest	Trailer Placard	Material Hazard Class	Mat'l ID	Material PSN	Material Name	ERG Guide No.	Quantity (lbs)	Other
14:18	West	Van	GA-AR	3	Flammable Liquid	1133	Adhesives (flammable)	Adhesives	128	1,512	
14:23	West	Flat Bed	GA-GA	3	Flammable Liquid	1993	Flammable liquid, NOS	Diesel	128	10,500	1500 gal
14:25	West	Van	GA-CA	5.1	Oxidizer	2880	Calcium hypochlorite, hydrated, <16%water	Calcium Hypochlorite	154	37,878	
14:25	West	Van	GA-GA	3	Flammable Liquid	1263	Paint related material, flammable	Paint	128	1,100	
14:33	West	Van	GA-TX	2.2	Nonflammable Gas	1018	Refrigerant gas R-22	Chlorodifluoromethane	126	41,500	
14:33	West	Van	GA-MS	5.1	Oxidizer	1479	Oxidizing substances, solids, NOS	Bromo-Chloro Dimethylhydantoin	140	1,012	
14:40	West	Van	SC-TX	8	Corrosive	2794	Batteries, wet, filled with acid	Batteries		11,123	
14:44	West	Roll-Off	GA-AL	9	Miscellaneous	3077	Hazardous waste, solid, NOS	Hazardous Waste	171	40,000	30 Yds
14:47	West	MC312	SC-AL	3	Flammable Liquid	1306	Wood preservatives, liquid	Wood Preservatives	129	0	Residue - Empty
14:55	West	MC306	GA-GA	3	Flammable Liquid	1203	Gasoline	Gasoline	128	34,375	5500 gal
				3	Flammable Liquid	1203	Gasoline	Diesel	128	10,500	1500 gal
14:55	East	MC306	GA-GA	3	Flammable Liquid	1203	Gasoline	Diesel	128	53,550	7650 Gal
15:00	East	MC307	GA-GA	9	Miscellaneous	3257	Elevated temperature liquid, NOS	Asphalt	128	54,370	5929 Gal
15:00	West	Van	GA-TX	8	Corrosive	2796	Battery fluid, acid	Sulfuric Acid	157	40,620	
15:01	East	MC312	AL-GA	8	Corrosive	2693	Bisulfites, inorganic, aqueous solution, NOS	Bisulfites	154	4,800	Coating
15:03	West	Van	GA-TN	3	Flammable Liquid	1197	Extracts, flavoring, liquid	Extracts	127	193	
				8	Corrosive	1805	Phosphoric acid	Phosphoric Acid	154	6,700	
15:08	East	MC306	GA-GA	3	Flammable Liquid	1203	Gasoline	Diesel	128	35,000	5000 Gal
15:09	East	MC306	AL-GA	3	Flammable Liquid	1203	Gasoline	Diesel	128	52,556	7508 Gal
15:10	East	MC307	Unknown	9	Miscellaneous	3257	Elevated temperature liquid, NOS	Asphalt	128		Did Not Stop
15:15	East	Tank Truck	GA-GA	3	Flammable Liquid	1203	Gasoline	Ethanol	128	18,750	3000 Gal
15:22	West	Van	SC-MS	8	Corrosive	2794	Batteries, wet, filled with acid	Batteries	154	22,000	

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Time	Dir	Trailer Type	Orig/ Dest	Trailer Placard	Material Hazard Class	Mat'l ID	Material PSN	Material Name	ERG Guide No.	Quantity (lbs)	Other
15:25	East	MC306	GA-GA	3	Flammable Liquid	1993	Combustible liquid, NOS	Diesel	121	12,600	1800 Gal
15:36	West	Van	GA-MS	3	Flammable Liquid	1263	Paint related material, flammable	Paint	128	415	
15:31	East	MC307	MO-GA	9	Miscellaneous	3257	Elevated temperature liquid, NOS	Asphalt	128		
15:50	West	Roll-Off	SC-AL	9	Miscellaneous	3077	Hazardous waste, solid, NOS	Xylene/Toluene waste	171	0	Residue - Empty
15:55	West	MC307	SC-TX	3	Flammable Liquid	1263	Paint related material, flammable	Paint	128	0	Residue - Empty
16:03	West	MC306	GA-GA	3	Flammable Liquid	1203	Gasoline	Gasoline	128	12,525	2004 gal
16:07	West	MC306	GA-GA	3	Flammable Liquid	1203	Gasoline	Diesel	128	36,400	5200 gal
				3	Flammable Liquid	1203	Gasoline	Gasoline	128	12,500	2000 gal
16:11	East	MC306	GA-GA	3	Flammable Liquid	1203	Gasoline	Gasoline	128	57,512	9202 Gal
16:12	East	MC312	GA-GA	3	Flammable Liquid	1203	Gasoline	Diesel	128	53,200	7600 Gal
16:13	West	MC312	NC-TN	5.1	Oxidizer	2015	Hydrogen peroxide, stabilized, >60%	Hydrogen Peroxide	143	0	Residue - Empty
16:17	West	MC312	NC-AL	8	Corrosive	3267	Corrosive liquid, basic, organic, NOS	Alkaline Copper Complex	153	45,000	
16:25	East	Double Van	Unkno wn	2.3	Toxic Gas	1079	Sulfur dioxide	Sulfur dioxide	125		Did Not Stop
16:25	East	MC307	Unkno wn	9	Miscellaneous	3257	Elevated temperature liquid, NOS	Elevated Temperature Liquid	128		Did Not Stop - Hot
16:30	East	Van	Unkno wn	3	Flammable Liquid				127		Did Not Stop - FedEx Truck
16:30	East	MC307	Unkno wn	3	Flammable Liquid	1203	Gasoline	Gasoline	128		Did Not Stop - FedEx Truck
16:31	East	Van	Unkno wn	3	Flammable Liquid				127		Did Not Stop
16:35	East	MC338	Unkno wn	2.2	Nonflammable Gas	3163	Liquified Gas	Nonflammable Gas	121		Did Not Stop
16:40	East	MC312	Unkno wn	8	Corrosive	3264	Corrosive liquid, acidic, inorganic, NOS		154		Did Not Stop
16:45	East	MC307	Unkno wn	3	Flammable Liquid	1993	Combustible liquid, NOS	Combustible Liquid	128		Did Not Stop
16:46	West	Utility Truck	GA-LA	2.1	Flammable Gas	1075	Petroleum gases, liquefied	LPG	115	12,300	3000 gal
16:50	East	MC307	Unkno wn	9	Miscellaneous	3257	Elevated temperature liquid, NOS	Asphalt	128		Did Not Stop

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Time	Dir	Trailer Type	Orig/ Dest	Trailer Placard	Material Hazard Class	Mat'l ID	Material PSN	Material Name	ERG Guide No.	Quantity (lbs)	Other
16:51	West	Van	GA-LA	8	Corrosive	2794	Batteries, wet, filled with acid	Batteries	154	2,911	
				4.1	Flammable Solids	2556	Nitrocellulose with not less than 25% alcohol	Nitrocellulose	113	391	
17:00	East	MC307	Unknown	3	Flammable Liquid	1919	Methyl acrylate, stabilized	Methyl Acrylate	129P		Did Not Stop
17:04	West	Van	SC-GA	6.1	Toxic	1897	Tetrachloroethylene	Tetrachloroethylene	160	150	
17:05	East	MC306	GA-GA	3	Flammable Liquid	1987	Alcohols, NOS	Ethanol	127	49,412	7500 Gal
17:10	East	Van	AL-KY	8	Corrosive	3267	Corrosive liquid, basic, organic, NOS	Monoethynolamine	153		
				3	Flammable Liquid	1263	Paint related material, flammable	Paint	128	3,000	
				6.1	Toxic	2810	Poisonous liquid, organic, NOS	Methylene Chloride	153	800	
				3	Flammable Liquid	1993	Combustible liquid, NOS	Combustible Liquid	127	200	
17:12	West	MC306	GA-LA	8	Corrosive	2922	Corrosive liquid, toxic, NOS	Sodium Hydrosulfide	154	0	Residue - Empty
17:14	West	Van	GA-AR	3	Flammable Liquid	1263	Paint related material, flammable	Paint	128	1,048	
17:20	East	MC306	GA-GA	3	Flammable Liquid	1203	Gasoline	Gasoline	128	0	Empty
17:30	East	MC306	TN-GA	3	Flammable Liquid	1203	Gasoline	Diesel	128	0	Low Sulfur - Empty
17:35	East	MC306	GA-GA	3	Flammable Liquid	1203	Gasoline	Ethanol	128	0	Empty
17:35	East	Van	TX-GA	8	Corrosive	1824	Sodium hydroxide, solution	Sodium Hydroxide	154	84	Empty
						3266	Corrosive liquid, basic, inorganic, NOS	Ethanol	154	76	
17:35	East	MC306	GA-GA	3	Flammable Liquid	1203	Gasoline	Gasoline	128	0	Empty
17:40	East	Double Van	TX-GA	3	Flammable Liquid	1197	Extracts, flavoring, liquid	Extracts	127		
				3	Flammable Liquid	1866	Resin solution	Resins	127		
17:40	East	Van	Unknown	3	Flammable Liquid	1263	Paint related material, flammable	Paint	128		Did not Stop
17:45	East	MC307	AR-GA	9	Miscellaneous	3257	Elevated temperature liquid, NOS	Asphalt	128	57,920	6316 Gal
17:50	East	MC306	AR-GA	9	Miscellaneous	3257	Elevated temperature liquid, NOS	Asphalt	128	57,770	6300 Gal

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Time	Dir	Trailer Type	Orig/ Dest	Trailer Placard	Material Hazard Class	Mat'l ID	Material PSN	Material Name	ERG Guide No.	Quantity (lbs)	Other
17:55	East	MC306	GA-GA	3	Flammable Liquid	1203	Gasoline	Gasoline	128	0	Empty
17:59	East	MC331	Unknown	2.1	Flammable Gas	1075	Petroleum gases, liquefied	Isobutylene	115		Did Not Stop
18:00	East	Tube Trailer	LA-GA	3	Flammable Liquid	1049	Hydrogen, compressed	Hydrogen	115	40	195 Gal (26CF)
18:10	East	MC312	AL-SC	8	Corrosive	1783	Hexamethylendiamine, solution	Hexamethylenediamine	156	78,300	
18:15	West	MC338	GA-AL	2.2	Nonflammable Gas	1073	Oxygen, refrigerated liquid, (cryogenic liquid)	Oxygen	122	42,980	
18:15	East	Double Van	Unknown	3	Flammable Liquid				127		Did Not Stop
18:19	West	MC312	GA-AL	8	Corrosive	2693	Bisulfites, aqueous solutions, NOS	Sodium Bisulfite	154	48,000	
18:25	West	Van	SC-AR	6.1	Toxic	2811	Toxic solid, organic, NOS	Phenol-Cresol	154	515	
				3	Flammable Liquid	1294	Toluene	Toluene	130	1,000	
				8	Corrosive	2920	Corrosive liquid, flammable, NOS	Oleoyl Chloride-Methanol	132	21,303	
18:30	East	Double Van	FL-MO	3	Flammable Liquid	1263	Paint related material, flammable	Paint	128	900	
				3	Flammable Liquid	1219	Isopropanol	Isopropanol	129		
				6.1	Toxic	3019	Organotin pesticide, liquid, poisonous, flammable	Pesticide	152	1,796	
18:34	West	Van	GA-TX	3	Flammable Liquid	1263	Paint related material, flammable	Paint	128	27,672	
18:45	East	Pickup Truck	GA-GA	2.3	Toxic Gas	1660	Nitric oxide, compressed	Nitric Oxide	124	500	4 Tanks
18:45	West	MC307	GA-AL	8	Corrosive	2789	Acetic acid, glacial	Acetic Acid	132	45,660	
19:05	East	Double Van	Unknown	2.2	Nonflammable Gas				121		Did Not Stop
19:05	East	Van	Unknown								Did Not Stop
19:14	East	MC307	Unknown	8	Corrosive	1814	Potassium hydroxide, solution	Potassium Hydroxide	154		Did Not Stop
19:14	East	MC307	Unknown	8	Corrosive	2693	Bisulfites, inorganic, aqueous solution, NOS	Bisulfites	154		Did Not Stop
19:15	East	MC307	GA-GA	9	Miscellaneous	3257	Elevated temperature liquid, NOS	Tar & Oil Blend	128	40,260	
19:17	East	MC306	AL-GA	3	Flammable Liquid	1203	Gasoline	Gasoline	128	1,850	297 Gal

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19:18	East	MC306	GA-GA	3	Flammable Liquid	1203	Gasoline	Gasoline	128		Did Not Stop
19:27	East	Van	Unknown	4.1	Flammable Solid	1325	Flammable Solid, NOS	Flammable Solid, NOS	133		Did Not Stop
19:30	East	Van	Unknown	8	Corrosive				153		Did Not Stop
19:35	East	MC307	Unknown	3	Flammable Liquid	1866	Resin solution	Resins	127		Did Not Stop
19:35	East	MC306	AL-MS	3	Flammable Liquid	1268	Petroleum distillates, NOS	Petroleum Distillates	128	43,750	7000 Gal
19:38	West	Van	SC-TN	3	Flammable Liquid	1133	Adhesives (flammable)	Adhesives	128	19,993	
19:40	East	MC307	LA-VA	6.1	Flammable Liquid	1673	Phenylenediamines	Phenylenediamines	153	40,000	
19:46	West	Van	GA-TN	3	Flammable Liquid	1866	Resin solution	Resins	127	2,784	
19:52	West	MC306	GA-GA	3	Flammable Liquid	1203	Gasoline	Gasoline	128	45,500	7000 gal
20:05	East	MC306	Unknown	3	Flammable Liquid	1203	Gasoline	Gasoline	128		Did Not Stop
20:10	East	MC306	Unknown	3	Flammable Liquid	1203	Gasoline	Gasoline	128		Did Not Stop
20:15	West	Van	GA-MS	3	Flammable Liquid	1263	Paint related material, flammable	Paint	128	500	
20:39	West	Van	NJ-TX	8	Corrosive	2491	Ethanolamine	Ethanolamine	153	1,905	
				8	Corrosive	3082	Hazardous waste, liquid, NOS	Chromic Acid	171	1,154	
20:47	West	Van	SC-AL	9	Miscellaneous	3077	Hazardous waste, solid, NOS	Xylene/Toluene waste	171	0	Residue - Empty
20:50	East	Intermodal	Unknown	6.1	Toxic	1554	Arsenic acid, solid	Arsenic Acid	154		Did Not Stop
20:52	East	MC338	AL-GA	2.2	Nonflammable Gas	1073	Oxygen, refrigerated liquid (cryogenic liquid)	Oxygen	122	51,000	616,770 CF
20:55	West	Van	GA-AL	3	Flammable Liquid	1263	Paint related material, flammable	Paint	128	26,413	
21:00	East	Roll-Off	GA-SC	9	Miscellaneous	3077	Hazardous waste, solid, NOS	Hazardous Waste - Toluene	171	34,940	
21:05	East	Roll-Off	GA-SC	9	Miscellaneous	3077	Hazardous waste, solid, NOS	Hazardous Waste - Toluene	171	34,940	
21:15	East	MC306	Unknown	3	Flammable Liquid	1203	Gasoline	Gasoline	128		Did Not Stop
21:19	West	MC307	GA-LA	8	Corrosive	2734	Alkylamines, NOS	Butylamine	153	39,800	

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Time	Dir	Trailer Type	Orig/ Dest	Trailer Placard	Material Hazard Class	Mat'l ID	Material PSN	Material Name	ERG Guide No.	Quantity (lbs)	Other
21:20	East	MC331	GA-OH	2.2	Nonflammable Gas	1073	Oxygen, refrigerated liquid (cryogenic liquid)	Oxygen	122	43,120	
21:22	East	MC307	LA-SC	8	Corrosive	2051	Dimethylethanolamine	Dimethylethanolamine	132	47,900	
21:30	West	MC306	GA-GA	3	Flammable Liquid	1203	Gasoline	Diesel	128	54,100	7729 gal
21:35	East	MC307	GA-VA	3	Flammable Liquid	2398	Methyl tert-butyl ether	Methyl tert-butyl ether	127	72,460	
21:35	East	MC307	TX-SC	8	Corrosive	2491	Ethanolamine	Triethanolamine	153	9,400	
21:50	East	MC306	AL-GA	3	Flammable Liquid	1203	Gasoline	Gasoline	128	46,875	7500 Gal
21:50	East	Van	GA-GA	3	Flammable Liquid	1133	Adhesives (flammable)	Adhesives	128	5,022	
22:00	East	MC331	GA-GA	2.2	Nonflammable Gas	1073	Oxygen, refrigerated liquid (cryogenic liquid)	Oxygen	122	27,139	2850 Gal
22:00	East	Van	GA-NC	2.1	Flammable Gas	1001	Acetylene	Acetylene	116	2,700	
22:05	East	MC307	MS-GA	3	Flammable Liquid	1198	Formaldehyde, solution, flammable	Formaldehyde	132	46,020	
22:06	East	MC306	AL-GA	3	Flammable Liquid	1203	Gasoline	Fuel Oil, Low Sulfur	128	52,500	7500 Gal
22:07	East	Van	GA-SC	8	Corrosive	3264	Corrosive liquid, acidic, inorganic, NOS	Phosphoric Acid	154	6,168	
				8	Corrosive	1814	Potassium hydroxide, solution	Potassium Hydroxide	154	2,884	
				8	Corrosive	1719	Caustic alkali liquid, NOS	Caustic Alkali	154	2,784	
				3	Flammable Liquid	2924	Flammable liquid, corrosive, NOS	Cyclohexylamine	132	2,334	
22:10	East	MC306	GA-GA	3	Flammable Liquid	1203	Gasoline	Gasoline	128	0	Empty
22:23	East	MC306	GA-GA	3	Flammable Liquid	1203	Gasoline	Fuel Oil	128	47,500	7600 Gal
22:34	East	MC338	Unknown	2.2	Nonflammable Gas	1073	Oxygen, refrigerated liquid (cryogenic liquid)	Oxygen	122		
22:43	East	MC307	LA-NC	3	Flammable Liquid	1993	Combustible liquid, NOS	Aromatic Naphtha	128	37,170	5947 Gal
22:45	East	MC307	Unknown	9	Miscellaneous	3257	Elevated temperature liquid, NOS	Asphalt	128		
22:50	East	Van	Unknown	3	Flammable Liquid				127		
22:59	East	Van	TN-FL	3	Flammable Liquid	1090	Acetone	Acetone	127	2,314	

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				3	Flammable Liquid	1987	Alcohols, NOS	Alcohol	127	900	
				3	Flammable Liquid	1263	Paint related material, flammable	Paint	128	2,778	
23:04	East	Van	TX-NC	6.1	Toxic	2862	Vanadium pentoxide	Vanadium Pentoxide	151	3,637	
23:05	East	MC331	TX-SC	8	Corrosive	1038	Ethylene, refrigerated liquid (cryogenic liquid)	Ethylene	115	40,150	
23:12	East	Van	TN-SC	8	Corrosive	2794	Batteries, wet, filled with acid	Batteries	154	2,730	154
23:23	East	MC307	GA-GA	9	Miscellaneous	3257	Elevated temperature liquid, NOS	Asphalt	128	51,290	5593 Gal
23:23	East	MC307	GA-GA	9	Miscellaneous	3257	Elevated temperature liquid, NOS	Asphalt	128	51,290	5593 Gal
23:23	East	MC307	GA-GA	9	Miscellaneous	3257	Elevated temperature liquid, NOS	Asphalt	128	51,290	5593 Gal
23:30	West	Van	GA-AR	8	Corrosive	2735	Alkylamines, NOS	Alkylamines	153	304	
23:30	East	Van	OK-GA	3	Flammable Liquid	1133	Adhesives (flammable)	Adhesives	128	1,120	
23:35	West	Van	GA-AL	2.2	Nonflammable Gas	1013	Carbon dioxide, compressed	Carbon Dioxide	120		
23:42	West	Van	NC-AL	8	Corrosive	1760	Corrosive liquid, NOS	Sodium Hydroxide	154	2,797	
				8	Corrosive	1791	Hypochlorite solution	Sodium Hypochlorite	154	1,985	
23:53	East	MC307	Unkno wn	9	Miscellaneous				171		
0:14	West	Van	GA-AL	3	Flammable Liquid	1268	Petroleum distillates, NOS	Petroleum Distillates	128		
				6.1	Toxic	1593	Methylene chloride	Methylene chloride/chloroform	160	1,382	
0:28	West	MC312	SC-AL	3	Flammable Liquid	1263	Paint related material, flammable	Paint	128	0	Residue - Empty
0:38	West	Van	GA-AL	3	Flammable Liquid	1263	Paint related material, flammable	Paint	128	740	
0:44	West	Van	GA-AL	3	Flammable Liquid	1263	Paint related material, flammable	Paint	128	93	
				2.1	Flammable Gas	3161	Liquefied gas, flammable, NOS		115	464	
0:45	East	Van	CA-GA	8	Corrosive	2794	Batteries, wet, filled with acid	Batteries	154	1,812	
0:50	West	Van	GA-TN	3	Flammable Liquid	1193	Methyl ethyl ketone	Methyl Ethyl Ketone	127	179	

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Time	Dir	Trailer Type	Orig/ Dest	Trailer Placard	Material Hazard Class	Mat'l ID	Material PSN	Material Name	ERG Guide No.	Quantity (lbs)	Other
0:59	East	Van	AL-GA	8	Corrosive	2794	Batteries, wet, filled with acid	Batteries	154	1,960	
1:00	East	MC306	GA-GA	3	Flammable Liquid	1203	Gasoline	Gasoline	128	48,125	7700 Gal
1:15	West	Van	GA-TX	3	Flammable Liquid	1197	Extracts, flavoring, liquid	Extracts	127	1,029	
				3	Flammable Liquid	2319	Terpine Hydrocarbons, NOS	Terpine Hydrocarbons	128	1,000	
1:18	West	Van	GA-TN	8	Corrosive	2794	Batteries, wet, filled with acid	Batteries	154	1,900	
				8	Corrosive	1823	Sodium hydroxide, solid	Sodium Hydroxide	154		
1:20	East	Van	AL-SC	8	Corrosive	1760	Corrosive liquid, NOS	Corrosive Liquid	154	3,000	
				2.1	Flammable Gas	1978	Propane	Propane	115	1,983	
1:20	West	Van	GA-MS	3	Flammable Liquid	1993	Combustible liquid, NOS	Linalyl Acetate	128	9,954	
1:22	West	Van	GA-TN	8	Corrosive	1824	Sodium hydroxide, solution	Sodium Hydroxide	154	750	
				8	Corrosive	1719	Caustic alkali liquid, NOS	Alkali	154		
1:26	West	Van	GA-TN	3	Flammable Liquid	1993	Combustible liquid, NOS	Ethanol-Isopropanol	128	1,760	
1:32	West	MC307	GA-AL	8	Corrosive	1791	Hypochlorite solution	Sodium Hypochlorite	154	11,532	
1:35	East	Van	MS-GA	3	Flammable Liquid	1268	Petroleum Products, NOS	Plastic Films	128		
1:40	West	MC307	GA-AR	9	Miscellaneous	3257	Elevated temperature liquid, NOS	Asphalt	128	0	Residue - Empty
1:41	West	MC307	GA-AR	9	Miscellaneous	3257	Elevated temperature liquid, NOS	Asphalt	128	0	Residue - Empty
1:42	West	MC307	GA-AR	9	Miscellaneous	3257	Elevated temperature liquid, NOS	Asphalt	128	0	Residue - Empty
1:43	West	MC307	GA-AR	9	Miscellaneous	3257	Elevated temperature liquid, NOS	Asphalt	128	0	Residue - Empty
1:48	West	Van	GA-AL	3	Flammable Liquid	1263	Paint related material, flammable	Paint	128	1,200	
1:52	West	Intermodal	SC-AL	4.1	Flammable Solids	1325	Flammable solid, organic, NOS	Stearic Acid	133	43,028	
1:54	East	Van	GA-GA	8	Corrosive	3253	Disodium trioxosilicate	Disodium Trioxosilicate	154	28,800	
1:55	West	Van	SC-AL	8	Corrosive	2790	Acetic acid, solution, 10-80%	Acetic Acid	153	175	

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1:55	West	Van	SC-AL	8	Corrosive	3265	Corrosive liquid, acidic, organic, NOS	Propionic Acid	153	325	
1:57	West	Van	GA-AL	3	Flammable Liquid	1263	Paint related material, flammable	Paint	128	3,947	
2:00	West	Van	GA-AL	3	Flammable Liquid	1866	Resin solution	Resins	127	4,456	
2:01	East	MC307	AL-GA	9	Miscellaneous	2448	Sulfur, molten	Sulfur	133	49,600	
2:02	East	Van	AL-GA	8	Corrosive	2794	Batteries, wet, filled with acid	Batteries	154	360	
				2.2	Nonflammable Gas	1044	Fire extinguishers with compressed gas	Fire Extinguishers	126	1,000	
2:15	West	Van	GA-MS	8	Corrosive	1791	Hypochlorite solution	Sodium Hypochlorite	154	380	
2:25	West	Van	GA-MS	3	Flammable Liquid	1263	Paint related material, flammable	Paint	128		
				8	Corrosive	1824	Sodium hydroxide, solution	Sodium Hydroxide	154	725	
2:31	East	Van	OK-NC	1	Explosives	303	Explosives	Ammunition	112	65,000	
				1	Explosives	131	Explosives	Ammunition	112	8,861	
2:35	East	MC307	AL-NC	3	Flammable Liquid	3256	Elevated temperature liquid, flammable, NOS	Dimethylterephthalate	128	24,000	
2:40	East	MC312	AL-SC	5.1	Oxidizer	2014	Hydrogen peroxide, 20% - 60%	Hydrogen Peroxide	140	41,400	
2:46	East	MC312	OK-GA	9	Miscellaneous	3257	Elevated temperature liquid, NOS	Flux	128		
2:46	East	MC312	OK-GA	9	Miscellaneous	3257	Elevated temperature liquid, NOS	Flux	128	50,480	
2:55	West	Van	GA-MS	3	Flammable Liquid	1993	Combustible liquid, NOS	Linalyl Acetate	128	1,235	
2:59	West	Van	GA-AL	3	Flammable Liquid	1987	Alcohols, NOS	Methanol	127	30	
				3	Flammable Liquid	1263	Paint related material, flammable	Paint	128	1,110	
3:10	East	Van	TN-GA	8	Corrosive	3260	Corrosive solid, acid, inorganic, NOS	Potassium Monopersulfate	154	43,000	
3:25	West	Van	GA-AL	5.1	Oxidizer	2468	Trichloroisocyanuric acid, dry	Trichloroisocyanuric Acid	140	3,759	
				5.1	Oxidizer	1748	Calcium hypochlorite, dry	Calcium Hypochlorite	140	2,031	
3:28	East	MC331	TX-GA	2.2	Nonflammable Gas	2187	Carbon dioxide, refrigerated liquid	Carbon Dioxide	120		

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3:55	West	Van	GA-AL	3	Flammable Liquid	1263	Paint related material, flammable	Paint	128	20,100	
3:57	East	MC306	GA-GA	3	Flammable Liquid	1203	Gasoline	Gasoline	128	31,250	5000 Gal
4:05	West	MC306	GA-GA	3	Flammable Liquid	1203	Gasoline	Gasoline	128	50,000	8000 gal
				3	Flammable Liquid	1170	Ethanol	Ethanol	127	5,850	900 gal
4:10	East	MC331	GA-GA	2.2	Nonflammable Gas	1977	Nitrogen, refrigerated liquid (cryogenic liquid)	Nitrogen	120	42,000	
4:15	West	Van	GA-AL	8	Corrosive	3265	Corrosive liquid, acidic, organic, NOS	Citric Acid	153	375	
				8	Corrosive	3265	Corrosive liquid, acidic, organic, NOS	Levulinic acid	153	1,218	
4:15	West	Van	GA-AL	3	Flammable Liquid	1263	Paint related material, flammable	Paint	128	250	
4:18	East	MC306	GA-GA	3	Flammable Liquid	1203	Gasoline	Gasoline	128	47,500	7600 Gal
				3	Flammable Liquid	1203	Gasoline	Ethanol	127	5,312	850 Gal
4:20	East	Tank Truck	Unknown	3	Flammable Liquid	1202	Diesel fuel	Diesel	128		Did Not Stop
4:23	East	Van	AL-NC	8	Corrosive	1824	Sodium hydroxide, solution	Sodium Hydroxide	154	2,000	
4:23	West	Van	GA-AL	3	Flammable Liquid	1263	Paint related material, flammable	Paint	128	1,224	
4:24	West	Van	GA-AL	3	Flammable Liquid	1263	Paint related material, flammable	Paint	128	1,400	
				5.1	Oxidizer	2468	Trichloroisocyanuric acid, dry	Trichloroisocyanuric Acid	140	248	
4:30	East	MC331	MS-GA	2.1	Flammable Gas	1075	Petroleum gases, liquefied	LPG	115	24,000	
4:34	East	MC307	OK-GA	9	Miscellaneous	3257	Elevated temperature liquid, flammable, NOS	Flux	128	52,000	
4:40	West	MC307	GA-AL	9	Miscellaneous	3082	Hazardous waste liquid, NOS	Methyldipheynl Diisocyanate	171	44,020	
4:45	East	Van	AL-GA	3	Flammable Liquid	1263	Paint related material, flammable	Paint	128	37,900	
4:46	West	Van	GA-MS	3	Flammable Liquid	1263	Paint related material, flammable	Paint	128	23,800	
				3	Flammable Liquid	1307	Xylenes	Xylene	130	200	
4:50	East	MC331	AL-GA	2.2	Nonflammable Gas	1073	Oxygen, refrigerated liquid (cryogenic liquid)	Oxygen	122	41,000	

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4:54	East	Van	AL-GA	5.1	Oxidizer	2468	Trichloroisocyanuric acid, dry	Trichloroisocyanuric Acid	140	12,000	
4:58	West	Van	GA-AL	3	Flammable Liquid	1263	Paint related material, flammable	Paint	128	30,100	
5:00	East	MC312	AR-NC	8	Corrosive	2922	Corrosive liquid, toxic, NOS	Sodium Hydrosulfide	154	48,000	
5:05	West	Van	SC-TX	8	Corrosive	3264	Corrosive liquid, acidic, inorganic, NOS	Phosphoric Acid	154	43,000	
5:10	East	MC306	GA-GA	3	Flammable Liquid	3257	Elevated temperature liquid, NOS	Shingle Coating	128	28,060	
5:14	West	Van	GA-AL	3	Flammable Liquid	2924	Flammable liquid, corrosive, NOS	Isopropanol / p-toluene sulfonic acid	132	800	
				3	Flammable Liquid	1866	Resin solution	Resins	128	8,915	
5:19	West	Tank Truck	GA-AL	3	Flammable Liquid	1270	Oil, petroleum	Oil	128	0	Residue - Empty
5:30	West	Van	GA-TN	3	Flammable Liquid	1760	Corrosive liquid, NOS	Ethanolamine	154	125	
				3	Flammable Liquid	1263	Paint related material, flammable	Paint	128	1,685	
5:38	East	MC306	Unknown	3	Flammable Liquid	1203	Gasoline	Gasoline	128		Did Not Stop
5:42	East	Van	AL-GA	4.2	Spontaneously Comb	1431	Sodium methylate, dry	Sodium Methylate	138	4,500	
5:43	East	MC306	GA-GA	3	Flammable Liquid	1205	Gasoline	Gasoline	128	0	Empty
5:44	West	Double Van	GA-AL	3	Flammable Liquid	1866	Resin solution	Resins	127	940	
				3	Flammable Liquid	1307	Xylenes	Xylene	130	1,680	
				3	Miscellaneous	1263	Paint related material, flammable	Paint	128	350	
5:45	West	Van	GA-AL	8	Corrosive	2794	Batteries, wet, filled with acid	Batteries	154	6,383	
				2.2	Nonflammable Gas	3159	Refrigerant gas R-134a	1,1,1,2-Tetrafluoroethane	126	1,790	
				8	Corrosive	2796	Battery fluid, acid	Battery Acid	157	366	
5:53	West	Van	GA-TX	3	Flammable Liquid	1263	Paint related material, flammable	Paint	128	3,143	
5:54	West	Van	GA-AL	3	Flammable Liquid	1866	Resin solution	Resins	127	2,033	
5:57	East	MC312	AR-SC	8	Corrosive	2922	Corrosive liquid, toxic, NOS	Sodium Hydrosulfide	154	46,800	

Georgia Commodity Flow Survey
September 10-11, 2008
Survey Data Table

Time	Dir	Trailer Type	Orig/ Dest	Trailer Placard	Material Hazard Class	Mat'l ID	Material PSN	Material Name	ERG Guide No.	Quantity (lbs)	Other
6:00	West	Van	GA-AL	8	Corrosive	1824	Sodium hydroxide, solution	Sodium Hydroxide	154	610	
6:02	West	Van	NC-GA	3	Flammable Liquid	1263	Paint related material, flammable	Paint	128	2,006	
6:03	West	Van	GA-AL	3	Flammable Liquid	1263	Paint related material, flammable	Paint	128	4,200	
				3	Flammable Liquid	1193	Methyl ethyl ketone	Methyl Ethyl Ketone	127	260	
6:03	East	Van	TN-GA	2.1	Flammable Gas	1950	Aerosols	Aerosols	128		
				3	Flammable Liquid	1866	Resin solution	Resins	127		
6:11	East	MC306	GA-GA	9	Miscellaneous	3257	Elevated temperature liquid, NOS	Shingle Coating	128	30,880	
6:12	East	Van	TN-GA	3	Flammable Liquid	1866	Resin solution	Resins	127	15,013	
6:16	East	Tank Truck	TX-GA	8	Corrosive	1805	Phosphoric acid	Phosphoric Acid	154	20,000	
6:18	West	Van	NC-TX	2.1	Flammable Gas	1057	Lighters (cigarettes)(flammable gas)	Lighters	115	3,172	
6:26	West	Van	GA-AL	3	Flammable Liquid	1263	Paint related material, flammable	Paint	128	1,464	
				8	Corrosive	1760	Corrosive liquid, NOS	Quaternary ammonium cleaner	154	906	
6:32	West	Van	GA-TN	3	Flammable Liquid	1863	Fuel, aviation, turbine engine	Jet Fuel	128	0	Residue - Empty
6:49	East	MC338	GA-GA	2.2	Nonflammable Gas	1073	Oxygen, refrigerated liquid (cryogenic liquid)	Oxygen	122	78,200	
6:50	East	MC307	MS-GA	8	Corrosive	2209	Formaldehyde, solution, corrosive	Formaldehyde	132	79,000	
6:54	East	MC307	GA-GA	3	Flammable Liquid	3257	Elevated temperature liquid, NOS	Flux	128		
6:57	East	Van	AL-GA	2.2	Nonflammable Gas	1044	Fire extinguishers with compressed gas	Fire Extinguishers	126	1,274	
7:00	West	Double Van	GA-MS	3	Flammable Liquid	3161	Liquefied gas, flammable, NOS	Dimethyl ether methyl acrylate	115	2,762	
7:04	East	MC331	GA-GA	2.2	Nonflammable Gas	1977	Nitrogen, refrigerated liquid (cryogenic liquid)	Nitrogen	128	5,495	
7:05	West	Flat Bed	FL-AL	1	Explosives	0161	Explosives, Division 1.4	Gunpowder	112	541	
7:06	West	Double Van	GA-AL	8	Corrosive	1758	Chromium oxychloride	Chromium Oxychloride	137	400	
				8	Corrosive	1824	Sodium hydroxide, solution	Sodium Hydroxide	154	984	

Georgia Commodity Flow Survey
September 10-11, 2008
Survey Data Table

Time	Dir	Trailer Type	Orig/ Dest	Trailer Placard	Material Hazard Class	Mat'l ID	Material PSN	Material Name	ERG Guide No.	Quantity (lbs)	Other
7:20	East	MC306	Unknown	3	Flammable Liquid	1193	Ethyl methyl ketone	Ethyl Methyl Ketone	127		Did Not Stop
7:23	West	Tank Truck	GA-AL	2.2	Nonflammable Gas	1073	Oxygen, refrigerated liquid (cryogenic liquid)	Oxygen	122	11,875	1250 gal
7:28	East	Van	AL-GA	3	Flammable Liquid	1993	Combustible liquid, NOS	Xylene	128	6,388	880 Gal
					Flammable Liquid	1993	Combustible liquid, NOS	Toluene	128	5,587	770 Gal
7:39	West	Van	GA-MS	8	Corrosive	1760	Corrosive liquid, NOS	Potassium Hydroxide	154	400	
				8	Corrosive	3266	Corrosive liquid, basic, inorganic, NOS	Potassium Hydroxide	154	7,360	
7:40	East	MC306	GA-GA	3	Flammable Liquid	1203	Gasoline	Gasoline	128		
				3	Flammable Liquid	1993	Combustible liquid, NOS	Diesel	128		
7:40	West	Box Truck	GA-GA	2.2	Nonflammable Gas	2187	Carbon dioxide, refrigerated liquid	Carbon Dioxide	120	250	
				2.2	Nonflammable Gas	1977	Nitrogen, refrigerated liquid	Nitrogen	120	250	
				2.2	Nonflammable Gas	1963	Helium, refrigerated liquid	Helium	120	250	
7:44	East	Van	GA-GA	3	Flammable Liquid	1993	Combustible liquid, NOS	Tetrachloroethylene/ Waste Paint Thinner	127		
7:45	East	MC306	AL-GA	2.3	Toxic Gas	1005	Anhydrous ammonia	Ammonia	125		
				8	Corrosive	2672	Ammonia, solution	Ammonium Hydroxide	154	47,000	
7:45	West	Roll-Off	SC-AL	4.3	Water Reactive	3170	Aluminum dross	Aluminum Byproduct Dross	138	23,200	
7:48	East	Van	TX-GA	3	Flammable Liquid	1197	Extracts, flavoring, liquid	Extracts	127		
				4.1	Flammable Solids	1944	Matches, safety	Matches	133		
				8	Corrosive	3264	Corrosive liquid, acidic, inorganic, NOS	Phosphoric Acid	154		
8:00	West	Van	GA-AL	3	Flammable Liquid	1263	Paint related material, flammable	Paint	128	6,650	
8:03	East	Van	AL-GA	8	Corrosive	3265	Corrosive liquid, acidic, organic, NOS	NexBrite	153		
				9	Miscellaneous	3082	Hazardous waste, liquid, NOS	Corrosive Liquid	171		
8:10	East	MC306	GA-GA	8	Corrosive	1863	Fuel, aviation, turbine engine	Jet Fuel, JP8	128		

Georgia Commodity Flow Survey
September 10-11, 2008
Survey Data Table

Time	Dir	Trailer Type	Orig/ Dest	Trailer Placard	Material Hazard Class	Mat'l ID	Material PSN	Material Name	ERG Guide No.	Quantity (lbs)	Other
8:21	West	Double Van	NC-MS	3	Flammable Liquid	1993	Combustible liquid, NOS	Methanol / Nitromethane	128	535	
				3	Flammable Liquid	1210	Printing ink, flammable	Ink(flammable)	129	5,261	
8:23	West	Van	GA-AL	3	Flammable Liquid	1950	Aerosol dispensers	Aerosols	126	900	
8:25	West	MC331	GA-AL	2.2	Nonflammable Gas	1951	Argon (refrigerated liquid) (cryogenic liquid)	Argon	120	48,000	
8:25	East	MC306	TX-GA	8	Corrosive	2834	Phosphorous acid	Phosphorous Acid	154	44,000	
8:26	West	MC331	GA-LA	2.2	Nonflammable Gas	1951	Argon (refrigerated liquid) (cryogenic liquid)	Argon	120	48,000	
8:32	West	Double Van	GA-AL	4.3	Dangerous when wet	3399	Organometallic substance, liquid, water reactive	Organometallic	138		
8:44	East	Van	GA-GA	8	Corrosive	1791	Hypochlorite solution	Sodium Hypochlorite	154	6,255	600 Gal
8:52	East	MC331	KS-SC	2.2	Nonflammable Gas	1963	Helium, refrigerated liquid (cryogenic liquid)	Helium	120		
8:51	West	Double Van	GA-CA	3	Flammable Liquid	1197	Extracts, flavoring, liquid	Extracts	127	1,867	
				3	Flammable Liquid	1170	Ethanol	Ethanol	127	432	
8:55	West	Roll-Off	GA-AL	9	Miscellaneous	3432	Polychlorinated biphenyls, solid	Polychlorinated Biphenyls	171	10,000	
8:58	West	MC312	GA-AL	3	Flammable Liquid	1219	Isopropanol	Isopropanol	129	9980	
								TOTAL		5,558,876	

Table 1
Truck Type, Shipments and Total Cargo Weights

Truck Type	Truck Count	Shipments	Wt. (Lbs)
Van	131	194	942,916
MC306	65	65	1,701,029
MC307	58	63	1,327,565
Double Van	23	39	79,460
MC312	22	22	629,421
MC331	15	15	367,524
Roll-Off	7	7	172,020
Tank Truck	7	7	50,625
MC338	5	5	172,180
Flat Bed	3	3	12,518
Intemodal	2	2	43,028
Box Truck	1	3	750
Dry Bulk	1	1	47,000
Pickup Truck	1	1	500
Tube Trailer	1	1	40
Utility Truck	1	1	12,300
Total	343	430	5,558,876

Table 2
Placards for Hazardous Materials Classes/Divisions

Class **1** Explosives (49CFR173.50)

Class **2** Compressed Gasses (49CFR173.115)
- Division **2.1** Flammable Gas [49CFR173.115(a)]
- Division **2.2** Non-flammable, Non-Poisonous Gas [49CFR173.115(b)]
- Division **2.3** Poison Gas [49CFR173.115(b)]

Class **3** Flammable Liquids (49CFR173.120)

Class **4** Flammable Solids (49CFR173.124)
- Division **4.1** Flammable Solid [49CFR173.124(a)]
- Division **4.2** Spontaneously Combustible [49CFR 173.124(b)]
- Division **4.3** Dangerous When Wet [49CFR 173.124(c)]

Class **5** Oxidizers (49CFR173.127)
- Division **5.1** Oxidizers [49CFR173.127(a)]
- Division **5.2** Organic Peroxide [173.128(a)]

Class **6** Poisons (49CFR173.132)
- Division **6.1** Poisons [49CFR 173.132]

Class **7** Radioactive Materials (49CFR Subpart 1)

Class **8** Corrosive Liquids (49CFR173.136)

Class **9** Miscellaneous Hazardous Materials (49CFR 173.140)

DANGEROUS – 49CFR172.405(e)

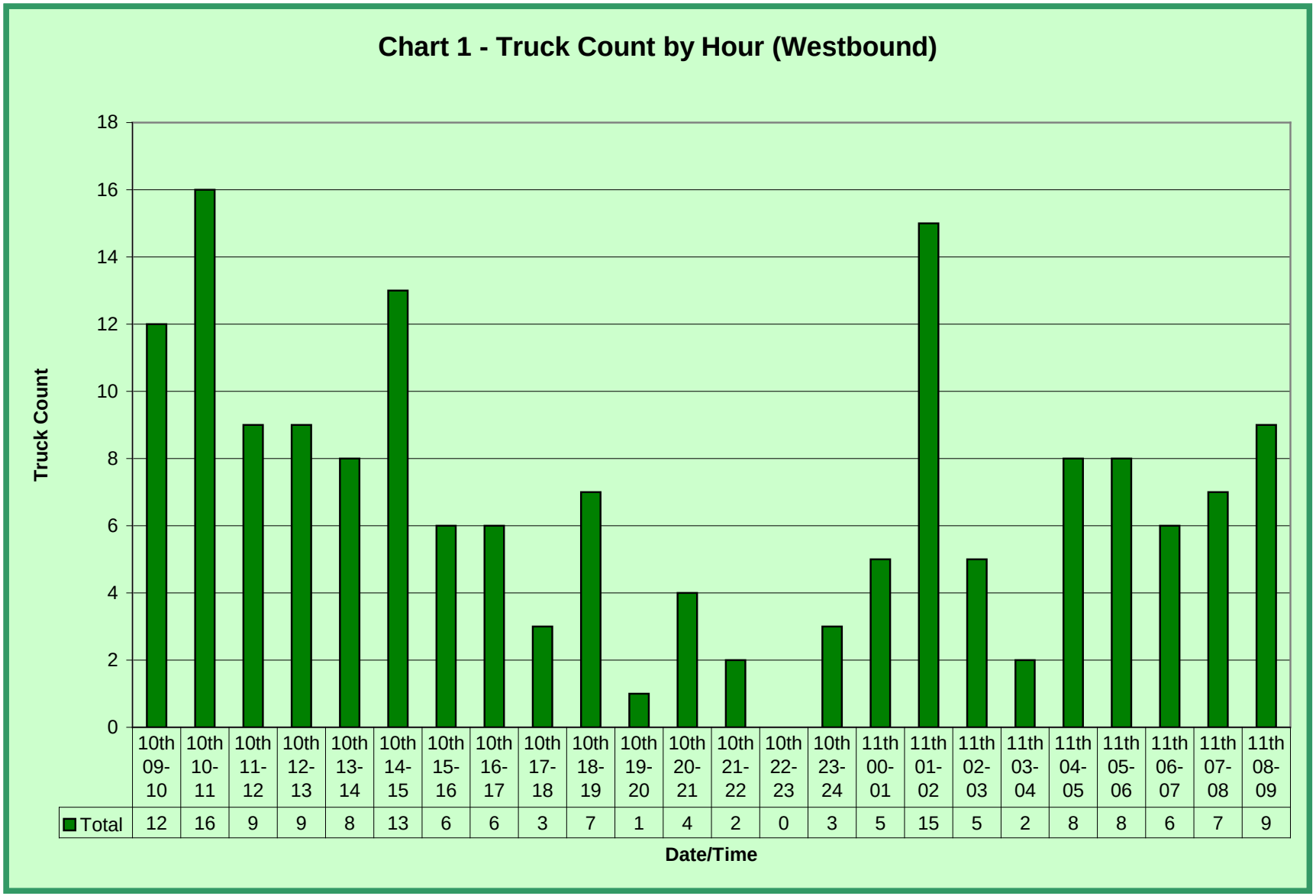
Table 3
Alphabetic List of Observed Hazardous Materials

1.	1,1,1,2-Tetrafluoroethane
2.	2,6-Di-tert-butylphenol
3.	Acetic Acid
4.	Acetone
5.	Acetylene
6.	Acrylic Acid
7.	Adhesives
8.	Aerosols
9.	Alcohol
10	Alkali
11.	Alkali liquid
12.	Alkaline Copper Complex
13.	Alkylamines
14.	Aluminium Sulfate
15.	Aluminum Byproduct Dross
16.	Aluminum Chloride
17.	Amines
18.	Ammonia
19.	Ammonium Hydroxide
20.	Ammunition
21.	Ammunition / Fire Works
22.	Aniline
23.	Argon
24.	Aromatic Naphtha
25.	Arsenic Acid
26.	Arsenical Pesticide
27.	Asphalt
28.	Batteries
29.	Battery Acid
30.	Bisulfites
31.	Bromo-Chloro Dimethylhydantoin
32.	Buffing Polish Compound
33.	Butylamine
34.	Calcium Hypochlorite
35.	Carbon Dioxide
36.	Carbon Dioxide
37.	Caustic Alkali
38.	Chloroanilines
39.	Chlorodifluoromethane
40.	Chromic Acid
41.	Chromium Oxychloride
42.	Citric Acid
43.	Clay fuel filters
44.	Combustible Liquid
45.	Compressed Air
46.	Corrosive Liquid
47.	Corrosive liquid, NOS
48.	Corrosive Liquid, Paraquat
49.	Corrosive Solids
50.	Cyclohexane ethyl acetate
51.	Cyclohexylamine
52.	Debris/concrete
53.	Diesel
54.	Dimethyl ether methyl acrylate
55.	Dimethylethanolamine
56.	Dimethylterephthalate
57.	Disodium Trioxosilicate
58.	Elevated Temperature Liquid
59.	Ethanol
60.	Ethanolamine
61.	Ethanol-Isopropanol
62.	Ethyl Methyl Ketone
63.	Ethylene
64.	Explosives
65.	Extracts
66.	Ferric Chloride
67.	Fire extinguishers
68.	Flammable Liquid
69.	Flammable Solid, NOS
70.	Flux
71.	Formaldehyde
72.	Fuel Oil
73.	Fuel Oil, Low Sulfur
74.	Fuses
75.	Gasohol
76.	Gasoline
77.	Gunpowder
78.	Haz Waste Solid (flammable)
78.	Hazardous Waste
79.	Hazardous Waste - Toluene
80.	Helium
81.	Hexamethylenediamine
82.	Hydrochloric Acid
83.	Hydrogen
84.	Hydrogen Peroxide
85.	Ink(flammable)
86.	Inorganic corrosive liquid
87.	Isobutylene
88.	Isocyanates
89.	Isopropanol
90.	Isopropanol / p-toluene sulfonic acid
91.	Jet Fuel

Table 3
Alphabetic List of Observed Hazardous Materials

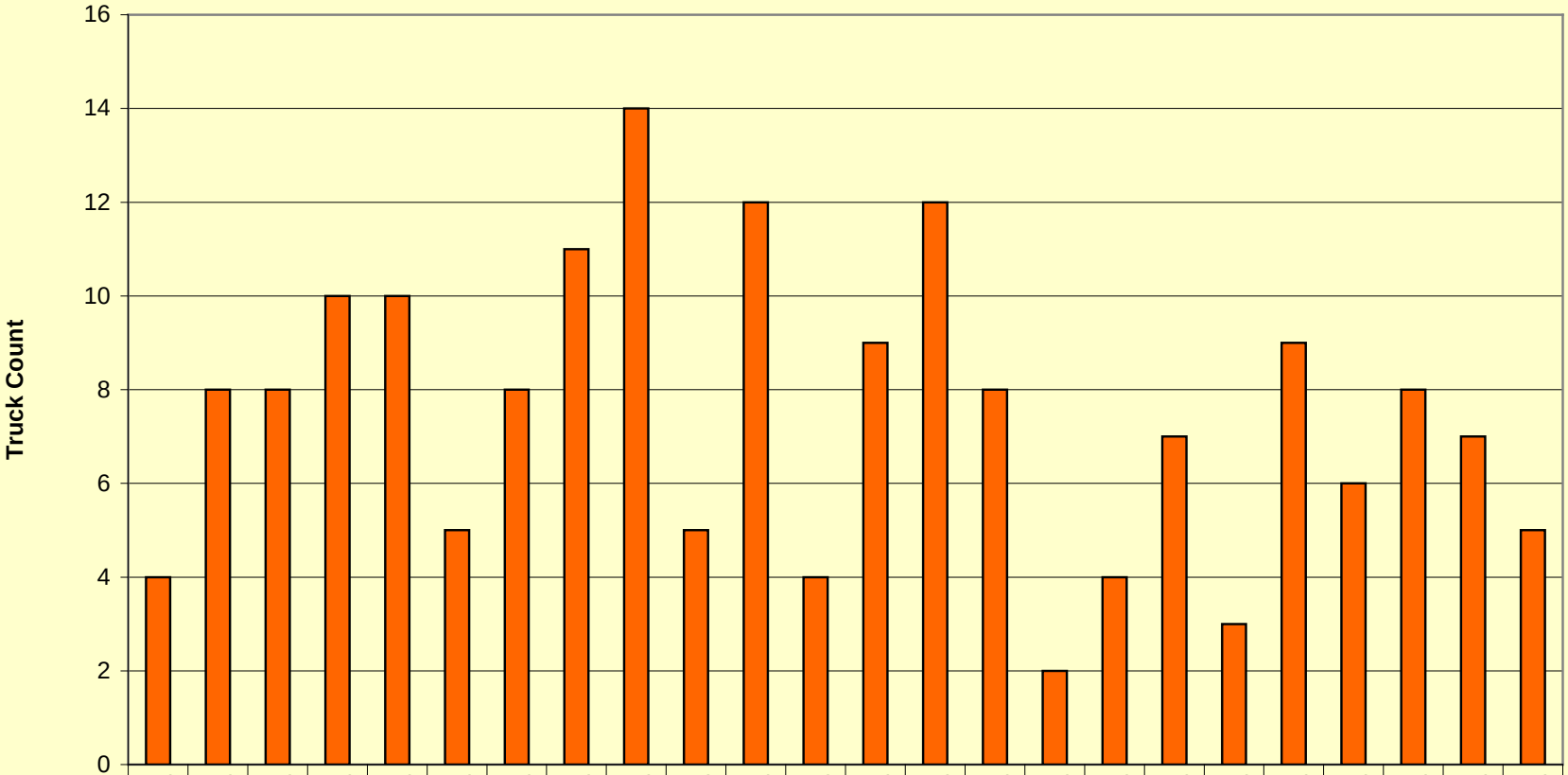
92.	Jet Fuel, JP8
93.	Levulinic acid
94.	Lighters
95.	Linalyl Acetate
96.	Lithium Hydroxide
97.	LPG
98.	Matches
99.	Methanol
100.	Methanol / Nitromethane
101.	Methyl Acrylate
102.	Methyl Ethyl Ketone
103.	Methyl Methacrylate
104.	Methyl tert-butyl ether
105.	Methyldipheynl Diisocyanate
106.	Methylene Chloride
107.	Methylene chloride/chloroform
108.	Monoethanolamine
109.	Monoethynolamine
110.	NexBrite
111.	Nitric Acid
112.	Nitric Oxide
113.	Nitrites
114.	Nitrocellulose
115.	Nitrogen
116.	Nonflammable Gas
117.	Oil
118.	Oleoyl Chloride-Methanol
119.	Organic Acid
120.	Organometallic
121.	Oxygen
122.	Paint
123.	Paint Thinner
124.	Pesticide
125.	Petroleum Distillates
126.	Phenol-Cresol
127.	Phenylenediamines
128.	Phosphoric Acid
129.	Phosphorous Acid
130.	Piperazine
131.	Plastic Films
132.	Polychlorinated Biphenyls
133.	Potassium Hydroxide
134.	Potassium Monopersulfate
135.	Propane
136.	Propanol
137.	Propionic Acid
138.	Quaternary ammonium cleaner
139.	Resins
140.	Shingle Coating
141.	Sodium Bisulfite
142.	Sodium Hydrosulfide
143.	Sodium Hydroxide
144.	Sodium Hydroxide / Potassium Hydroxide
145.	Sodium Hypochlorite
146.	Sodium Methylate
147.	Stearic Acid
148.	Sulfur
149.	Sulfur dioxide
150.	Sulfuric Acid
151.	Tar & Oil Blend
152.	Terpine Hydrocarbons
153.	Tetrachloroethylene
154.	Tetrachloroethylene/ Waste Paint Thinner
155.	Toluene
156.	Toluene/Acetone
157.	Trichloroisocyanuric Acid
158.	Triethanolamine
159.	Vanadium Pentoxide
160.	Wood Preservatives
161.	Xylene

Chart 1 - Truck Count by Hour (Westbound)



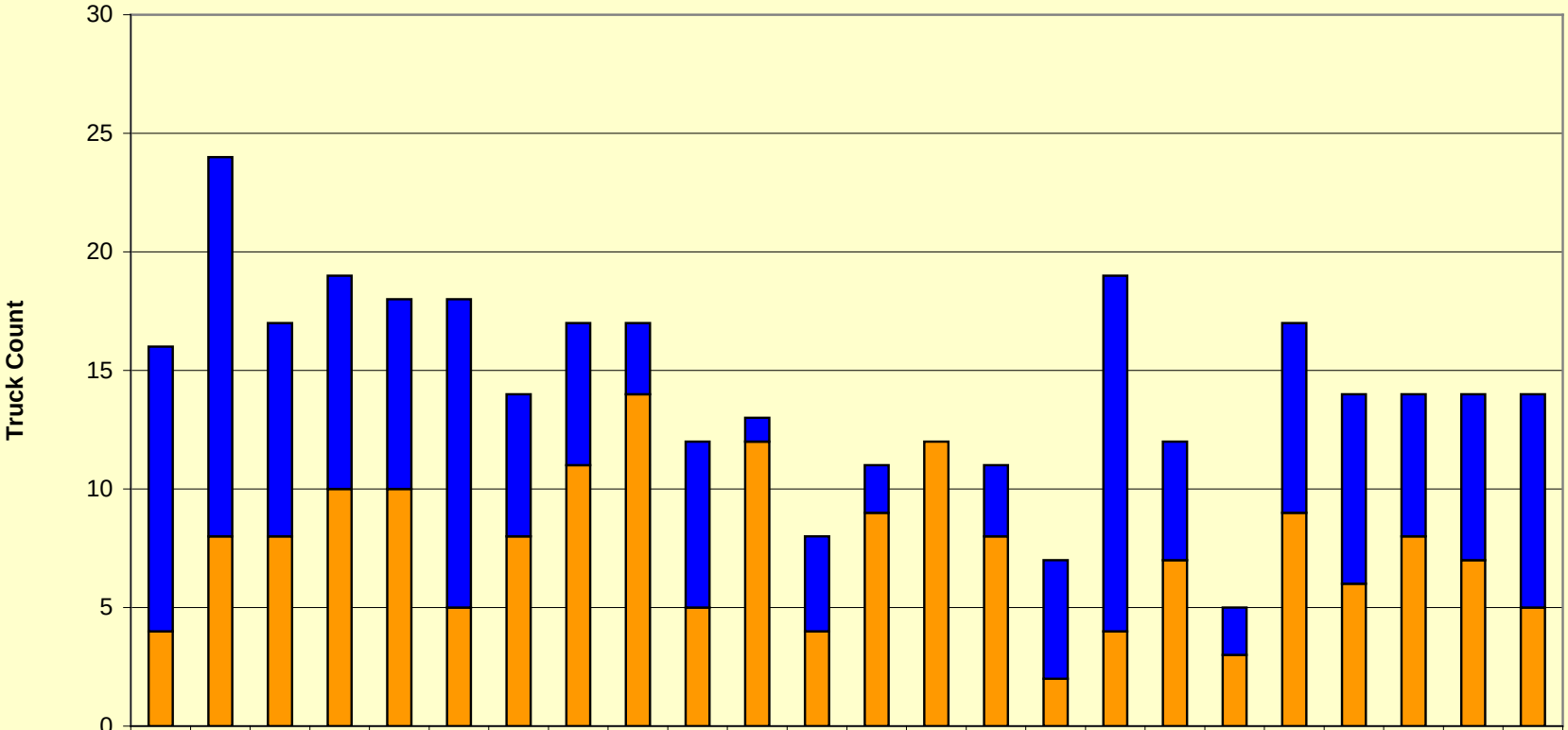
	10th 09-10	10th 10-11	10th 11-12	10th 12-13	10th 13-14	10th 14-15	10th 15-16	10th 16-17	10th 17-18	10th 18-19	10th 19-20	10th 20-21	10th 21-22	10th 22-23	10th 23-24	11th 00-01	11th 01-02	11th 02-03	11th 03-04	11th 04-05	11th 05-06	11th 06-07	11th 07-08	11th 08-09
Total	12	16	9	9	8	13	6	6	3	7	1	4	2	0	3	5	15	5	2	8	8	6	7	9

Chart 2 - Truck Count by Hour (Eastbound)



	10th 09-10	10th 10-11	10th 11-12	10th 12-13	10th 13-14	10th 14-15	10th 15-16	10th 16-17	10th 17-18	10th 18-19	10th 19-20	10th 20-21	10th 21-22	10th 22-23	10th 23-24	11th 00-01	11th 01-02	11th 02-03	11th 03-04	11th 04-05	11th 05-06	11th 06-07	11th 07-08	11th 08-09
Total	4	8	8	10	10	5	8	11	14	5	12	4	9	12	8	2	4	7	3	9	6	8	7	5

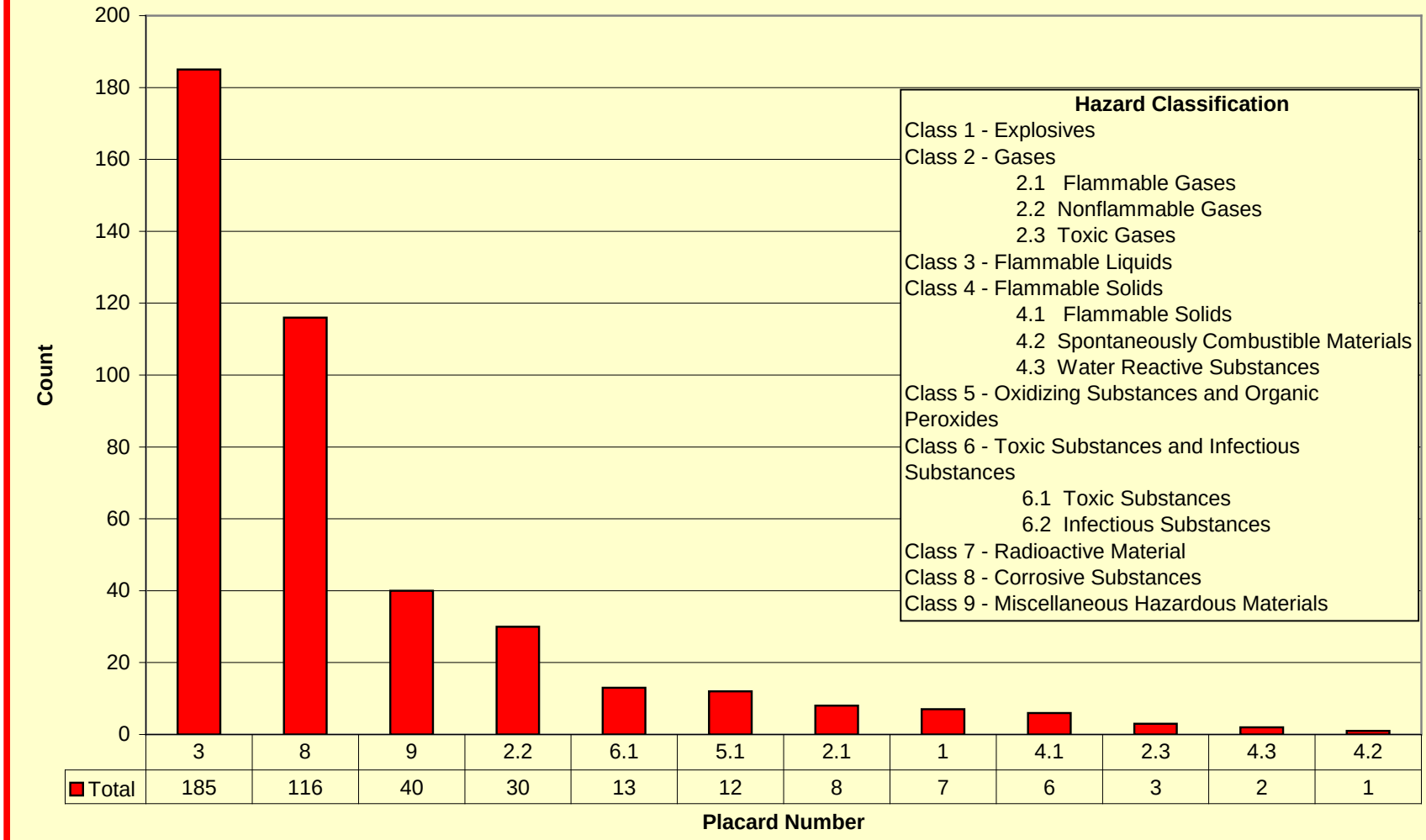
Chart 3 - Truck Count by Hour (Total)



	10th 09-10	10th 10-11	10th 11-12	10th 12-13	10th 13-14	10th 14-15	10th 15-16	10th 16-17	10th 17-18	10th 18-19	10th 19-20	10th 20-21	10th 21-22	10th 22-23	10th 23-24	11th 00-01	11th 01-02	11th 02-03	11th 03-04	11th 04-05	11th 05-06	11th 06-07	11th 07-08	11th 08-09
West	12	16	9	9	8	13	6	6	3	7	1	4	2	0	3	5	15	5	2	8	8	6	7	9
East	4	8	8	10	10	5	8	11	14	5	12	4	9	12	8	2	4	7	3	9	6	8	7	5

Date/Time

Chart 4 - Placard ID Count



	3	8	9	2.2	6.1	5.1	2.1	1	4.1	2.3	4.3	4.2
Total	185	116	40	30	13	12	8	7	6	3	2	1

Chart 5 - Distribution of Hazmat Placards

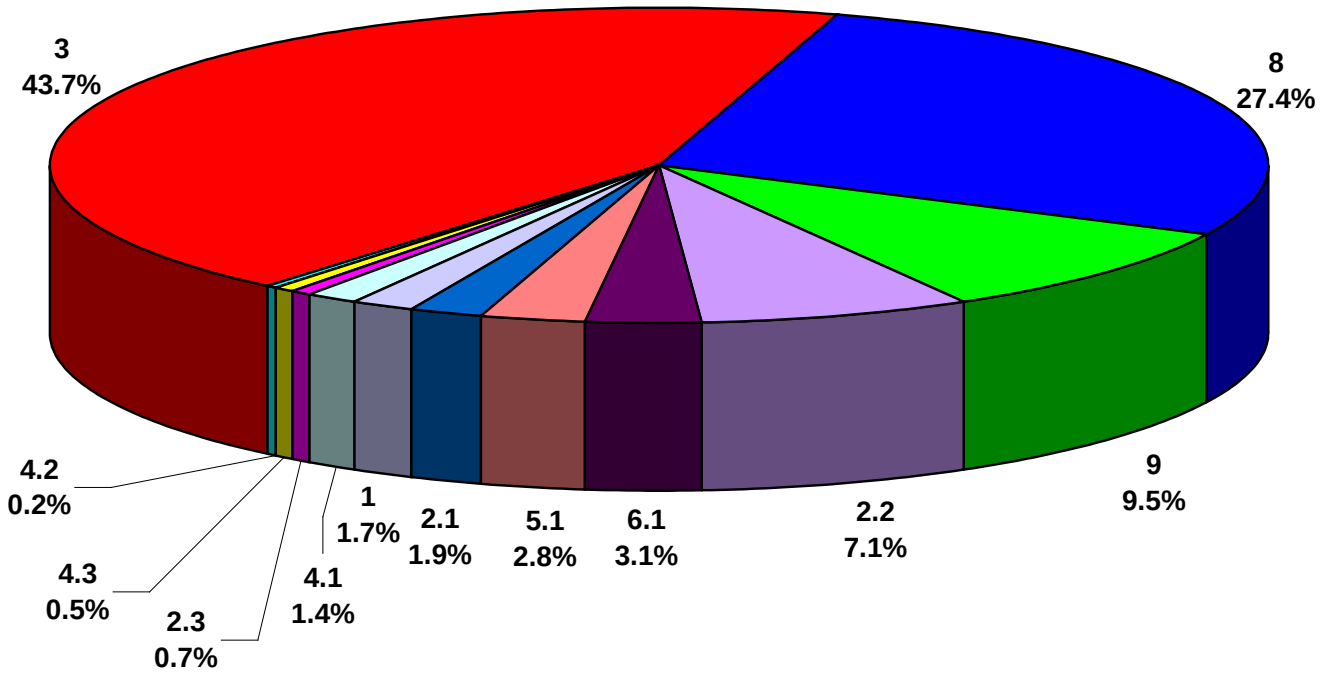
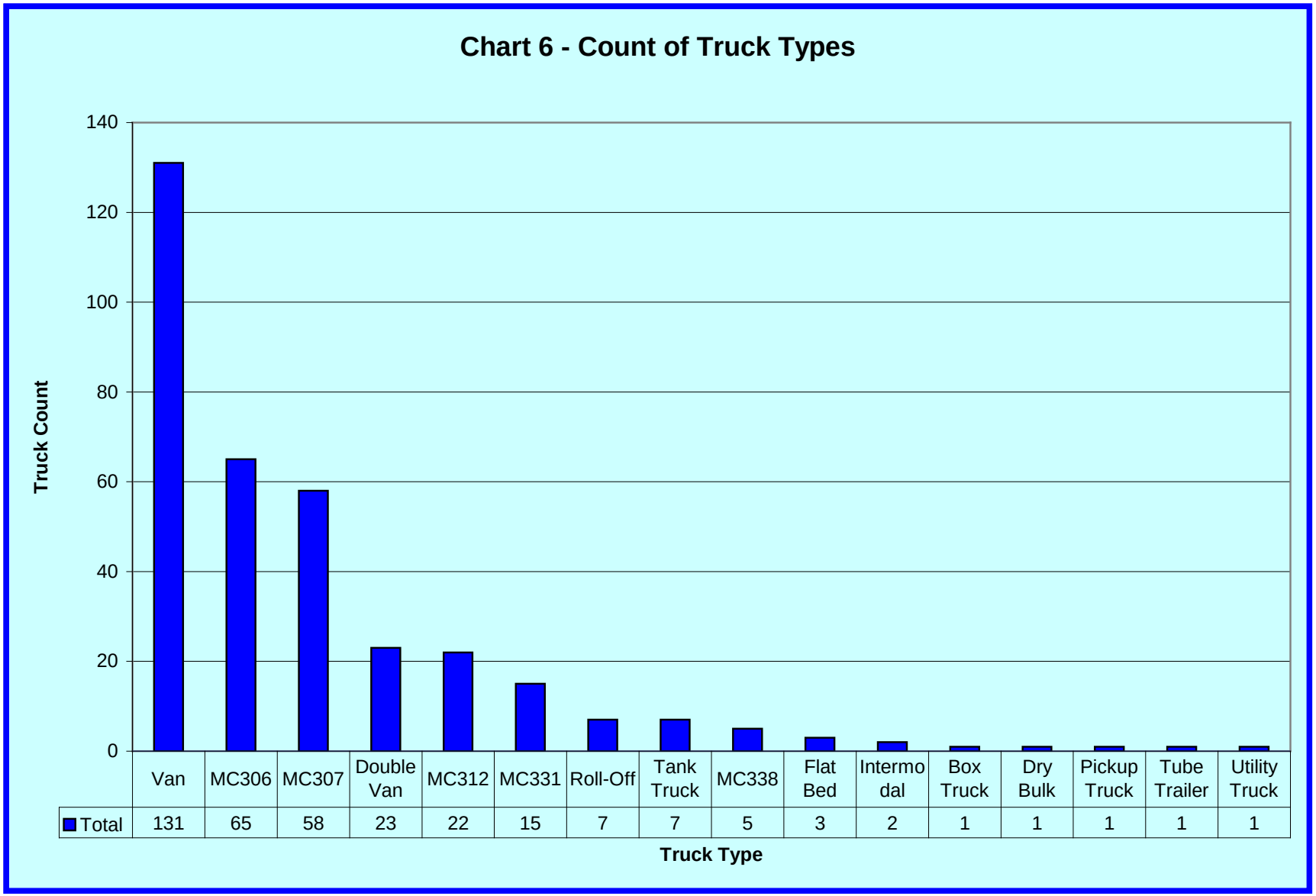
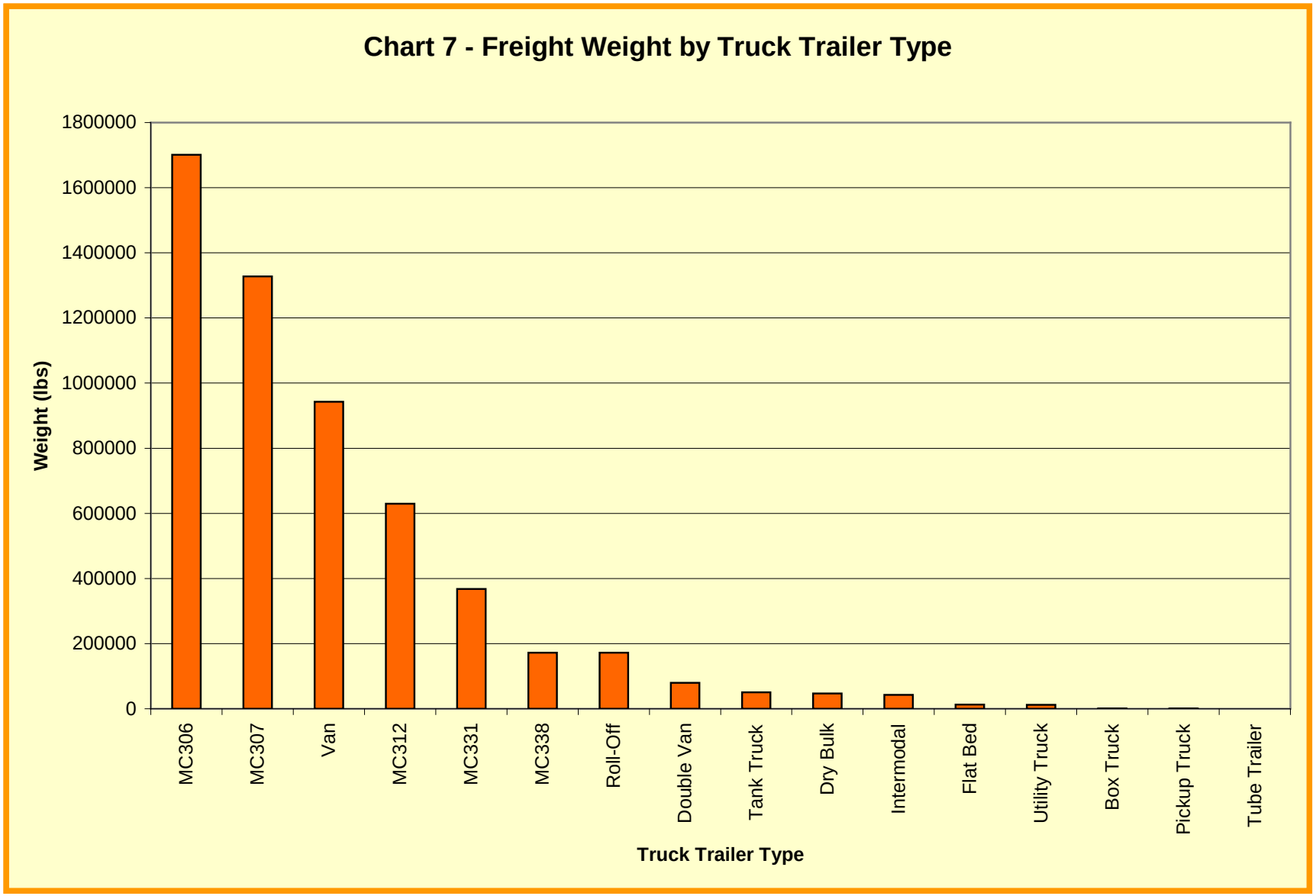


Chart 6 - Count of Truck Types



	Van	MC306	MC307	Double Van	MC312	MC331	Roll-Off	Tank Truck	MC338	Flat Bed	Intermodal	Box Truck	Dry Bulk	Pickup Truck	Tube Trailer	Utility Truck
Total	131	65	58	23	22	15	7	7	5	3	2	1	1	1	1	1

Chart 7 - Freight Weight by Truck Trailer Type



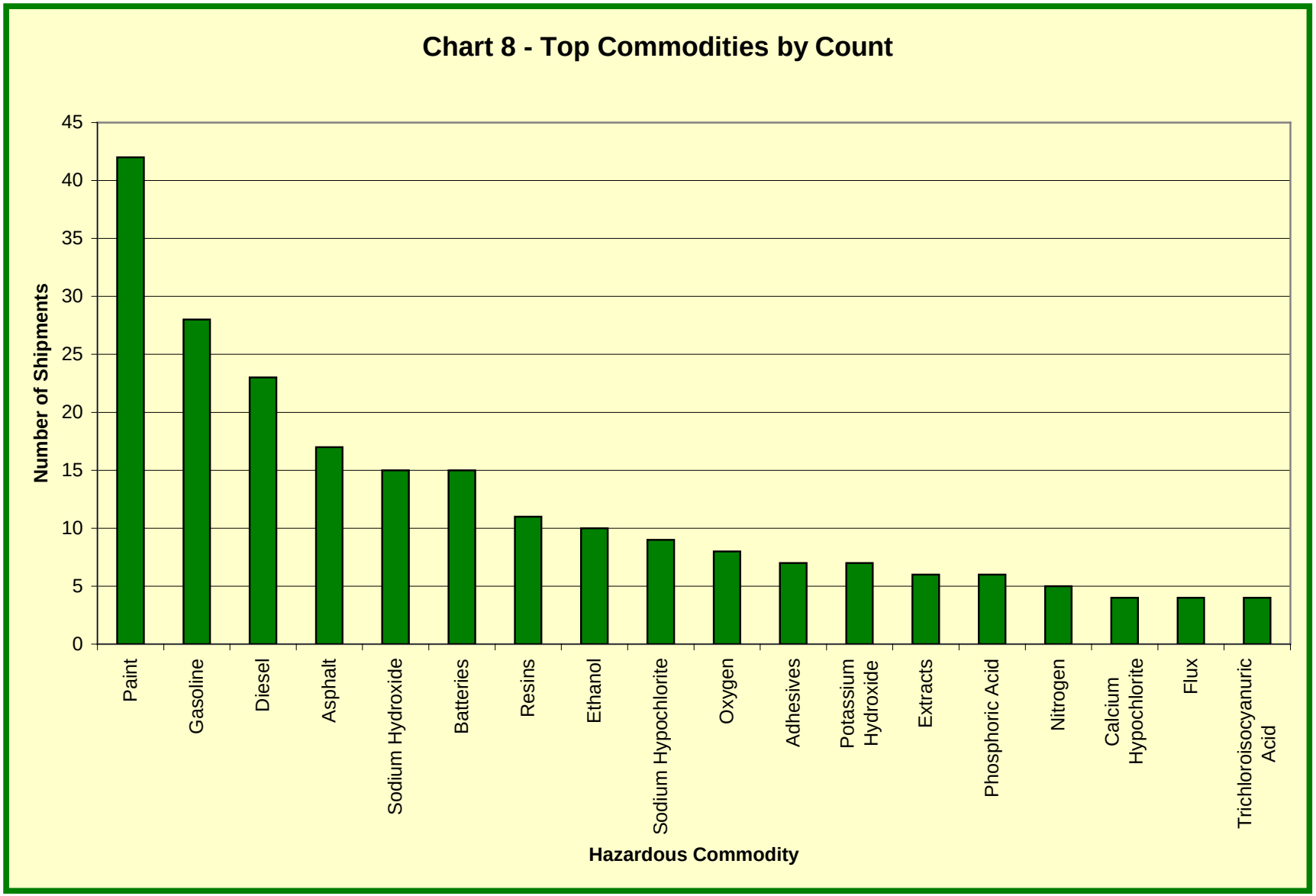


Chart 8 - Top Commodities by Count
Number of Shipments
45
40
35
30
25
20
15
10
5
0
Paint
Gasoline
Diesel
Asphalt
Sodium Hydroxide
Batteries
Resins
Ethanol
Sodium Hypochlorite
Oxygen
Adhesives
Potassium Hydroxide
Extracts
Phosphoric Acid
Nitrogen
Calcium Hypochlorite
Flux
Trichloroisocyanuric Acid
Hazardous Commodity

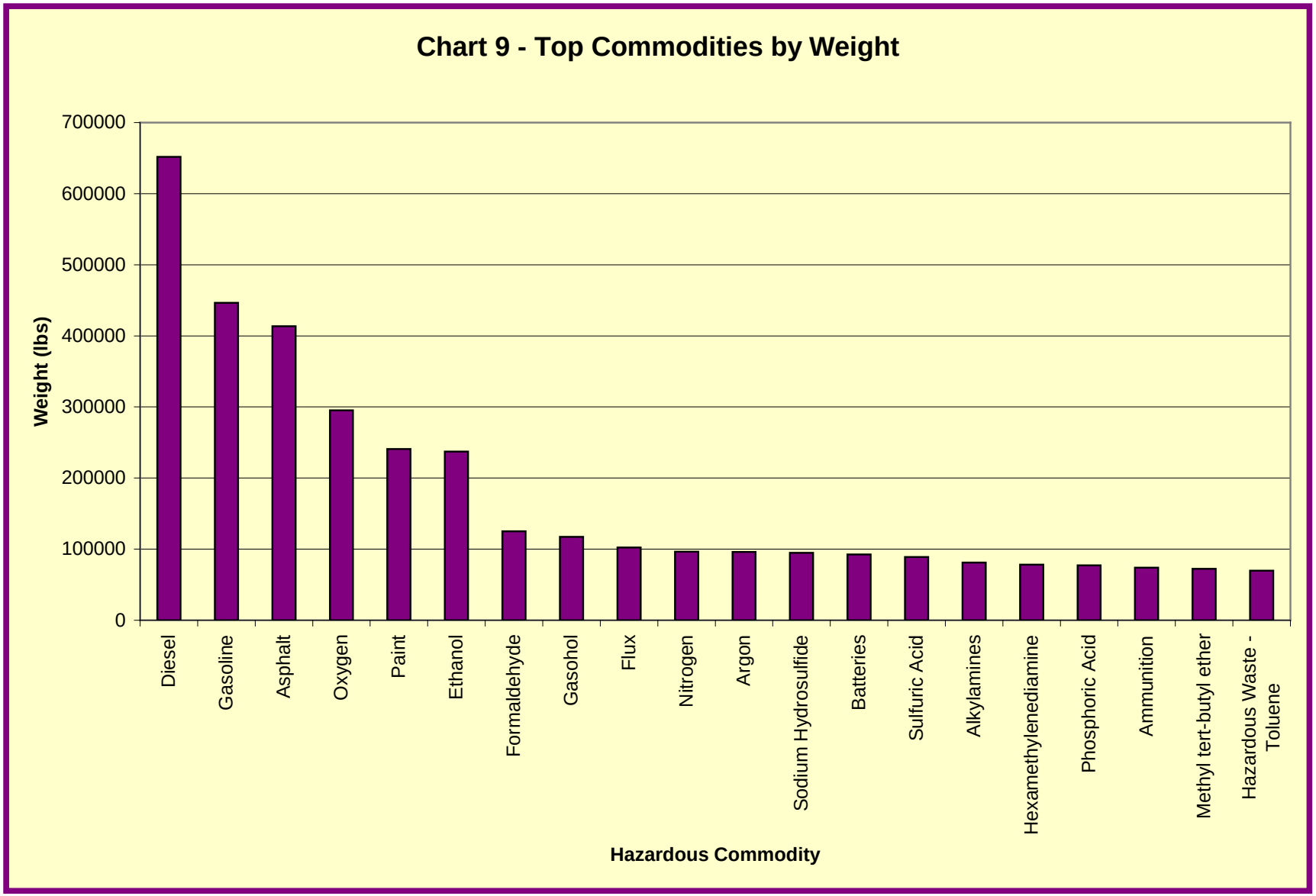


Chart 9 - Top Commodities by Weight
Weight (lbs)
700000
600000
500000
400000
300000
200000
100000
0
Diesel
Gasoline
Asphalt
Oxygen
Paint
Ethanol
Formaldehyde
Gasohol
Flux
Nitrogen
Argon
Sodium Hydrosulfide
Batteries
Sulfuric Acid
Alkylamines
Hexamethylenediamine
Phosphoric Acid
Ammunition
Methyl tert-butyl ether
Hazardous Waste - Toluene
Hazardous Commodity

Chart 10 - State of Origin/Destination of Trucks

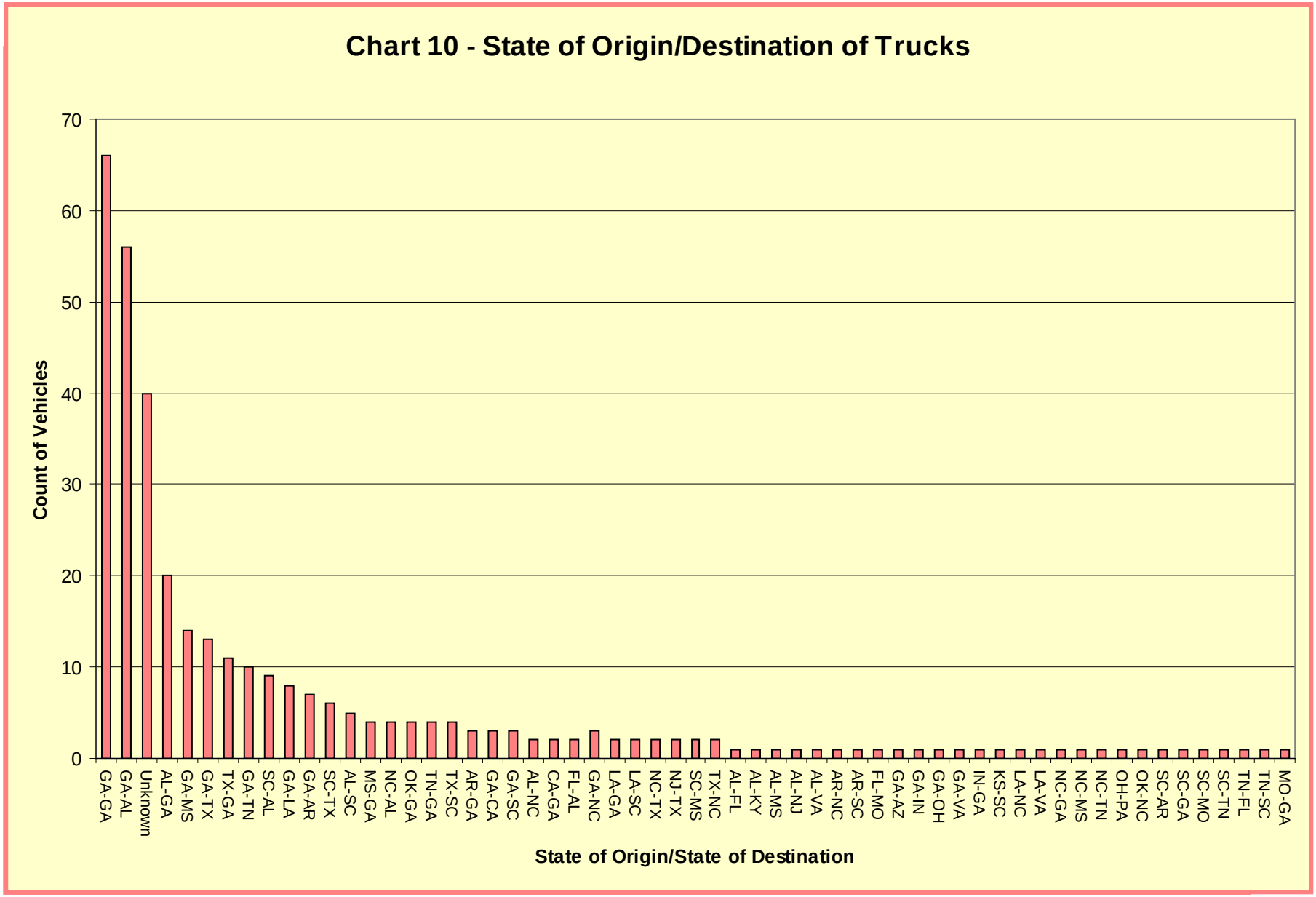


Chart 11 - Transportation Patterns among Regions

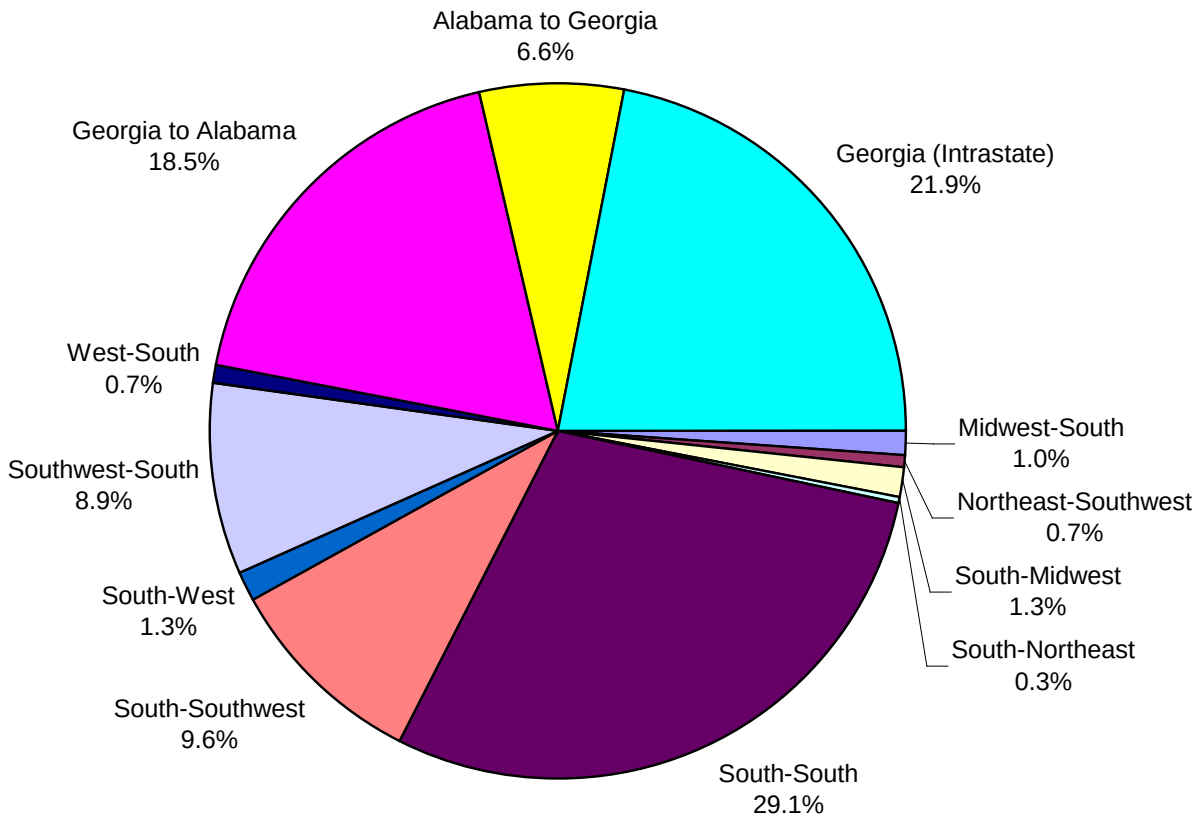
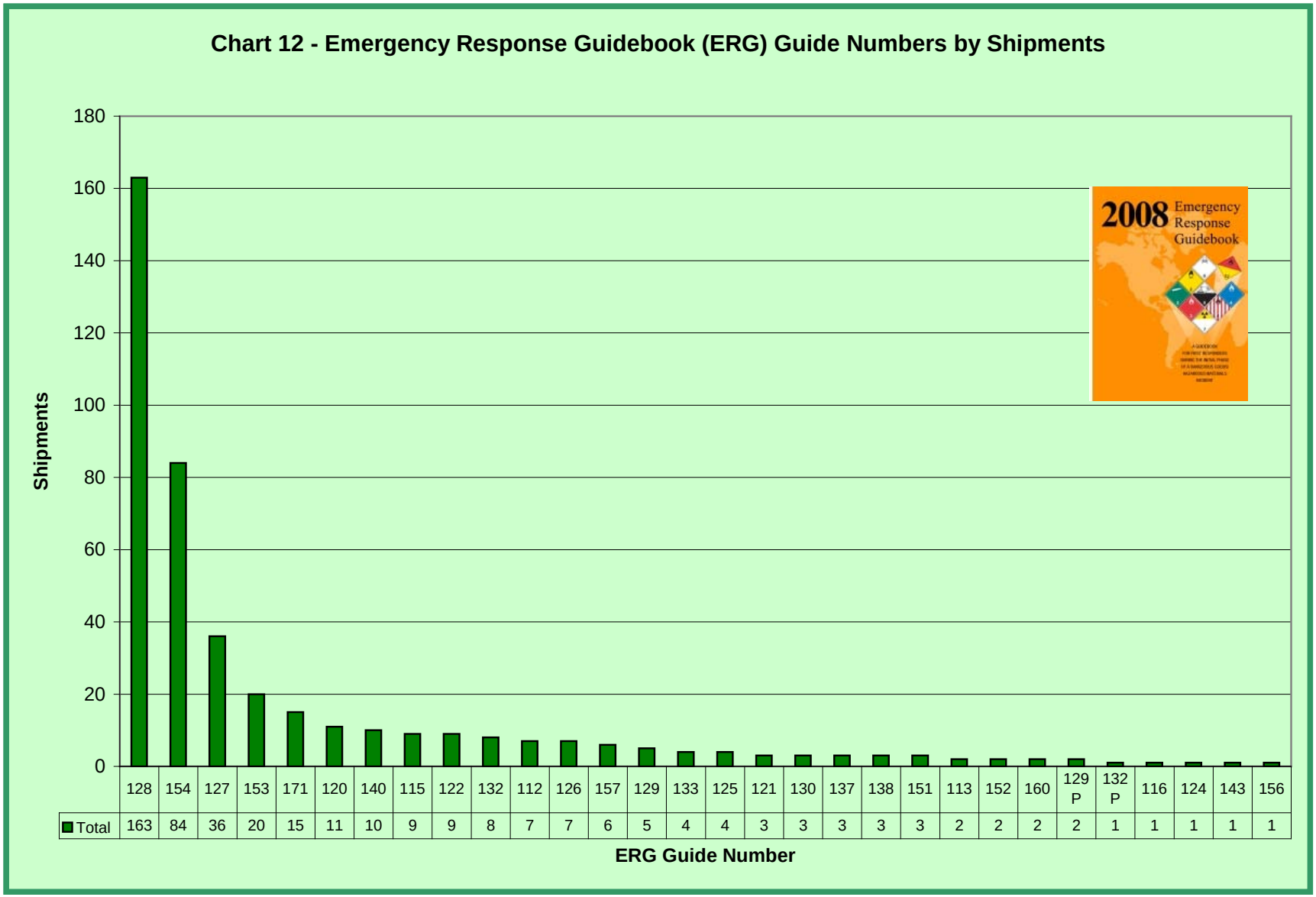


Chart 12 - Emergency Response Guidebook (ERG) Guide Numbers by Shipments



	128	154	127	153	171	120	140	115	122	132	112	126	157	129	133	125	121	130	137	138	151	113	152	160	129 P	132 P	116	124	143	156
Total	163	84	36	20	15	11	10	9	9	8	7	7	6	5	4	4	3	3	3	3	3	2	2	2	2	1	1	1	1	1

ERG Guide Number

Conclusions/Findings/Observations

Traffic Flow – During the 24-hour commodity flow survey approximately 11,300 commercial vehicles passed through the weigh stations. Of these, approximately 3.0% (343 vehicles) were carrying HAZMAT materials. The 343 HAZMAT vehicles were recorded as 179 eastbound vehicles and 164 westbound vehicles. Weight of HAZMAT materials logged during the survey was 5.558 million pounds. Of this total, 2.076 million pounds were westbound and 3.482 million pounds were eastbound, (see *Table 1*).

The East to West HAZMAT vehicle ratio was about 1.09 to 1 (179/164) and indicates that, for this survey, the number of HAZMAT vehicles was nearly balanced with respect to direction of travel. However, the East to West ratio of commodity weights was about 1.68 to 1. This is somewhat unbalanced, and appears to be a result of an eastbound distribution pattern in bulk commodities.

From an examination of HAZMAT vehicle count by time of day (*Chart 1, Chart 2,* and *Chart 3*), there appear to be daily cycles in the pattern of traffic flow. Westbound traffic flow increases beginning at about 3:00am, peaks by about 11:00am, remains fairly steady in the afternoon and diminishes to a low (10:00pm-12:00M), and remains somewhat steady from about 4:00pm until about 3:00am. The pattern for eastbound traffic flow appears fairly steady through the morning hours (4:00am – 12:00N) and peaks in late afternoon (4:00pm -7:00pm) and thereafter declines to a minimum in the early morning hours (12:00M to 4:00am). Combined overall flow (East and West) is fairly steady and heavy from 4:00am to 5:00 pm and thereafter declining through the evening hours.

Table 2
Placards for Hazardous Materials Classes/Divisions

Class **1** Explosives (49CFR173.50)

Class **2** Compressed Gasses (49CFR173.115)
- Division **2.1** Flammable Gas [49CFR173.115(a)]
- Division **2.2** Non-flammable, Non-Poisonous Gas [49CFR173.115(b)]
- Division **2.3** Poison Gas [49CFR173.115(b)]

Class **3** Flammable Liquids (49CFR173.120)

Class **4** Flammable Solids (49CFR173.124)
- Division **4.1** Flammable Solid [49CFR173.124(a)]
- Division **4.2** Spontaneously Combustible [49CFR 173.124(b)]
- Division **4.3** Dangerous When Wet [49CFR 173.124(c)]

Class **5** Oxidizers (49CFR173.127)
- Division **5.1** Oxidizers [49CFR173.127(a)]
- Division **5.2** Organic Peroxide [173.128(a)]

Class **6** Poisons (49CFR173.132)
- Division **6.1** Poisons [49CFR 173.132]

Class **7** Radioactive Materials (49CFR Subpart 1)

Class **8** Corrosive Liquids (49CFR173.136)

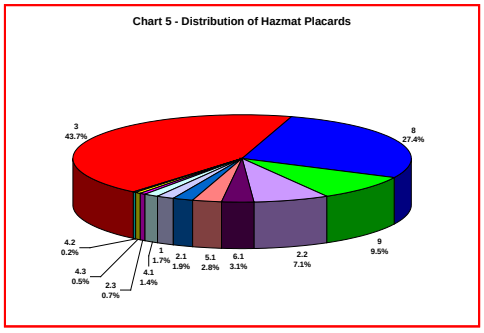
Class **9** Miscellaneous Hazardous Materials (49CFR 173.140)

DANGEROUS – 49CFR172.405(e)

Placard Identification - During the flow survey, the placard numbers on each of the passing vehicles were recorded. *Table 2* provides a listing of Classes/Divisions of hazardous materials that require placards.

The Hazardous Materials Regulations (49 CFR Parts 171-180) specify requirements for the safe transportation of hazardous materials, including the U.S. Department of Transportation requirements for the placarding of trailers. Reportable quantities of hazardous materials (except for radionuclides) are contained at 49CFR172.101 in Table 1 to Appendix A of the Hazardous Materials Table.

Chart 4 and *Chart 5* illustrate the numbers, classes and distribution of the placards observed during the survey.



As can be seen from *Chart 5*, over 70% of the placards recorded during the survey were either Class 3 (Flammable Liquids) or Class 8 (Corrosive) hazardous materials.

It is noted that the direction of flow of vehicles carrying Class 3 materials (Flammable Liquids) is balanced with an E-W ratio of 1.06 to 1 (86 eastbound/ 81 westbound) , relative to the overall E-W flow ratio (1.09 to 1).

Keeping in mind the overall east/west traffic flow ratio of 1.09 to 1, the following E-W vehicle ratios hold for the other HAZMAT commodities: Class 1 = 4/2 = 2.00 to 1; Class 2 = 24/15 = 1.60 to 1; Class 3 = 86/81 = 1,06 to 1, Class 4 = 4/5 = 0.80 to 1; Class 5 =2/9 = 0.22 to 1; Class 6 = 5/8 = 0.62 to 1; Class 7 = N/A; Class 8 = 40/58 =0.69 to 1; Class 9 = 27/14 = 1.93 to 1. This indicates predominant direction of flow for each of the nine hazard classes, e.g. Classes 1, 2, and 9 are appear to be mostly eastbound, whereas Classes 4, 5, 6, and 8 appear to be mostly westbound, given that the data is limited.

Several vehicles were observed which displayed the DANGEROUS placard. Generally, a vehicle containing non-bulk packages with two or more categories of hazardous materials that require different placards may be displayed with a DANGEROUS placard, rather than separate placards, provided that there is less than 2205 pounds of one of the HAZMAT categories and that it was loaded on the vehicle at one loading facility. For specific guidance see: 49CFR172.504(b)].

Vehicle Loads – *Table 1*, *Chart 6* and *Chart 7* show total counts and weights of materials by type of trailer. Single and Double Vans (154) have the highest number of shipments (218), but bulk tank trailers (e.g. MC306, MC307, etc.), account for the majority by weight, of all shipments. These 165 tankers, about half of all HAZMAT vehicles, represent about 75% of the total weight of shipments recorded.

A pattern of interstate fuel tankers, some coming from as far as Texas and Louisiana, carrying gasoline and diesel, headed eastbound and returning empty westbound was observed. Also, many bulk interstate shipments of asphalt moving east and returning west as empty containers were noted. This appears to indicate a pattern of interstate distribution of petroleum products from west to east

It should be noted that the quantity of diesel transported is significantly higher (50%) than the quantity of gasoline. Also to be noted is that the survey occurred the same week that Hurricane Ike was threatening refineries in the gulf coast, and it was reported that there was a diesel shortage in the Atlanta area due to fall startup of schools.

Variety of Commodities Observed – One hundred sixty one different hazardous materials were recorded during the survey. An alphabetical list of these materials is presented in *Table 3.*

Of these hazardous materials, *Chart 8*, and Chart 9 show the most frequent commodities recorded, by count of shipments and by total weight of shipments, respectively. The commodities shown in these charts account about 50% (221/430) of all shipments by count and about 64% (3.55M/5.56 M) of all shipments by weight.

A comparison of these two charts clearly shows the effect of the many tanker shipments carrying large quantities of a single cargo. An average vanload of multiple hazmat commodities at 6,850 pounds, contrasts sharply with the 50,000 pound weight of a loaded tank trailer. These factors result in different rankings for the same commodity in the two charts.

Hazmat Vehicle Origin/Destination Information
Information was collected on the point of origin and destination for 88% of the 343 hazmat vehicles observed. This information is helpful in determining the relationships among local, regional, and national traffic flow patterns and commodity flow trends at a particular survey point. *Chart 10* illustrates the frequency of traffic between pairs of states. At the survey point, approximately 78% of the traffic was interstate and 22% intrastate traffic. Of the interstate traffic, about 80% either originated or terminated in Georgia.

Regional Shipment Origin/Destination Information
Information on regional origin/destination of the vehicles is developed in *Chart 11* which illustrates the regional origin/destination of the HAZMAT shipments observed during the survey. The regional origin/destinations are *South* (including GA, FL, SC, NC, VA, KY, TN, AL, MS, LA), *Southwest* (including TX, AR, OK), *West* (including CA, AZ), *Midwest* (including IN, MO, KS) and Northeast (including NJ).

Count of ERG Guide Numbers – The 2004 Emergency Response Guidebook (ERG), developed by the United States Department of Transportation, is a guide to first responders to aid them in quickly determining the hazards for dangerous goods involved in an incident and to respond accordingly to protect themselves, the public and the environment. These guides provide first responders with information on potential hazards, public safety actions and emergency response actions associated with a particular hazardous material; e.g. if the material involved in the incident is propane, Guide #115 is applicable.

For each shipment identified during the survey, the ERG Guide Numbers associated with the hazardous materials in that particular shipment were noted. *Chart 12* shows the count of ERG Guide Numbers for each commodity logged during the survey and illustrates the frequency with which ERG responses occur. It addresses the probabilities of responders encountering certain commodities at this particular point and date on Interstate 20.This information provides insight on training needs for a certain response. This information may be useful in prioritizing specific training needed by first responders.

DOE staff/contractors who participated in the survey were: Bill Spurgeon, Ella McNeil, Dottie Brown, Michele O'Shaughnessy (DOE Savannah River Site), Larry Harmon (PEC) and Larry Blalock (PEC)

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Nathan Barrington
Jay Gazaway
Sherri Ycarta
Kim Noel
Russ Jones
Beth Worthon

City of Carrollton Fire Department
Chad Roberts, Firefighter

West Georgia Regional Mobile Operations Center
The Southern States Energy Board

Appendix A

Emergency Response Information

Based on the commodity flow study, we are providing emergency response information for the hazard classes identified during the 24-hour period. Because we did not capture specific products in all cases, we are providing the general response information contained in the Department of Transportation Emergency Response Guidebook (ERG). An electronic copy of the ERG can be found at http://hazmat.dot.gov/pubs/erg/gydebook.htm.

Table of Contents

For shipments where we captured the specific product being transported, we have included safety information. These include:

ERG Guide 112

EXPLOSIVES - DIVISION 1.1, 1.2, 1.3, 1.5 OR 1.6; CLASS A OR B

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- **MAY EXPLODE AND THROW FRAGMENTS 1600 meters (1 MILE) OR MORE IF FIRE REACHES CARGO.**
- **See below for information on "Compatibility Group" letters.**

HEALTH

- Fire may produce irritating, corrosive and/or toxic gases.

PUBLIC SAFETY

CALL Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper is not available or no answer, refer to appropriate telephone number listed in Appendix B.

- Isolate spill or leak area immediately for at least 500 meters (1/3 mile) in all directions.
- Move people out of line of sight of the scene and away from windows.
- Keep unauthorized personnel away.
- Stay upwind.
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing will only provide limited protection.

EVACUATION

Large Spill

- **Consider initial evacuation for 800 meters (1/2 mile) in all directions.**

Fire

- If rail car or trailer is involved in a fire and heavily encased explosives such as bombs or artillery projectiles are suspected, ISOLATE for 1600 m (1 mile) in all directions; also, initiate evacuation including emergency responders for 1600 m (1 mile) in all directions.
- When heavily encased explosives are not involved, evacuate the area for 800 meters (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

CARGO Fires

- **DO NOT fight fire when fire reaches cargo! Cargo may EXPLODE!**
- Stop all traffic and clear the area for at least 1600 meters (1 mile) in all directions and let burn.
- Do not move cargo or vehicle if cargo has been exposed to heat.

TIRE or VEHICLE Fires

- **Use plenty of water - FLOOD it! If water is not available, use CO_2, dry chemical or dirt.**
- If possible, and WITHOUT RISK, use unmanned hose holders or monitor nozzles from maximum distance to prevent fire from spreading to cargo area.
- Pay special attention to tire fires as re-ignition may occur. Stand by with extinguisher ready.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Do not touch or walk through spilled material.

ERG Guide 112

EXPLOSIVES - DIVISION 1.1, 1.2, 1.3, 1.5 OR 1.6; CLASS A OR B

- DO NOT OPERATE RADIO TRANSMITTERS WITHIN 100 meters (330 feet) OF ELECTRIC DETONATORS.
- **DO NOT CLEAN-UP OR DISPOSE OF, EXCEPT UNDER SUPERVISION OF A SPECIALIST.**

FIRST AID

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

COMPATABILITY GROUP

Letters identify explosives that are deemed to be compatible. Class 1 materials are considered to be "compatible" if they can be transported together without significantly increasing either the probability of an incident or, for a given quantity, the magnitude of the effects of such an incident.

A Substances which are expected to mass detonate very soon after fire reaches them.

B Articles which are expected to mass detonate very soon after fire reaches them.

C Substances or articles which may be readily ignited and burn violently without necessarily exploding.

D Substances or articles which may mass detonate (with blast and/or fragment hazard) when exposed to fire.

E&F Articles which may mass detonate in a fire.

G Substances and articles which may mass explode and give off smoke or toxic gases.

H Articles which in a fire may eject hazardous projectiles and dense white smoke.

J Articles which may mass explode.

K Articles which in a fire may eject hazardous projectiles and toxic gases.

L Substances and articles which present a special risk and could be activated by exposure to air or water.

N Articles which contain only extremely insensitive detonating substances and demonstrate a negligible probability of accidental ignition or propagation.

S Packaged substances or articles which, if accidentally initiated, produce effects that are usually confined to the immediate vicinity.

ERG Guide115
GASES – FLAMMABLE

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- **EXTREMELY FLAMMABLE.**
- Will be easily ignited by heat, sparks or flames.
- Will form explosive mixtures with air.
- Vapors from liquefied gas are initially heavier than air and spread along ground.

CAUTION: Hydrogen (UN1049), Deuterium (UN1957) and Methane (UN1971) are lighter than air and will rise. Hydrogen and Deuterium fires are difficult to detect since they burn with an invisible flame. Use an alternate method of detection (thermal camera, broom handle, etc.)

- Vapors may travel to source of ignition and flash back.
- Cylinders exposed to fire may vent and release flammable gas through pressure relief devices.
- Containers may explode when heated.
- Ruptured cylinders may rocket.

HEALTH

- Vapors may cause dizziness or asphyxiation without warning.
- Some may be irritating if inhaled at high concentrations.
- Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite.
- Fire may produce irritating and/or toxic gases.

PUBLIC SAFETY

CALL Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed in Appendix B.

- As an immediate precautionary measure, isolate spill or leak area for at least 100 meters (330 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind.
- Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Keep out of low areas.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing will only provide limited protection.
- Always wear thermal protective clothing when handling refrigerated/cryogenic liquids.

EVACUATION

Large Spill

- Consider initial downwind evacuation for at least 800 meters (1/2 mile).

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 1600 meters (1 mile) in all directions; also, consider initial evacuation for 1600 meters (1 mile) in all directions.

ERG Guide115
GASES – FLAMMABLE

EMERGENCY RESPONSE

FIRE

• DO NOT EXTINGUISH A LEAKING GAS FIRE UNLESS LEAK CAN BE STOPPED.CAUTION: Hydrogen (UN1049) and Deuterium (UN1957) burn with an invisible flame.

Small Fires

• Dry chemical or CO2.

Large Fires

• Water spray or fog.
• Move containers from fire area if you can do it without risk.

Fire involving Tanks

• Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
• Cool containers with flooding quantities of water until well after fire is out.
• Do not direct water at source of leak or safety devices; icing may occur.
• Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
• ALWAYS stay away from tanks engulfed in fire.
• For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK

• ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
• All equipment used when handling the product must be grounded.
• Do not touch or walk through spilled material.
• Stop leak if you can do it without risk.
• If possible, turn leaking containers so that gas escapes rather than liquid.
• Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
• Do not direct water at spill or source of leak.
• Prevent spreading of vapors through sewers, ventilation systems and confined areas.
• Isolate area until gas has dispersed.

CAUTION: When in contact with refrigerated/cryogenic liquids, many materials become brittle and are likely to break without warning.

FIRST AID

• Move victim to fresh air.
• Call 911 or emergency medical service.
• Give artificial respiration if victim is not breathing.
• Administer oxygen if breathing is difficult.
• Remove and isolate contaminated clothing and shoes.
• Clothing frozen to the skin should be thawed before being removed.
• In case of contact with liquefied gas, thaw frosted parts with lukewarm water.
• In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
• Keep victim warm and quiet.
• Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

ERG Guide120

GASES - INERT
(INCLUDING REFRIGERATED LIQUIDS)

POTENTIAL HAZARDS

HEALTH

- Vapors may cause dizziness or asphyxiation without warning.
- Vapors from liquefied gas are initially heavier than air and spread along ground.
- Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite.

FIRE OR EXPLOSION

- **Non-flammable gases.**
- Containers may explode when heated.
- Ruptured cylinders may rocket.

PUBLIC SAFETY

CALL Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper is not available or no answer, refer to appropriate telephone number listed in Appendix B.

- As an immediate precautionary measure, isolate spill or leak area for at least 100 meters (330 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind.
- Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Keep out of low areas.
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing will only provide limited protection.
- Always wear thermal protective clothing when handling refrigerated/cryogenic liquids or solids.

EVACUATION

Large Spill

- Consider initial downwind evacuation for at least 100 meters (330 feet).

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

- Use extinguishing agent suitable for type of surrounding fire.
- Move containers from fire area if you can do it without risk.
- Damaged cylinders should be handled only by specialists.

Fire involving Tanks

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Do not direct water at source of leak or safety devices; icing may occur.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.

- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
- Do not direct water at spill or source of leak.
- If possible, turn leaking containers so that gas escapes rather than liquid.
- Prevent entry into waterways, sewers, basements or confined areas.
- Allow substance to evaporate.
- Ventilate the area.

CAUTION: When in contact with refrigerated/cryogenic liquids, many materials become brittle and are likely to break without warning.

FIRST AID

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Clothing frozen to the skin should be thawed before being removed.
- In case of contact with liquefied gas, thaw frosted parts with lukewarm water.
- Keep victim warm and quiet.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

ERG Guide 121
GASES - INERT

POTENTIAL HAZARDS

HEALTH
• Vapors may cause dizziness or asphyxiation without warning.
• Vapors from liquefied gas are initially heavier than air and spread along ground.
FIRE OR EXPLOSION
• **Non-flammable gases.**
• Containers may explode when heated.
• Ruptured cylinders may rocket.

PUBLIC SAFETY

CALL Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed in Appendix B.
• As an immediate precautionary measure, isolate spill or leak area for at least 100 meters (330 feet) in all directions.
• Keep unauthorized personnel away.
• Stay upwind.
• Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).
• Keep out of low areas.
• Ventilate closed spaces before entering.
PROTECTIVE CLOTHING
• Wear positive pressure self-contained breathing apparatus (SCBA).
• Structural firefighters' protective clothing will only provide limited protection.
EVACUATION
Large Spill
• Consider initial downwind evacuation for at least 100 meters (330 feet).
Fire
• If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE
• Use extinguishing agent suitable for type of surrounding fire.
• Move containers from fire area if you can do it without risk.
• Damaged cylinders should be handled only by specialists.
Fire involving Tanks
• Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
• Cool containers with flooding quantities of water until well after fire is out.
• Do not direct water at source of leak or safety devices; icing may occur.
• Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
• ALWAYS stay away from tanks engulfed in fire.
SPILL OR LEAK
• Do not touch or walk through spilled material.
• Stop leak if you can do it without risk.
• Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to

contact spilled material.
• Do not direct water at spill or source of leak.

• If possible, turn leaking containers so that gas escapes rather than liquid.
• Prevent entry into waterways, sewers, basements or confined areas.
• Allow substance to evaporate.
• Ventilate the area.

FIRST AID

• Move victim to fresh air.
• Call 911 or emergency medical service.
• Give artificial respiration if victim is not breathing.
• Administer oxygen if breathing is difficult.
• Keep victim warm and quiet.
• Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

ERG Guide 122
GASES - OXIDIZING

POTENTIAL HAZARDS

FIRE OR EXPLOSION
- Substance does not burn but will support combustion.
- Some may react explosively with fuels.
- May ignite combustibles (wood, paper, oil, clothing, etc.).
- Vapors from liquefied gas are initially heavier than air and spread along ground.
- Runoff may create fire or explosion hazard.
- Containers may explode when heated.
- Ruptured cylinders may rocket.

HEALTH
- Vapors may cause dizziness or asphyxiation without warning.
- Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite.
- Fire may produce irritating and/or toxic gases.

PUBLIC SAFETY

CALL Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed in Appendix B
- As an immediate precautionary measure, isolate spill or leak area for at least 100 meters (330 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind.
- Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Keep out of low areas.
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING
- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.
- Always wear thermal protective clothing when handling refrigerated/cryogenic liquids.

EVACUATION

Large Spill
- Consider initial downwind evacuation for at least 500 meters (1/3 mile).

Fire
- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE
- Use extinguishing agent suitable for type of surrounding fire.

Small Fires
- Dry chemical or CO2.

ERG Guide 122
GASES - OXIDIZING

Large Fires
• Water spray, fog or regular foam.
• Move containers from fire area if you can do it without risk.

• Damaged cylinders should be handled only by specialists.
Fire involving Tanks
• Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
• Cool containers with flooding quantities of water until well after fire is out.
• Do not direct water at source of leak or safety devices; icing may occur.
• Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
• ALWAYS stay away from tanks engulfed in fire.
• For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK
• Keep combustibles (wood, paper, oil, etc.) away from spilled material.
• Do not touch or walk through spilled material.
• Stop leak if you can do it without risk.
• If possible, turn leaking containers so that gas escapes rather than liquid.
• Do not direct water at spill or source of leak.
• Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
• Prevent entry into waterways, sewers, basements or confined areas.
• Allow substance to evaporate.
• Isolate area until gas has dispersed.

CAUTION: When in contact with refrigerated/cryogenic liquids, many materials become brittle and are likely to break without warning.

FIRST AID
• Move victim to fresh air.
• Call 911 or emergency medical service.
• Give artificial respiration if victim is not breathing.
• Administer oxygen if breathing is difficult.
• Remove and isolate contaminated clothing and shoes.
• Clothing frozen to the skin should be thawed before being removed.
• In case of contact with liquefied gas, thaw frosted parts with lukewarm water.
• Keep victim warm and quiet.
• Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

ERG Guide 126

GASES - COMPRESSED OR LIQUEFIED (INCLUDING REFRIGERANT GASES)

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- Some may burn, but none ignite readily.
- Containers may explode when heated.
- Ruptured cylinders may rocket.

HEALTH

- Vapors may cause dizziness or asphyxiation without warning.
- Vapors from liquefied gas are initially heavier than air and spread along ground.
- Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite.
- Fire may produce irritating, corrosive and/or toxic gases.

PUBLIC SAFETY

CALL Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper is not available or no answer, refer to appropriate telephone number listed in Apendix B.

- As an immediate precautionary measure, isolate spill or leak area for at least 100 meters (330 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind.
- Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Keep out of low areas.
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing will only provide limited protection.

EVACUATION

Large Spill

- Consider initial downwind evacuation for at least 500 meters (1/3 mile).

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

- Use extinguishing agent suitable for type of surrounding fire.

Small Fires

- Dry chemical or CO2.

Large Fires

- Water spray, fog or regular foam.
- Move containers from fire area if you can do it without risk.
- Damaged cylinders should be handled only by specialists.

Fire involving Tanks

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.

• Do not direct water at source of leak or safety devices; icing may occur.

• Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
• ALWAYS stay away from tanks engulfed in fire.
• Some of these materials, if spilled, may evaporate leaving a flammable residue.

SPILL OR LEAK

• Do not touch or walk through spilled material.
• Stop leak if you can do it without risk.
• Do not direct water at spill or source of leak.
• Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
• If possible, turn leaking containers so that gas escapes rather than liquid.
• Prevent entry into waterways, sewers, basements or confined areas.
• Allow substance to evaporate.
• Ventilate the area.

FIRST AID

• Move victim to fresh air.
• Call 911 or emergency medical service.
• Give artificial respiration if victim is not breathing.
• Administer oxygen if breathing is difficult.
• Remove and isolate contaminated clothing and shoes.
• In case of contact with liquefied gas, thaw frosted parts with lukewarm water.
• Keep victim warm and quiet.
• Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

ERG Guide 127
FLAMMABLE LIQUIDS (POLAR/WATER-MISCIBLE)

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- **HIGHLY FLAMMABLE: Will be easily ignited by heat, sparks or flames.**
- Vapors may form explosive mixtures with air.
- Vapors may travel to source of ignition and flash back.
- Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Vapor explosion hazard indoors, outdoors or in sewers.
- Those substances designated with a **"P"** in the Emergency Response Guidebook may polymerize explosively when heated or involved in a fire.
- Runoff to sewer may create fire or explosion hazard.
- Containers may explode when heated.
- Many liquids are lighter than water.

HEALTH

- Inhalation or contact with material may irritate or burn skin and eyes.
- Fire may produce irritating, corrosive and/or toxic gases.
- Vapors may cause dizziness or suffocation.
- Runoff from fire control may cause pollution.

PUBLIC SAFETY

CALL Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed in Appendix B.

- As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind.
- Keep out of low areas.
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing will only provide limited protection.

EVACUATION

Large Spill

- Consider initial downwind evacuation for at least 300 meters (1000 feet).

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

CAUTION: All these products have a very low flash point: Use of water spray when fighting fire may be inefficient.

Small Fires

- Dry chemical, CO2, water spray or alcohol-resistant foam.

Large Fires

ERG Guide 127
FLAMMABLE LIQUIDS (POLAR/WATER-MISCIBLE)

- Water spray, fog or alcohol-resistant foam.
- Use water spray or fog; do not use straight streams.
- Move containers from fire area if you can do it without risk.

Fire involving Tanks or Car/Trailer Loads

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Prevent entry into waterways, sewers, basements or confined areas.
- A vapor suppressing foam may be used to reduce vapors.
- Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
- Use clean non-sparking tools to collect absorbed material.

Large Spills

- Dike far ahead of liquid spill for later disposal.
- Water spray may reduce vapor; but may not prevent ignition in closed spaces.

FIRST AID

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Wash skin with soap and water.
- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
- Keep victim warm and quiet.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

ERG Guide 128

FLAMMABLE LIQUIDS
(NON-POLAR/WATER-IMMISCIBLE)

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- **HIGHLY FLAMMABLE: Will be easily ignited by heat, sparks or flames.**
- Vapors may form explosive mixtures with air.
- Vapors may travel to source of ignition and flash back.
- Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Vapor explosion hazard indoors, outdoors or in sewers.
- Those substances designated with a **"P"** in the Emergency Response Guidebook may polymerize explosively when heated or involved in a fire.
- Runoff to sewer may create fire or explosion hazard.
- Containers may explode when heated.
- Many liquids are lighter than water.
- Substance may be transported hot.
- **If molten aluminum is involved, refer to ERG GUIDE 169.**

HEALTH

- Inhalation or contact with material may irritate or burn skin and eyes.
- Fire may produce irritating, corrosive and/or toxic gases.
- Vapors may cause dizziness or suffocation.
- Runoff from fire control or dilution water may cause pollution.

PUBLIC SAFETY

CALL Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper is not available or no answer, refer to appropriate telephone number listed in Appendix B.

- As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind.
- Keep out of low areas.
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing will only provide limited protection.

EVACUATION

Large Spill

- Consider initial downwind evacuation for at least 300 meters (1000 feet).

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

CAUTION: All these products have a very low flash point: Use of water spray when fighting fire may be inefficient.

ERG Guide 128
FLAMMABLE LIQUIDS
(NON-POLAR/WATER-IMMISCIBLE)

CAUTION: For mixtures containing a high percentage of an alcohol or polar solvent, alcohol-resistant foam may be more effective.

Small Fires

• Dry chemical, CO2, water spray or regular foam.

Large Fires

• Water spray, fog or regular foam.
• Use water spray or fog; do not use straight streams.
• Move containers from fire area if you can do it without risk.

Fire involving Tanks or Car/Trailer Loads

• Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
• Cool containers with flooding quantities of water until well after fire is out.
• Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
• ALWAYS stay away from tanks engulfed in fire.
• For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK

• ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
• All equipment used when handling the product must be grounded.
• Do not touch or walk through spilled material.
• Stop leak if you can do it without risk.
• Prevent entry into waterways, sewers, basements or confined areas.
• A vapor suppressing foam may be used to reduce vapors.
• Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
• Use clean non-sparking tools to collect absorbed material.

Large Spills

• Dike far ahead of liquid spill for later disposal.
• Water spray may reduce vapor; but may not prevent ignition in closed spaces.

FIRST AID

• Move victim to fresh air.
• Call 911 or emergency medical service.
• Give artificial respiration if victim is not breathing.
• Administer oxygen if breathing is difficult.
• Remove and isolate contaminated clothing and shoes.
• In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
• Wash skin with soap and water.
• Keep victim warm and quiet.
• In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
• Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

ERG Guide 129
FLAMMABLE LIQUIDS
(POLAR/WATER-MISCIBLE/NOXIOUS)

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- **HIGHLY FLAMMABLE: Will be easily ignited by heat, sparks or flames.**
- Vapors may form explosive mixtures with air.
- Vapors may travel to source of ignition and flash back.
- Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Vapor explosion hazard indoors, outdoors or in sewers.
- Those substances designated with a **"P"** in the Emergency Response Guidebook may polymerize explosively when heated or involved in a fire.
- Runoff to sewer may create fire or explosion hazard.
- Containers may explode when heated.
- Many liquids are lighter than water.

HEALTH

- May cause toxic effects if inhaled or absorbed through skin.
- Inhalation or contact with material may irritate or burn skin and eyes.
- Fire will produce irritating, corrosive and/or toxic gases.
- Vapors may cause dizziness or suffocation.
- Runoff from fire control or dilution water may cause pollution.

PUBLIC SAFETY

CALL Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper is not available or no answer, refer to appropriate telephone number listed in Appendix B.

- As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind.
- Keep out of low areas.
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing will only provide limited protection.

EVACUATION

Large Spill

- Consider initial downwind evacuation for at least 300 meters (1000 feet).

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

CAUTION: All these products have a very low flash point: Use of water spray when fighting fire may be inefficient.

Small Fires

- Dry chemical, CO2, water spray or alcohol-resistant foam.

ERG Guide 129
FLAMMABLE LIQUIDS
(POLAR/WATER-MISCIBLE/NOXIOUS)

- **Do not use dry chemical extinguishers to control fires involving nitromethane or nitroethane.**

Large Fires
- Water spray, fog or alcohol-resistant foam.
- **Do not use straight streams.**
- Move containers from fire area if you can do it without risk.

Fire involving Tanks or Car/Trailer Loads
- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK
- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Prevent entry into waterways, sewers, basements or confined areas.
- A vapor suppressing foam may be used to reduce vapors.
- Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
- Use clean non-sparking tools to collect absorbed material.

Large Spills
- Dike far ahead of liquid spill for later disposal.
- Water spray may reduce vapor; but may not prevent ignition in closed spaces.

FIRST AID
- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Wash skin with soap and water.
- Keep victim warm and quiet.
- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

ERG Guide 131
FLAMMABLE LIQUIDS – TOXIC

POTENTIAL HAZARDS

HEALTH

- **TOXIC; may be fatal if inhaled, ingested or absorbed through skin.**
- Inhalation or contact with some of these materials will irritate or burn skin and eyes.
- Fire will produce irritating, corrosive and/or toxic gases.
- Vapors may cause dizziness or suffocation.
- Runoff from fire control or dilution water may cause pollution.

FIRE OR EXPLOSION

- **HIGHLY FLAMMABLE: Will be easily ignited by heat, sparks or flames.**
- Vapors may form explosive mixtures with air.
- Vapors may travel to source of ignition and flash back.
- Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Vapor explosion and poison hazard indoors, outdoors or in sewers.
- Those substances designated with a **"P"** in the Emergency Response Guidebook may polymerize explosively when heated or involved in a fire.
- Runoff to sewer may create fire or explosion hazard.
- Containers may explode when heated.
- Many liquids are lighter than water.

PUBLIC SAFETY

CALL Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper is not available or no answer, refer to appropriate telephone number listed in Appendix B.

- As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind. • Keep out of low areas.
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Spill

- See the Table of Initial Isolation and Protective Action Distances for highlighted substances. For non-highlighted substances, increase, in the downwind direction, as necessary, the isolation distance shown under "PUBLIC SAFETY".

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

ERG Guide 131
FLAMMABLE LIQUIDS – TOXIC

EMERGENCY RESPONSE

FIRE

CAUTION: All these products have a very low flash point: Use of water spray when fighting fire may be inefficient.

Small Fires

• Dry chemical, CO2, water spray or alcohol-resistant foam.

Large Fires

• Water spray, fog or alcohol-resistant foam.
• Move containers from fire area if you can do it without risk.
• Dike fire control water for later disposal; do not scatter the material.
• Use water spray or fog; do not use straight streams.

Fire involving Tanks or Car/Trailer Loads

• Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
• Cool containers with flooding quantities of water until well after fire is out.
• Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
• ALWAYS stay away from tanks engulfed in fire.
• For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK

• Fully encapsulating, vapor protective clothing should be worn for spills and leaks with no fire.
• ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
• All equipment used when handling the product must be grounded.
• Do not touch or walk through spilled material.
• Stop leak if you can do it without risk.
• Prevent entry into waterways, sewers, basements or confined areas.
• A vapor suppressing foam may be used to reduce vapors.

Small Spills

• Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal.
• Use clean non-sparking tools to collect absorbed material.

Large Spills • Dike far ahead of liquid spill for later disposal.
• Water spray may reduce vapor; but may not prevent ignition in closed spaces.

FIRST AID

• Move victim to fresh air.
• Call 911 or emergency medical service.
• Give artificial respiration if victim is not breathing.
• **Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.**
• Administer oxygen if breathing is difficult.
• Remove and isolate contaminated clothing and shoes.
• In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
• Wash skin with soap and water. • Keep victim warm and quiet.
• In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
• Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.
• Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

ERG Guide132
FLAMMABLE LIQUIDS - CORROSIVE

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- **Flammable/combustible materials.**
- May be ignited by heat, sparks or flames.
- Vapors may form explosive mixtures with air.
- Vapors may travel to source of ignition and flash back.
- Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Vapor explosion hazard indoors, outdoors or in sewers.
- Those substances designated with a **"P"** in the Emergency Response Guidebook may polymerize explosively when heated or involved in a fire.
- Runoff to sewer may create fire or explosion hazard.
- Containers may explode when heated.
- Many liquids are lighter than water.

HEALTH

- May cause toxic effects if inhaled or ingested/swallowed.
- Contact with substance may cause severe burns to skin and eyes.
- Fire will produce irritating, corrosive and/or toxic gases.
- Vapors may cause dizziness or suffocation.
- Runoff from fire control or dilution water may cause pollution.

PUBLIC SAFETY

CALL Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper is not available or no answer, refer to appropriate telephone number listed in Appendix B.

- As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind.
- Keep out of low areas.
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Large Spill

- See the Table of Initial Isolation and Protective Action Distances for highlighted substances. For non-highlighted substances, increase, in the downwind direction, as necessary, the isolation distance shown under “PUBLIC SAFETY”.

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

ERG Guide132
FLAMMABLE LIQUIDS - CORROSIVE

EMERGENCY RESPONSE

FIRE

• Some of these materials may react violently with water.

Small Fires

• Dry chemical, CO2, water spray or alcohol-resistant foam.

Large Fires

• Water spray, fog or alcohol-resistant foam.
• Move containers from fire area if you can do it without risk.
• Dike fire control water for later disposal; do not scatter the material.
• Do not get water inside containers.

Fire involving Tanks or Car/Trailer Loads

• Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
• Cool containers with flooding quantities of water until well after fire is out.
• Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
• ALWAYS stay away from tanks engulfed in fire.
• For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK

• Fully encapsulating, vapor protective clothing should be worn for spills and leaks with no fire.
• ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
• All equipment used when handling the product must be grounded.
• Do not touch or walk through spilled material.
• Stop leak if you can do it without risk.
• Prevent entry into waterways, sewers, basements or confined areas.
• A vapor suppressing foam may be used to reduce vapors.
• Absorb with earth, sand or other non-combustible material and transfer to containers (except for Hydrazine).
• Use clean non-sparking tools to collect absorbed material.

Large Spills

• Dike far ahead of liquid spill for later disposal.
• Water spray may reduce vapor; but may not prevent ignition in closed spaces.

FIRST AID

• Move victim to fresh air.
• Call 911 or emergency medical service.
• Give artificial respiration if victim is not breathing.
• **Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.**
• Administer oxygen if breathing is difficult.
• Remove and isolate contaminated clothing and shoes.
• In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
• In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
• Keep victim warm and quiet.
• Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.
• Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

ERG Guide133
FLAMMABLE SOLIDS

POTENTIAL HAZARDS

FIRE OR EXPLOSION
- Flammable/combustible material.
- May be ignited by friction, heat, sparks or flames.
- Some may burn rapidly with flare burning effect.
- Powders, dusts, shavings, borings, turnings or cuttings may explode or burn with explosive violence.
- Substance may be transported in a molten form at a temperature that may be above its flash point.
- May re-ignite after fire is extinguished.

HEALTH
- Fire may produce irritating and/or toxic gases.
- Contact may cause burns to skin and eyes.
- Contact with molten substance may cause severe burns to skin and eyes.
- Runoff from fire control may cause pollution.

PUBLIC SAFETY

CALL Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper is not available or no answer, refer to appropriate telephone number listed in Appendix B.
- As an immediate precautionary measure, isolate spill or leak area for at least 25 meters (75 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind.
- Keep out of low areas.

PROTECTIVE CLOTHING
- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing will only provide limited protection.

EVACUATION

Large Spill
- Consider initial downwind evacuation for at least 100 meters (330 feet).

Fire
- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

Small Fires
- Dry chemical, CO2, sand, earth, water spray or regular foam.

Large Fires
- Water spray, fog or regular foam.
- Move containers from fire area if you can do it without risk.

Fire involving Tanks or Car/Trailer Loads
- Cool containers with flooding quantities of water until well after fire is out.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of

tank.
• ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK
• ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
• Do not touch or walk through spilled material.

Small Dry Spills
• With clean shovel place material into clean, dry container and cover loosely; move containers from spill area.

Large Spills
• Wet down with water and dike for later disposal.
• Prevent entry into waterways, sewers, basements or confined areas.

FIRST AID
• Move victim to fresh air.
• Call 911 or emergency medical service.
• Give artificial respiration if victim is not breathing.
• Administer oxygen if breathing is difficult.
• Remove and isolate contaminated clothing and shoes.
• In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
• Removal of solidified molten material from skin requires medical assistance.
• Keep victim warm and quiet.
• Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

ERG Guide 137

SUBSTANCES - WATER-REACTIVE - CORROSIVE

POTENTIAL HAZARDS

HEALTH

- CORROSIVE and/or TOXIC; inhalation, ingestion or contact (skin, eyes) with vapors, dusts or substance may cause severe injury, burns or death.
- Fire will produce irritating, corrosive and/or toxic gases.
- Reaction with water may generate much heat which will increase the concentration of fumes in the air.
- Contact with molten substance may cause severe burns to skin and eyes.
- Runoff from fire control or dilution water may cause pollution.

FIRE OR EXPLOSION

- EXCEPT FOR ACETIC ANHYDRIDE (UN1715), THAT IS FLAMMABLE, some of these materials may burn, but none ignite readily.
- May ignite combustibles (wood, paper, oil, clothing, etc.).
- Substance will react with water (some violently), releasing corrosive and/or toxic gases.
- Flammable/toxic gases may accumulate in confined areas (basement, tanks, hopper/tank cars etc.)
- Contact with metals may evolve flammable hydrogen gas.
- Containers may explode when heated or if contaminated with water.
- Substance may be transported in a molten form.

PUBLIC SAFETY

CALL Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper is not available or no answer, refer to appropriate telephone number listed in Appendix B.

- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind.
- Keep out of low areas.
- Ventilate enclosed areas.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Spill

- See the Table of Initial Isolation and Protective Action Distances in the Emergency Response Guidebook for highlighted substances. For non-highlighted substances, increase, in the downwind direction, as necessary, the isolation distance shown under “PUBLIC SAFETY”.

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

ERG Guide 137

SUBSTANCES - WATER-REACTIVE - CORROSIVE

EMERGENCY RESPONSE

FIRE

- **When material is not involved in fire: do not use water on material itself.**

Small Fires

- Dry chemical or CO2.
- Move containers from fire area if you can do it without risk.

Large Fires

- Flood fire area with large quantities of water, while knocking down vapors with water fog. If insufficient water supply: knock down vapors only.

Fire involving Tanks or Car/Trailer Loads

- Cool containers with flooding quantities of water until well after fire is out.
- Do not get water inside containers.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- Fully encapsulating, vapor protective clothing should be worn for spills and leaks with no fire.
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Stop leak if you can do it without risk.
- Use water spray to reduce vapors; do not put water directly on leak, spill area or inside container.
- Keep combustibles (wood, paper, oil, etc.) away from spilled material.

Small Spills

- Cover with DRY earth, DRY sand or other non-combustible material followed with plastic sheet to minimize spreading or contact with rain.
- Use clean non-sparking tools to collect material and place it into loosely covered plastic containers for later disposal.
- Prevent entry into waterways, sewers, basements or confined areas.

FIRST AID

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- **Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.**
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- For minor skin contact, avoid spreading material on unaffected skin.
- Removal of solidified molten material from skin requires medical assistance.
- Keep victim warm and quiet.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

ERG Guide 140
OXIDIZERS

POTENTIAL HAZARDS

FIRE OR EXPLOSION
- These substances will accelerate burning when involved in a fire.
- Some may decompose explosively when heated or involved in a fire.
- May explode from heat or contamination.
- Some will react explosively with hydrocarbons (fuels).
- May ignite combustibles (wood, paper, oil, clothing, etc.).
- Containers may explode when heated.
- Runoff may create fire or explosion hazard.

HEALTH
- Inhalation, ingestion or contact (skin, eyes) with vapors or substance may cause severe injury, burns or death.
- Fire may produce irritating, corrosive and/or toxic gases.
- Runoff from fire control or dilution water may cause pollution.

PUBLIC SAFETY

CALL Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper is not available or no answer, refer to appropriate telephone number listed in Appendix B.
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind.
- Keep out of low areas.
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING
- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing will only provide limited protection.

EVACUATION

Large Spill
- Consider initial downwind evacuation for at least 100 meters (330 feet).

Fire
- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

Small Fires
- Use water. Do not use dry chemicals or foams. CO2 or Halon® may provide limited control.

Large Fires
- Flood fire area with water from a distance.
- Move containers from fire area if you can do it without risk.
- Do not move cargo or vehicle if cargo has been exposed to heat.
- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.

ERG Guide 140
OXIDIZERS

• Cool containers with flooding quantities of water until well after fire is out.
• ALWAYS stay away from tanks engulfed in fire.

• For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK

• Keep combustibles (wood, paper, oil, etc.) away from spilled material.
• Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
• Stop leak if you can do it without risk.
• Do not get water inside containers.

Small Dry Spills

• With clean shovel place material into clean, dry container and cover loosely; move containers from spill area.

Small Liquid Spills

• Use a non-combustible material like vermiculite or sand to soak up the product and place into a container for later disposal.

Large Spills

• Dike far ahead of liquid spill for later disposal.
• **Following product recovery, flush area with water.**

FIRST AID

• Move victim to fresh air.
• Call 911 or emergency medical service.
• Give artificial respiration if victim is not breathing.
• Administer oxygen if breathing is difficult.
• Remove and isolate contaminated clothing and shoes.
• Contaminated clothing may be a fire risk when dry.
• In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
• Keep victim warm and quiet.
• Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

ERG Guide 153

SUBSTANCES - TOXIC AND/OR CORROSIVE (COMBUSTIBLE)

POTENTIAL HAZARDS

HEALTH

- **TOXIC**; inhalation, ingestion or skin contact with material may cause severe injury or death.
- Contact with molten substance may cause severe burns to skin and eyes.
- Avoid any skin contact.
- Effects of contact or inhalation may be delayed.
- Fire may produce irritating, corrosive and/or toxic gases.
- Runoff from fire control or dilution water may be corrosive and/or toxic and cause pollution.

FIRE OR EXPLOSION

- Combustible material: may burn but does not ignite readily.
- When heated, vapors may form explosive mixtures with air: indoors, outdoors and sewers explosion hazards.
- Those substances designated with a **"P"** in the Emergency Response Guidebook may polymerize explosively when heated or involved in a fire.
- Contact with metals may evolve flammable hydrogen gas.
- Containers may explode when heated.
- Runoff may pollute waterways.
- Substance may be transported in a molten form.

PUBLIC SAFETY

CALL Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper is not available or no answer, refer to appropriate telephone number listed in Appendix B.

- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind.
- Keep out of low areas.
- Ventilate enclosed areas.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Spill

- See the Table of Initial Isolation and Protective Action Distances in the Emergency Response Guidebook for highlighted substances. For non-highlighted substances, increase, in the downwind direction, as necessary, the isolation distance shown under “PUBLIC SAFETY”.

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

ERG Guide 153

SUBSTANCES - TOXIC AND/OR CORROSIVE (COMBUSTIBLE)

EMERGENCY RESPONSE

FIRE

Small Fires

• Dry chemical, CO2 or water spray.

Large Fires

• Dry chemical, CO2, alcohol-resistant foam or water spray.
• Move containers from fire area if you can do it without risk.
• Dike fire control water for later disposal; do not scatter the material.

Fire involving Tanks or Car/Trailer Loads

• Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
• Do not get water inside containers.
• Cool containers with flooding quantities of water until well after fire is out.
• Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
• ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

• ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
• Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
• Stop leak if you can do it without risk.
• Prevent entry into waterways, sewers, basements or confined areas.
• Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
• DO NOT GET WATER INSIDE CONTAINERS.

FIRST AID

• Move victim to fresh air.
• Call 911 or emergency medical service.
• Give artificial respiration if victim is not breathing.
• **Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.**
• Administer oxygen if breathing is difficult.
• Remove and isolate contaminated clothing and shoes.
• In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
• For minor skin contact, avoid spreading material on unaffected skin.
• Keep victim warm and quiet.
• Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.
• Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

ERG Guide 154

SUBSTANCES - TOXIC AND/OR CORROSIVE (NON-COMBUSTIBLE)

POTENTIAL HAZARDS

HEALTH

- **TOXIC**; inhalation, ingestion or skin contact with material may cause severe injury or death.
- Contact with molten substance may cause severe burns to skin and eyes.
- Avoid any skin contact.
- Effects of contact or inhalation may be delayed.
- Fire may produce irritating, corrosive and/or toxic gases.
- Runoff from fire control or dilution water may be corrosive and/or toxic and cause pollution.

FIRE OR EXPLOSION

- Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes.
- Some are oxidizers and may ignite combustibles (wood, paper, oil, clothing, etc.).
- Contact with metals may evolve flammable hydrogen gas.
- Containers may explode when heated.

PUBLIC SAFETY

CALL Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper is not available or no answer, refer to appropriate telephone number listed in Appendix B.

- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind.
- Keep out of low areas.
- Ventilate enclosed areas.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Spill

- See the Table of Initial Isolation and Protective Action Distances (green pages in the 2004 Emergency Response Guidebook) for highlighted substances. For non-highlighted substances, increase, in the downwind direction, as necessary, the isolation distance shown under “PUBLIC SAFETY”.

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

ERG Guide 154

SUBSTANCES - TOXIC AND/OR CORROSIVE (NON-COMBUSTIBLE)

Emergency Response

FIRE

Small Fires

• Dry chemical, CO2 or water spray.

Large Fires

• Dry chemical, CO2, alcohol-resistant foam or water spray.
• Move containers from fire area if you can do it without risk.
• Dike fire control water for later disposal; do not scatter the material.

Fire involving Tanks or Car/Trailer Loads

• Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
• Do not get water inside containers.
• Cool containers with flooding quantities of water until well after fire is out.
• Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
• ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

• ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
• Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
• Stop leak if you can do it without risk.
• Prevent entry into waterways, sewers, basements or confined areas.
• Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
• DO NOT GET WATER INSIDE CONTAINERS.

FIRST AID

• Move victim to fresh air.
• Call 911 or emergency medical service.
• Give artificial respiration if victim is not breathing.
• **Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.**
• Administer oxygen if breathing is difficult.
• Remove and isolate contaminated clothing and shoes.
• In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
• For minor skin contact, avoid spreading material on unaffected skin.
• Keep victim warm and quiet.
• Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.
• Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

ERG GUIDE 157

SUBSTANCES - TOXIC AND/OR CORROSIVE (NON-COMBUSTIBLE/WATER-SENSITIVE)

POTENTIAL HAZARDS

HEALTH

- **TOXIC**; inhalation, ingestion or contact (skin, eyes) with vapors, dusts or substance may cause severe injury, burns or death.
- Reaction with water or moist air will release toxic, corrosive or flammable gases.
- Reaction with water may generate much heat that will increase the concentration of fumes in the air.
- Fire will produce irritating, corrosive and/or toxic gases.
- Runoff from fire control or dilution water may be corrosive and/or toxic and cause pollution.

FIRE OR EXPLOSION

- Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes.
- Vapors may accumulate in confined areas (basement, tanks, hopper/tank cars etc.).
- Substance will react with water (some violently), releasing corrosive and/or toxic gases.
- Contact with metals may evolve flammable hydrogen gas.
- Containers may explode when heated or if contaminated with water.

PUBLIC SAFETY

CALL Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed in Appendix B.

- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind.
- Keep out of low areas.
- Ventilate enclosed areas.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Spill

- See the Table of Initial Isolation and Protective Action Distances for highlighted substances. For non-highlighted substances, increase, in the downwind direction, as necessary, the isolation distance shown under “PUBLIC SAFETY”.

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

- Note: Most foams will react with the material and release corrosive/toxic gases.

Small Fires

- CO_2 (except for Cyanides), dry chemical, dry sand, alcohol-resistant foam.

ERG GUIDE 157

SUBSTANCES - TOXIC AND/OR CORROSIVE (NON-COMBUSTIBLE/WATER-SENSITIVE)

Large Fires

- Water spray, fog or alcohol-resistant foam.
- Move containers from fire area if you can do it without risk.
- Use water spray or fog; do not use straight streams.
- Dike fire control water for later disposal; do not scatter the material.

Fire involving Tanks or Car/Trailer Loads

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Do not get water inside containers.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Stop leak if you can do it without risk.
- A vapor suppressing foam may be used to reduce vapors.
- DO NOT GET WATER INSIDE CONTAINERS.
- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
- Prevent entry into waterways, sewers, basements or confined areas.

Small Spills

- Cover with DRY earth, DRY sand or other non-combustible material followed with plastic sheet to minimize spreading or contact with rain.
- Use clean non-sparking tools to collect material and place it into loosely covered plastic containers for later disposal.

FIRST AID

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- **Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.**
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- For minor skin contact, avoid spreading material on unaffected skin.
- Keep victim warm and quiet.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

ERG Guide 171
SUBSTANCES (LOW TO MODERATE HAZARD)

POTENTIAL HAZARDS

FIRE OR EXPLOSION
- Some may burn but none ignite readily.
- Containers may explode when heated.
- Some may be transported hot.

HEALTH
- Inhalation of material may be harmful.
- Contact may cause burns to skin and eyes.
- Inhalation of Asbestos dust may have a damaging effect on the lungs.
- Fire may produce irritating, corrosive and/or toxic gases.
- Some liquids produce vapors that may cause dizziness or suffocation.
- Runoff from fire control may cause pollution.

PUBLIC SAFETY

CALL Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper is not available or no answer, refer to appropriate telephone number listed in Appendix B.
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind.

PROTECTIVE CLOTHING
- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing will only provide limited protection.

EVACUATION

Spill
- See the Table of Initial Isolation and Protective Action Distances for highlighted substances. For non-highlighted substances, increase, in the downwind direction, as necessary, the isolation distance shown under "PUBLIC SAFETY".

Fire
- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

EMERGENCY RESPONSE

FIRE

Small Fires
- Dry chemical, CO2, water spray or regular foam.

Large Fires
- Water spray, fog or regular foam.
- Move containers from fire area if you can do it without risk.
- Do not scatter spilled material with high pressure water streams.
- Dike fire-control water for later disposal.

Fire involving Tanks
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

ERG Guide 171
SUBSTANCES (LOW TO MODERATE HAZARD)

SPILL OR LEAK

• Do not touch or walk through spilled material.

• Stop leak if you can do it without risk.
• Prevent dust cloud.
• Avoid inhalation of asbestos dust.

Small Dry Spills

• With clean shovel place material into clean, dry container and cover loosely; move containers from spill area.

Small Spills

• Take up with sand or other non-combustible absorbent material and place into containers for later disposal.

Large Spills

• Dike far ahead of liquid spill for later disposal.
• Cover powder spill with plastic sheet or tarp to minimize spreading.
• Prevent entry into waterways, sewers, basements or confined areas.

FIRST AID

• Move victim to fresh air.
• Call 911 or emergency medical service.
• Give artificial respiration if victim is not breathing.
• Administer oxygen if breathing is difficult.
• Remove and isolate contaminated clothing and shoes.
• In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
• Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselv

Asphalt (Elevated Temperature Liquid)

PRODUCT NAME: Asphalt
OTHER/GENERIC NAMES: Petroleum Asphalt
EMERGENCY OVERVIEW: Flammable hot liquid, dark brown to black, Strong odor. Thermal burns can result from contact May causes eye, respiratory and digestive irritation.

POTENTIAL HEALTH HAZARDS

SKIN: Irritation. Thermal burns can result from contact. Chronic exposure may result in redness, itching, drying, cracking, burning or inflammation of skin (Dermatitis).
EYES: Irritation. Thermal burns can result from contact.
INHALATION: No significant adverse health effects are expected to occur from short term exposure at ambient temperatures. Breathing fumes from heating of the cured product can irritate the mucous membranes of the nose, throat, bronchi, and lungs.
INGESTION: Large amounts of the material may cause stomach or intestinal upset with pain, nausea, vomiting and/or diarrhea.

FIRST AID MEASURES

SKIN: Wash skin with plenty of soap and water. Remove contaminated clothing and launder before wearing again.
EYES: Immediately flush eyes with large amounts of water for at least 15 minutes occasionally lifting the lower and upper lids. Get medical attention promptly.
INHALATION: Remove to fresh air. If not breathing give artificial respiration.
INGESTION: DO NOT induce vomiting. Give large quantities of water. Never give anything by mouth to an unconscious person.

FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES
ERG GUIDE NUMBER 128
NFPA HAZARD RATING: Flammability 1, Health 0, Reactivity 0
FLASH POINT: >350F
AUTOIGNITION TEMPERATURE: 905F.
UPPER FLAME LIMIT (volume % in air): Not applicable.
LOWER FLAME LIMIT (volume % in air): Not applicable.
FLAME PROPAGATION RATE (solids): Not applicable.
OSHA FLAMMABILITY CLASS: Flammable.
EXTINGUISHING MEDIA: Use dry chemical or carbon dioxide as extinguishing media. Water or foam may cause frothing. Use water to keep fire exposed containers cool.
UNUSUAL FIRE AND EXPLOSION HAZARDS: Products of combustion may contain carbon dioxide, carbon monoxide, hydrogen sulfide and various hydrocarbon compounds. Do not enter enclosed or confined space without a self contained breathing apparatus and other protective equipment.

IN CASE OF SPILL OR OTHER RELEASE:

Control ignition sources around spill area. Avoid washing, draining or directing materials to sanitary sewers **Small spills** should be placed in containers for later disposal. **Large spills** – If liquid, contain spill immediately in the smallest possible area.

PERSONAL PROTECTIVE EQUIPMENT

SKIN PROTECTION: As a minimum, wear gloves and apron. Nonflammable boots, trousers and jacket may be used for increased protection.
EYE PROTECTION: Wear safety glasses or face shields as appropriate.
RESPIRATORY PROTECTION: Generally, none required.
ADDITIONAL RECOMMENDATIONS: When loading or unloading, remain upwind. Request assistance of safety and health personnel to determine air concentrations.

TRANSPORT INFORMATION
US DOT HAZARD CLASS: 9, PG lll
US DOT ID NUMBER: UN3257
PROPER SHIPPING NAME: Elevated Temperature Liquid, N.O.S.

PHYSICAL/CHEMICAL DATA
COLOR: DARK BROWN TO BLACK
BOILING POINT >700F
SOFTENING POINT 115-120F

Diesel

Synonyms: Diesel, Distillate, Cycle Oil, Fuel Oil, Diesels Cycle Oil, Furnace Oil

Major Uses: Used as a fuel in engines and heaters designed for diesel fuels.

Hazards Identification

EMERGENCY OVERVIEW

Colorless, red, blue, or amber liquid with kerosene odor. May cause eye, skin and respiratory tract irritation.

First Aid Measures

Remove all clothing impregnated with material immediately. Consult a physician for major exposures of inhalation or skin contact.

Inhalation: Remove from further exposure. If unconsciousness occurs, seek immediate medical assistance. If breathing stops, use mouth-to-mouth resuscitation.

Ingestion: DO NOT INDUCE VOMITING. Get medical assistance promptly. (Note to physician: Material if aspirated into the lungs may cause chemical pneumonitis. Treat appropriately.)

Eyes**:** Flush immediately with water for at least 15 minutes minimum. Seek medical attention promptly.

Skin: Discard contaminated leather articles. Wash contact areas with soap and water. Launder contaminated clothing before reuse.

Fire Fighting Measures

FIRE AND EXPLOSION HAZARDS

GENERAL HAZARD: Incomplete burning can produce carbon monoxide. Vapors will be released above flash point and when mixed with air, can burn or explode in confined space if exposed to sources of ignition.

Flash Point: 100^{o} F Minimum

Flammable Limits in Air: LEL - 1.3 UEL - 6

Autoignition Temperature: 490^{0} - 545^{o} F

Extinguishing Media: Use foam, dry chemical, CO_2, water fog or vaporizing liquid (Halon). Keep personnel removed from and up-wind of fire. Cool adjacent structures and storage drums with water spray. Evacuate area.

Spills/Leaks: Prevent runoff from fire control dilution from entering streams or drinking water supply. Shut off and eliminate all ignition sources. Keep people away. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining

liquid in sand or inert absorbent and remove to safe place.
Contain and remove by mechanical means. Add sand, earth or other suitable absorbent to spill area then scrape off the ground. Spill may be removed from water with mechanical dredges or lifts.

Personal Protective Equipment

General: Adequate general ventilation should be provided to keep vapor and mists below exposure limits. Where there is possibility of skin contact, use the following as appropriate:

Eyes: Wear safety glasses with side shields. Wear a face shield if possibility of material splashing or spraying exists.

Skin: Wear appropriate protective gloves to prevent skin exposure.

Clothing: Use full-face shield, chemical goggles, impervious gloves, boots and whole body protection.

Respirators: Approved respiratory protection must be used when vapors or mist concentrations are unknown or exceed the TLV (100ppm). Avoid prolonged or repeated breathing of vapor or mists.

Physical and Chemical Properties (Diesel)

Chemical Formula: (approximate for #2 Diesel)	64% aliphatic hydrocarbons, (C_{10} - C_{19}) 35% aromatic hydrocarbons, l% olefinic hydrocarbons
Appearance:	Colorless, red, blue, or amber liquid
Odor:	Kerosene
Solubility (20 ^{o} C):	0.0005 g/100 ml
Density:	0.75 - 0.90
Boiling Point:	282-338 ^{o} C
Melting Point:	-18 ^{o} C
Vapor Pressure at 20 ^{o} C:	0.40 mm Hg

Transport Information

Proper Shipping Name: Combustible Liquid, n.o.s. (Diesel #2)
Hazard Class: 3 (Combustible Liquid)
UN/NA: UN 1993
Packing Group: III
DOT LABELS: Flammable

Gasoline

Product Use: This product is intended for use as a fuel in engines or for use in engineered processes. Use in other applications may result in higher exposures and require additional controls, such as local exhaust ventilation and personal protective equipment.

Hazards of Combustion Products: Carbon monoxide and carbon dioxide can be found in the combustion products of this product and other forms of hydrocarbon combustion. Carbon monoxide in moderate concentrations can cause symptoms of headache, nausea, vomiting, increased cardiac output, and confusion. Exposure to higher concentrations of carbon monoxide can cause loss of consciousness, heart damage, brain damage, and/or death. Exposure to high concentrations of carbon dioxide can cause simple asphyxiation by displacing available oxygen. Combustion of this and other similar materials should only be carried out in well ventilated areas.

First Aid Measures

Eyes: Immediately flush eyes with large amount of water for at least 15 minutes holding lids apart to ensure flushing of the entire eye surface. **SEEK IMMEDIATE MEDICAL ATTENTION.**

Skin: Wash contaminated areas with plenty of soap and water. A soothing ointment may be applied to irritated skin after thoroughly cleansing. Remove contaminated clothing and footwear. **SEEK IMMEDIATE MEDICAL ATTENTION.**

Inhalation: Get person out of contaminated area to fresh air. If breathing has stopped resuscitate and administer oxygen if readily available. **SEEK MEDICAL ATTENTION IMMEDIATELY.**

Ingestion: Never give anything by mouth to an unconscious person. If swallowed, do not induce vomiting. If vomiting occurs spontaneously, keep airway clear. **SEEK MEDICAL ATTENTION IMMEDIATELY.**

Note to Physician: Gastric lavage only if large quantity has been ingested. Guard against aspiration into lungs which may result in chemical pneumonitis. Irregular heart beat may occur; use of adrenaline is not advised. Treat symptomatically.

Fire and Explosion Data

Flash Point: <-40 degrees (Estimated)
Auto ignition Temperature: 480 degrees F
Flammable Limits In Air: UEL: 7.1% - LEL: 1.3%

Extinguishing Media: Use dry chemical, carbon dioxide, foam or water spray. Water may be ineffective in fighting fires of liquids with low flash points, but water should be used to keep fire exposed containers cool. If a leak or spill has not ignited, use water spray to disperse the vapors and to protect persons attempting to stop a leak.

Special Fire Fighting Procedures: Pressure-demand, self contained, breathing apparatus should be provided for fire fighters engaged in activities in the hot zone.

Unusual Fire And Explosion Hazard: Vapors may travel extended distances and flashback with explosive force if ignition sources are present. Clothing, rags, or similar organic material contaminated with the product and stored in a closed space may undergo spontaneous combustion.

Accidental Release Measures

Eliminate all sources of ignition (flames, sparks, heat, electrical equipment, and engines) and remove non-response personnel from the spill area. Contain liquids with earthen dikes or petroleum absorbent materials. Prevent discharges to streams or sewer systems. Control vapors from large spills with fire-fighting foam. Remove liquid with explosion-proof equipment and grounded and bonded suction hoses. Report spills or releases as required to the appropriate local, state and federal regulatory agencies.

Personal Protection/Exposure Controls

Specific Personal Protective Equipment

Respiratory: Respiratory protection is normally not required when transferring material in well ventilated areas. When transferring in enclosed areas or at high temperatures, vapors concentrations may warrant use of respiratory equipment. Use NIOSH approved respiratory protection following manufacture's recommendations. Positive pressure supplied air respiratory protection is required for IDLH areas; follow ANSI Z88.2

Eye: Face shield and goggles or chemical goggles should be worn where splashing is likely.

Gloves: Impermeable protective gloves such as nitrile gloves should be worn during routine handling of this product.

Other Clothing and Equipment: Standard work clothing is sufficient with good practices. Clothing contaminated with this product should be removed and laundered before reuse. Items which can not be laundered should be discarded. Allow contaminated items to air dry or hang in a well ventilated area. Spontaneous combustion or fire may result from contaminated materials being placed together before drying. Shower and eyewash facilities should be accessible.

Transport Information

DOT Proper Shipping Name	**Gasoline**
DOT Hazard Class*	3
DOT Packing Group (PG)	II
I.D. Number	UN 1203
Required Labeling	Flammable Liquid

Paint (Solvent Based)

(Flammable)

Hazards Identification

EMERGENCY OVERVIEW

Combustible Liquid. Inhalation, ingestion or skin contact with material or its combustion products may cause injury. Causes eye and skin irritation. Mist and vapor causes respiratory tract and mucous membrane irritation.

First Aid Measures

Inhalation: Provide plenty of fresh air and rest.
Ingestion: DO NOT INDUCE VOMITING. Call a physician.
Eyes: Flush eyes with plenty of water. Call a physician.
Skin: Wash with soap and water. Use emollient cream or lotion.
Symptoms of Overexposure: Headache, dizziness, nausea, and loss of coordination are indications excessive exposure to vapors or spray mists. Redness and itching or burning sensation may indicate eye or excessive skin exposure.

Fire Fighting Measures

Flammability Class: Combustible Liquid
Flash Point: Above 99 ºF and below 200 ºF
Extinguishing Media: Regular Foam, Carbon Dioxide (CO_2) or dry chemical. Straight water streams will spread oil fires. If water is used, fog nozzles are preferable.

Vapors are heavier than air and may move along the ground and be ignited.
Containers may rupture in extreme heat.
Decomposition Products may be hazardous – GET MEDICAL ATTENTION.
Fire Fighters should be equipped with NIOSH-approved self-contained breathing apparatus and full protective clothing.
Use water to keep containers cool and prevent explosion.
Dried films of paint material will support combustion.

Spills/Leaks:
Eliminate all ignition Sources
Absorb on inert material
Dispose of in a closed container

. **Personal Protective Equipment**

General: Adequate general ventilation should be provided to keep vapor and mists below exposure limits.
Eyes: Wear safety glasses with side shields. Wear a face shield if possibility of material splashing or spraying exists.
Skin: Wear appropriate protective gloves to prevent skin exposure.
Clothing: Wear gloves impervious to material, boots, hood, pants and jacket.

Respirators: Wear a NIOSH/OSHA approved respirator with a dust/mist cartridge if there is potential of exposure to mists in excess of applicable limits.

Physical and Chemical Properties of solvent-based Paint

Appearance:	Liquid
Flash Point	Above 99 ºF and below 200 ºF
Weight:	8-13 lb/gal
Boiling Range	300-450 ºF
Volatile (By Volume)	40-60**%**
Vapor Density (Air = 1)	Greater than Air

Transport Information

Proper Shipping Name: Paint (flammable)
Hazard Class: 3
UN/NA: UN 1263
Packing Group: III
DOT LABELS: 3
DOT PLACARDS: Flammable Liquid

Phosphoric Acid

Product Identification
Synonyms: Ortho-phosphoric acid; white phosphoric acid
CAS No.: 7664-38-2

Emergency Overview

DANGER! CORROSIVE. CAUSES SEVERE IRRITATION AND BURNS TO EVERY AREA OF CONTACT. HARMFUL IF SWALLOWED OR INHALED.

Health Rating: 3 - Severe
Flammability Rating: 0 - None
Reactivity Rating: 2 - Moderate
Contact Rating: 4 - Extreme (Corrosive)
Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES
Storage Color Code: White (Corrosive)

First Aid Measures

Inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician immediately.
Ingestion: If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. Get medical attention immediately.
Skin Contact: Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Call a physician, immediately. Wash clothing before reuse.
Eye Contact: Immediately flush eyes with gentle but large stream of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Call a physician immediately.

Fire Fighting Measures

ERG Guide Number: 154
Fire: Not considered to be a fire hazard. Contact with most metals causes formation of flammable and explosive hydrogen gas.
Explosion: Not considered to be an explosion hazard.
Fire Extinguishing Media: Use any means suitable for extinguishing surrounding fire. Water spray may be used to keep fire exposed containers cool. If water is used, use in abundance to control heat and acid build-up.
Special Information: In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full face piece operated in the pressure demand or other positive pressure mode.

Physical and Chemical Properties

Physical data below refers to concentrated phosphoric acid.
Appearance: Clear, colorless syrupy liquid.
Odor: Odorless.
Solubility: Miscible in all proportions in water.

Specific Gravity: 1.69 @ 25C
pH: 1.5 (0.1 N aqueous solution)
% Volatiles by volume @ 21C (70F): 100
Boiling Point: 158C (316F)
Melting Point: 21C (70F)
Vapor Density (Air=1): 3.4
Vapor Pressure (mm Hg): 0.03 @ 20C (68F)
Evaporation Rate (BuAc=1): No information found.

Transport Information

Proper Shipping Name: PHOSPHORIC ACID, LIQUID
Hazard Class: 8
UN/NA: UN1805
Packing Group: III
Information reported for product/size: 350LB

Sodium Hydroxide

Product Identification
Synonyms: Caustic soda; lye; sodium hydroxide solid; sodium hydrate

Emergency Overview

POISON! DANGER! CORROSIVE. MAY BE FATAL IF SWALLOWED. HARMFUL IF INHALED. CAUSES BURNS TO ANY AREA OF CONTACT. REACTS WITH WATER, ACIDS AND OTHER MATERIALS.

Health Rating: 4 - Extreme (Poison)
Flammability Rating: 0 - None
Reactivity Rating: 2 - Moderate
Contact Rating: 4 - Extreme (Corrosive)
Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES
Storage Color Code: White Stripe (Store Separately)

First Aid Measures

Inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.
Ingestion: DO NOT INDUCE VOMITING! Give large quantities of water or milk if available. Never give anything by mouth to an unconscious person. Get medical attention immediately.
Skin Contact: Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Call a physician, immediately. Wash clothing before reuse.
Eye Contact: Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

Fire Fighting Measures

Fire: Not considered to be a fire hazard. Hot or molten material can react violently with water. Can react with certain metals, such as aluminum, to generate flammable hydrogen gas.
Explosion: Not considered to be an explosion hazard.
Fire Extinguishing Media: Use any means suitable for extinguishing surrounding fire. Adding water to caustic solution generates large amounts of heat.
Special Information: In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full face piece operated in the pressure demand or other positive pressure mode.

Personal Protective Equipment

Personal Respirators (NIOSH Approved): If the exposure limit is exceeded and engineering controls are not feasible, a half facepiece particulate respirator (NIOSH type N95 or better filters) may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest.. A full-face piece particulate respirator (NIOSH type N100 filters) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency, or respirator supplier, whichever is lowest. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied

respirator. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.
Skin Protection: Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.
Eye Protection: Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

Physical and Chemical Properties

Appearance: White, deliquescent pellets or flakes.
Odor: Odorless.
Solubility: 111 g/100 g of water.
Specific Gravity: 2.13
pH: 13 - 14 (0.5% soln.)
% Volatiles by volume @ 21C (70F): 0
Boiling Point: 1390C (2534F)
Melting Point: 318C (604F)
Vapor Density (Air=1): > 1.0
Vapor Pressure (mm Hg): Negligible.
Evaporation Rate (BuAc=1): No information found.

Transport Information

Proper Shipping Name: SODIUM HYDROXIDE, SOLID
Hazard Class: 8
UN/NA: UN1823
Packing Group: II
Information reported for product/size: 300LB

Sulfuric Acid

PRODUCT NAME: Sulfuric Acid
OTHER/GENERIC NAMES: Battery acid

EMERGENCY OVERVIEW

Oily, colorless to slightly yellow, clear to turbid liquid. Odorless. Causes severe skin burns. Causes severe eye burns. Causes burns of the mouth, throat, and stomach.

POTENTIAL HEALTH HAZARDS

SKIN: Causes severe burns.
EYES: Liquid contact can cause irritation, corneal burns, and conjunctivitis. May result in severe or permanent injury. May cause blindness.
INHALATION: Inhalation of fumes or acid mist can cause irritation or corrosive burns to the upper respiratory system, including the nose, mouth and throat. May irritate the lungs. May cause pulmonary edema.
INGESTION: Causes burns of the mouth, throat and stomach. May be fatal if swallowed. Hazards are also applicable to dilute solutions.

FIRST AID MEASURES

SKIN: Immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing while washing. Get medical attention immediately.
EYES: Immediately flush eyes with large amounts of water for at least 15 minutes. Get immediate medical attention.
INHALATION: If inhaled, remove to fresh air. If not breathing give artificial respiration, preferably mouth-to-mouth. If breathing is difficult give oxygen. Get medical attention.
INGESTION: If swallowed, do NOT induce vomiting. Give victim two glasses of water. Call a physician immediately. Never give anything by mouth to an unconscious person.
ADVICE TO PHYSICIAN: Treat symptomatically.

FIRE FIGHTING MEASURES

ERG GUIDE NUMBERS: 137/157
FLASH POINT: Not applicable.
FLASH POINT METHOD: Not applicable.
AUTOIGNITION TEMPERATURE: Not applicable.
UPPER FLAME LIMIT (volume % in air): Not applicable.
LOWER FLAME LIMIT (volume % in air): Not applicable.
FLAME PROPAGATION RATE (solids): Not applicable.
OSHA FLAMMABILITY CLASS: Not flammable.
EXTINGUISHING MEDIA: Water spray or fog may be used to knock down corrosive vapor cloud. Water may be applied to the sides of the containers exposed to flames provided the water does not come in contact with the tank contents.

UNUSUAL FIRE AND EXPLOSION HAZARDS

Flammable and potentially explosive hydrogen gas can be generated inside metal drums and storage tanks. Concentrated sulfuric acid can ignite combustible materials on contact.

SPECIAL FIRE FIGHTING PRECAUTIONS/INSTRUCTIONS

Do not use solid water streams near ruptured tanks or spills of sulfuric acid. Acid reacts violently with water and can spatter acid onto personnel. Wear approved positive-pressure self-contained breathing apparatus and protective clothing.

IN CASE OF SPILL OR OTHER RELEASE:

Dilute small spills or leaks cautiously with plenty of water. Neutralize residue with sodium bicarbonate or other suitable neutralizing agent. When using carbonates for neutralization, adequate precautions should be taken to minimize hazards from carbon dioxide gas generation. No smoking in spill area. Major spills must be handled by a predetermined plan. Attempt to keep out of sewers.

PERSONAL PROTECTIVE EQUIPMENT

SKIN PROTECTION: As a minimum, wear acid-resistant, preferably rubber, gloves and apron. Acid resistant boots, trousers and jacket may be used for increased protection.
EYE PROTECTION: Wear chemical safety goggles. Add a full face shield for pouring liquids. Do not wear contact lenses.
RESPIRATORY PROTECTION: Generally, none required. If misting conditions prevail, wear a NIOSH-approved acid-mist respirator.
ADDITIONAL RECOMMENDATIONS: Provide eyewash stations and quick-drench shower facilities in or near areas of use or handling.

Physical and Chemical Properties (Sulfuric Acid)

Chemical Formula	H_2SO_4
Appearance:	Colorless to light yellow liquid
Odor:	Odorless
Solubility:	Fully soluble in water
pH:	0.9 (1% Solution)
Boiling Point:	~310C (94%))
Melting Point:	~ -27C (94%)

TRANSPORT INFORMATION

US DOT HAZARD CLASS: 8, PG II
US DOT ID NUMBER: UN1830
PROPER SHIPPING NAME: Sulfuric acid

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Appendix B

Emergency Response Telephone Numbers

- **CHEMTREC** **1-800-424-9300**
- **CHEM-TEL** **1-800-255-3924**
- **INFOTRAC** **1-800-535-5053**
- **3E Company** **1-800-451-8346**
- **National Response Center (NRC)** **1-800-424-8802**
- **Military Shipments**
  - **Explosives/ammunition incidents** **703-697-0218**
  - **All other dangerous goods incidents** **1-800-851-8061**
- **Nationwide Poison Control Center** **1-800-222-1222**