SAFETY PERFORMANCE DATA

RSPA' s Office of Hazardous Materials Safety (OHM) maintains the Hazardous Materials Information System (HMIS). This system is the principal source of safety data related to hazardous materials transportation. It contains comprehensive information on hazardous materials incidents, exemptions and approvals, enforcement actions, and other elements that support the regulatory program.

The HMIS is used by DOT, other Federal agencies, state and local governments, industry, researchers, the media, and the public. HMIS data supports regulatory evaluation and policy making, training programs, the better understanding of hazardous materials transportation incidents, and identification of possible safety problems.

To enhance the HMIS, menu-driven programs used by state and local governmental agencies continued to be improved. These improvements permit generation of additional summary statistical reports, expand the search criteria, and give the ability to sort records before printing. Other system and database modifications improved HMIS information storage and retrieval capabilities. The six subsystems improved are:

- Incidents generally involving the transport of hazardous materials by one or more modes;
- Exemptions issued under the Hazardous Materials Regulations;
- Interpretations of regulations issued by RSPA;
- Approvals of specialized container manufacturers, reconditioners, retesters, shippers, and explosives manufacturers;
- Compliance activities, inspection data, and completed enforcement proceedings; and
- Registrants to the Hazardous Materials Registration Program.

In addition, RSPA used emerging technologies to improve the responsiveness of the HMIS. Alternative methods of archiving incident source documents are ongoing to improve the HMIS storage capability and the ease of retrieving reports. Also, additional software improvements for the HMIS data entry program were completed in 1998. Work continued on migrating the HMIS from its existing database management system into a more robust environment to improve system performance, maintenance, and accessibility. In 1998, RSPA began an initiative to make more data and reports available to the public onthe Office of Hazardous Materials Safety Internet Home Page.

1998 Safety Statistics

In 1998, 15,349 hazardous materials incidents were reported. The total number of incidents increased by 1,354 this year. This is an increase of 8.8 percent. Most of this increase is due to higher levels of reporting by small-package highway carriers. Another factor in the growth is an increase in air incident reporting.

Air incidents have gradually increased from being approximately four percent of all reported incidents in 1992 to being seven percent in 1997. In 1998, air incidents jumped to being nine percent of all 1998 incidents. Along with this trend, air incident injuries have decreased from a high of 54 in 1994 to 20 in 1998. This reflects continued efforts by both RSPA and FAA to improve carriers' awareness of the reporting criteria.

Overall, highway incidents increased by 1,107 to 12,968. Rail incidents declined, dropping by 112 to 990, their lowest level in the past decade. Although there were few non-bulk water incidents in 1995, their number more than doubled from five to 11. Reported air incidents increased by 353 (34 percent) to 1,380. Examining the incidents by hazard class, flammable-combustible liquids and corrosive materials were involved in the most incidents, accounting for 77 percent of all 1998 incidents.

On October 1, 1998, HM-200 went into effect, subjecting intrastate motor carriers who transport hazardous materials to the Federal hazardous materials regulations and incident reporting requirements. No significant effects have been noticed from this rulemaking in 1998, due to only three months of reporting.

Serious incidents, which RSPA has defined as an incident that involves a fatality or major injury due to a hazardous material, closure of a major transportation artery or facility or evacuation of six or more persons due to the presence of a hazardous material, or a vehicle accident or derailment resulting in the release of a hazardous material, remain constant with less than a three percent increase from 1997 to 1998. The 432 serious incidents equal 2.8 percent of all 1998 incidents. Further, in 1998, bulk incidents, while only 20.1 percent of all incidents, accounted for 75.5 percent of all serious incidents.

One incident in 1998 resulted in a significant number of injuries and/or fatalities. This incident, a highway shipment of gasoline being unloaded in Biloxi, MS, caused five fatalities and one major injury. Another incident, a truck crash in Chester, PA involving gasoline, caused two fatalities and more than $4 million in damages. Two incidents involved the evacuation of a large number of people. In one of these incidents, a truck carrying Type E Blasting Explosives in Milwaukee, WI was involved in a crash and although there was no release of product, 900 people were evacuated. The other incident involved the release of formaldehyde solution, a corrosive material, from a derailment of two rail cars in Cox Landing, WV. In this incident, 500 people were evacuated. Additionally, there were three train derailments in 1998 that resulted in damages greater than $2 million. While the number of rail incidents decreased in 1998, the damages due to rail incidents nearly doubled; however, these three derailments accounted for nearly half of all damages due to rail. These incidents maintained the urgency of DOT's continuous work to improve safety in transporting hazardous materials.

1999 Safety Statistics

In 1999, 16,992 hazardous materials incidents were reported. The total number of incidents increased by 1,643 this year. This is an increase of 10.7 percent. This increase can be attributed to continued higher levels of reporting by small-package highway carriers and continued growth in reporting by air carriers and increased reporting by intrastate carriers. Overall, highway incidents increased by 1,383 to 14,351. Rail incidents increased by 65 to 1,055, still lower than the years prior to 1998. The non-bulk water incidents continue to be rare, decreasing from eleven in 1998 to eight in 1999. Reported air incidents increased by 198 (14.3 percent) to 1,578 and air injuries decreased by seven (35 percent) to 13, continuing to reflect the efforts of RSPA and FAA to improve carriers' awareness of the reporting criteria. Examining the incidents by hazard class, corrosive materials and flammable-combustible liquids were involved in the most incidents, accounting for 80 percent of all 1999 incidents.

Serious incidents, which RSPA has defined as an incident that involves a fatality or major injury due to a hazardous material, closure of a major transportation artery or facility or evacuation of six or more persons due to the presence of a hazardous material, or a vehicle accident or derailment resulting in the release of a hazardous material, dropped by 14.6 percent from 1998 to 1999. The 369 serious incidents equal 2.2 percent of all 1999 incidents. Further, in 1999, bulk incidents, while only 17.5 percent of all incidents, accounted for 73.4 percent of all serious incidents.

Of the six incidents resulting in fatalities, four were the result of a vehicle crash that caused the load of gasoline to ignite. The other two fatalities were the result of errors made by the operator when unloading the material. Three incidents involved the evacuation of a large number of people. In one of these incidents, a rail car carrying an Organic Toxic Liquid, n.o.s., released vapor and product in the Temple, TX rail yard. Local authorities evacuated approximately 2,500 people, including about 2,200 student and faculty of a local high school and about 300 of the nearby residential and commercial populace. The second large evacuation incident involved an en-route release of about 30 gallons of sufuric hydrochloric acid from a tank truck in Selinsgrove, PA. The road was closed for about 30 hours and approximately 1,000 people were evacuated from the surrounding area. Six people suffered minor burns to their arms and nasal passages. The third large evacuation incident involved a spill of a poisonous corrosive material when two drums were punctured by a forklift during unloading. 1,000 people were evacuated from the area. Additionally, there were three train derailments in 1999 that resulted in damages greater than $1 million. These three derailments accounted for nearly half of all damages due to rail. These incidents maintained the urgency of DOT' s continuous work to improve safety in transporting hazardous materials.

Description of Charts and Graphs

Exhibits 1.1 and 1.2 summarize hazardous materials transportation incidents over the past eight years. During this time, the number of incidents increased every year to a peak in 1994 and has declined through 1997. In 1998, however, there was an 8.8 percent increase in the number of incidents and in 1999 there

was a 10.7 percent increase. Highway, clearly the most prevalent mode for incidents, accounted for the majority of incidents (85 percent) in that period and for all fatalities except in 1996 when an air incident and two rail incidents resulted in fatalities. Serious incidents have remained relatively steady throughout the 1990s, but declined 7 percent in 1998 and 21 percent in 1999 from a high reached in 1996.

Exhibit 1.3 summarizes vehicular accident and derailment incidents overthe past eight years. The average number of incidents per year has been just under 300. All fatalities from these incidents were highway-related, except for two rail fatalities that occurred in 1996. All injuries involved highway and rail modes of transport.

Exhibit 1.4 summarizes hazardous waste incidents over the past eight years. The total number of hazardous waste incidents dropped each year from 1996 through 1998 and then rose by four percent in 1999. The number of hazardous waste incidents in 1998 is more than 37 percent lower than the peak value, which occurred in 1995. In 1999, it is more than 35 percent lower than the 1995 peak value. After a long period with no fatalities, there was one fatality in 1996 and two more in 1998. Most injuries involved highway and rail modes of transport. The only injuries involving the air mode of transportation occurred in 1998.

Exhibits 2.1 and 2.2 display hazardous materials transportation incidents and fatalities over the past eight years and correspond to data from Exhibit 1.1.

Exhibits 2.3 - 2.6 display the number of incidents by mode over the past eight years. Exhibit 2.5 shows the noticeable increase in reporting of air incidents in 1998 and 1999. The number of incidents that are bulk and non-bulk is also shown for highway and rail. The number of bulk incidents has remained fairly steady since 1990, except for a noticeable reduction in bulk rail incidents in 1998.

Exhibit 3.1 displays the hazardous materials incidents reported since 1985 and regulatory changes affecting reporting requirements. The graph is segmented into highway and all other incidents, and shows the impact highway incidents have on the trend of incidents. The peaks in incident reporting in 1994 and 1999 are also particularly evident.

Exhibit 3.2 displays the serious hazardous materials incidents since 1990. Note that serious incidents are measured on a different scale than all incidents. Serious incidents have remained relatively steady throughout the 1990s, but have declined from a peak in 1996.

Exhibit 3.3 illustrates the number of all incidents since 1990 that involved commodities shipped in bulk packagings. The number of bulk incidents has remained fairly constant during this period; most of the variability in the number of incident reports is due to changes in the number of non-bulk incidents.

Exhibits 4.1.1 - 4.1.4 show reported incidents and damages by hazard class. The first four columns of Exhibits 4.1.1 and 4.1.2 present and rank incidents by hazard class, and the last four columns present the number of incidents involving dollar damages, damages by dollar amount, percent, and rank. The majority

of incidents and damages involved flammable-combustible liquids and corrosive materials. Exhibits 4.1.3 and 4.1.4 graphically depict the distribution of incidents among the top five hazard classes.

Exhibits 4.2.1 and 4.2.2 display injuries by hazard class. Also included is a breakdown between major and minor injuries. In 1998, corrosive materials, flammable-combustible liquids, and poisonous materials accounted for more than 85 percent of injuries. In 1999 they accounted for more than 82 percent of injuries.

Exhibit 4.3 lists the hazardous materials involved in incidents resulting in fatalities. One air incident in 1996 involving oxidizers resulted in 110 fatalities. Of the remaining materials, gasoline accounted for the most fatalities in both 1998 and 1999.

Exhibit 4.4.1 and 4.4.2 rank the 50 top hazardous materials involved in incidents. These 50 materials, out of approximately 3,000 hazardous materials identified in the Hazardous Materials Table, 49 CFR §172.101, were involved in 72 percent of all incidents in 1998 and 74.7 percent in 1999. The Exhibits list the commodity, corresponding hazard class, number of incidents reported for that commodity, and corresponding percentage.

Exhibits 4.5.1 and 4.5.2 rank the hazardous materials involved in serious incidents. These materials were involved in less than three percent of all incidents in 1998 and 1999. Gasoline accounts for more serious incidents than any other hazardous material. The Exhibits list the commodity, corresponding hazard class, number of incidents reported for that commodity, and corresponding percentage.

Exhibit 5 shows the distribution of incident damages in the five categories that appear on the report form. Carrier damage and decontamination/cleanup costs made up 71.6 percent of the costs associated with incidents involving damages in 1998 and 81.3 percent in 1999.

Exhibits 6.1 and 6.2 show the breakdown of incident causes by mode of transportation. Human error was the main cause of incidents in 1998 and 1999. Combined with package failure, these two causes are responsible for nearly 97 percent of all incidents each year. Note that for accidents and derailments the cause of the incident is not determined.

Exhibits 7.1 and 7.2 display information on incidents involving an evacuation. The incidents are broken down by mode, cause, and consequence. Human error was the main cause of evacuation incidents in 1998 and in 1999. For rail, while human error is the leading cause of all rail incidents, it causes the fewest number of rail evacuations. When looking at total incidents with evacuations, accidents and derailments are nearly nine times as likely to cause evacuations than human error, package failure, and other incident causes combined.

Exhibits 8.1.1 and 8.1.2 show the consequences of hazardous materials incidents by transportation phase. As can be expected, most incidents resulting in high damages were due to en route accidents. En route

accidents also result in a higher average number of minor injuries per incident than the other incident types. Unloading incidents result in the second largest number of fatalities, the most major injuries, and by far the largest number of incidents.

Exhibits 8.2.1 and 8.2.2 display the consequences of bulk and non-bulk hazardous materials incidents. Although an approximately equal number of minor injuries result from bulk and non-bulk incidents, bulk incidents lead to significantly more fatalities, major injuries, and damages greater than $50,000. Non-bulk incidents accounted for the majority of evacuations.

Exhibits 8.3.1 and 8.3.2 illustrate the consequences of hazardous materials incidents by time of day. Most injuries occur between 9 a.m. and noon. In 1998, fatalities are distributed throughout the late evening and early morning and the three hours after noon. In 1999, fatalities are distributed throughout the morning and early afternoon.

Exhibits 9.1 and 9.2 show the number of serious bulk and non-bulk hazardous materials incidents by time of day. In 1998, most serious incidents occurred between 6 a.m. and noon. In 1999, most serious incidents occurred between 6 a.m. and 3 p.m.

Exhibit 10.1 displays the breakdown of hazardous materials incidents, injuries, fatalities, and damages by state. States with large population centers and industrial cities had the most hazardous materials incidents.

Exhibits 11.1.1 - 11.7.2 display 1998 and 1999 incident data by county. The areas with the greatest concentration of hazardous materials incidents either were industrial centers or included numerous terminal facilities. Exhibits 11.1.1 and 11.1.2 display the location of all incidents reported to RSPA. Exhibits 11.2.1 and 11.2.2 show the origin of shipments that resulted in an incident. Exhibits 11.3.1 and 11.3.2 show the location of highway incidents and Exhibits 11.4.1 and 11.4.2 display the location of rail incidents. Exhibits 11.5.1 and 11.5.2 show the location of loading and unloading incidents and Exhibits 11.6.1 and 11.6.2 show the location of incidents that occurred en route. Exhibits 11.7.1 and 11.7.2 show the location of serious incidents. Note that the exhibits for rail, en route, and serious incidents use a different classification scheme from the other exhibits.

Exhibit 1.1
Incident Statistics by Mode and Reporting Year

Mode	1992	1993	1994	1995	1996	1997	1998	1999	Total
Incidents by Mode									
Air	413	622	929	814	916	1,027	1,380	1,578	7,679
Highway	7,759	11,080	13,995	12,764	11,917	11,862	12,968	14,351	96,696
Railway	1,130	1,120	1,157	1,153	1,111	1,102	990	1,055	8,818
Water	8	8	6	12	6	5	11	8	64
Other	0	0	0	0	0	0	0	0	0
TOTALS	9,310	12,830	16,087	14,743	13,950	13,996	15,349	16,992	113,257
Deaths by Mode									
Air	0	0	0	0	110	0	0	0	110
Highway	16	15	11	7	8	12	13	7	89
Railway	0	0	0	0	2	0	0	0	2
Water	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0
TOTALS	16	15	11	7	120	12	13	7	201
Injuries by Mode									
Air	23	50	57	33	33	24	20	13	253
Highway	465	511	425	296	216	156	153	216	2,438
Railway	116	66	95	71	926	45	22	35	1,376
Water	0	0	0	0	0	0	2	0	2
Other	0	0	0	0	0	0	0	0	0
TOTALS	604	627	577	400	1,175	225	197	264	4,069
Damages by Mode (in Dollars)									
Air	98,634	88,480	177,695	100,582	87,188	336,178	266,628	286,076	1,441,461
Highway	23,920,011	19,849,049	25,242,713	22,144,029	29,267,931	24,775,292	28,162,819	23,332,027	196,693,871
Railway	11,002,297	2,650,931	18,673,002	8,485,159	17,373,978	8,355,149	16,359,706	8,982,333	91,882,555
Water	143,115	213,091	92,003	173,511	120,146	38,145	1,014,931	60,500	1,855,442
Other	0	0	0	0	0	0	0	0	0
TOTALS	35,164,057	22,801,551	44,185,413	30,903,281	46,849,243	33,504,764	45,804,084	32,660,936	291,873,329

Exhibit 1.2
Incident Statistics by Mode and Reporting Year
Serious Incidents

Mode	1992	1993	1994	1995	1996	1997	1998	1999	Total
Incidents by Mode									
Air	10	9	15	11	13	12	22	15	107
Highway	308	283	335	328	376	346	341	291	2,608
Railway	57	66	76	68	77	65	69	63	541
Water	1	0	1	1	0	0	0	0	3
Other	0	0	0	0	0	0	0	0	0
TOTALS	376	358	427	408	466	423	432	369	3,259
Deaths by Mode									
Air	0	0	0	0	110	0	0	0	110
Highway	16	15	11	7	8	12	13	7	89
Railway	0	0	0	0	2	0	0	0	2
Water	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0
TOTALS	16	15	11	7	120	12	13	7	201
Injuries by Mode									
Air	7	7	33	22	21	4	4	5	103
Highway	189	242	188	88	85	68	55	109	1,024
Railway	78	11	45	20	892	6	9	3	1,064
Water	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0
TOTALS	274	260	266	130	998	78	68	117	2,191
Damages by Mode (in Dollars)									
Air	1,500	23,175	69,871	6,041	11,410	6,209	26,168	6,262	150,636
Highway	19,433,619	13,169,100	14,485,766	16,732,937	23,826,872	18,833,297	22,274,124	16,640,189	145,395,904
Railway	9,501,264	1,935,467	12,385,233	7,492,260	16,619,721	7,399,115	15,502,779	7,168,517	78,004,356
Water	125,000	0	0	71,141	0	0	0	0	196,141
Other	0	0	0	0	0	0	0	0	0
TOTALS	29,061,383	15,127,742	26,940,870	24,302,379	40,458,003	26,238,621	37,803,071	23,814,968	223,747,037

* RSPA defines serious incidents as incidents that involve: a fatality or major injury due to a hazardous material; closure of a major transportation artery or facility or evacuation of six or more persons due to the presence of a hazardous material; or a vehicle accident or derailment resulting in the release of a hazardous material.

Exhibit 1.3
Incident Statistics by Mode and Reporting Year
Accident / Derailment Incidents

Mode	1992	1993	1994	1995	1996	1997	1998	1999	Total
Incidents by Mode									
Air	1	0	0	0	0	1	1	0	3
Highway	245	215	243	244	289	258	264	223	1,981
Railway	36	49	52	50	43	52	51	57	390
Water	1	0	0	0	0	0	0	0	1
Other	0	0	0	0	0	0	0	0	0
TOTALS	283	264	295	294	332	311	316	280	2,375
Deaths by Mode									
Air	0	0	0	0	0	0	0	0	0
Highway	15	14	11	6	5	10	8	5	74
Railway	0	0	0	0	2	0	0	0	2
Water	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0
TOTALS	15	14	11	6	7	10	8	5	76
Injuries by Mode									
Air	0	0	0	0	0	0	0	0	0
Highway	34	61	95	14	22	11	11	15	263
Railway	64	1	16	4	842	5	4	0	936
Water	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0
TOTALS	98	62	111	18	864	16	15	15	1,199
Damages by Mode (in Dollars)									
Air	0	0	0	0	0	0	0	0	0
Highway	18,140,499	11,200,448	13,528,095	16,256,066	22,276,796	17,841,187	21,340,168	13,562,949	134,146,208
Railway	9,378,024	1,916,070	12,013,577	7,260,124	15,460,065	7,338,960	15,437,881	7,144,707	75,949,408
Water	125,000	0	0	0	0	0	0	0	125,000
Other	0	0	0	0	0	0	0	0	0
TOTALS	27,643,523	13,116,518	25,541,672	23,516,190	37,736,861	25,180,147	36,778,049	20,707,656	210,220,616

Exhibit 1.4
Incident Statistics by Mode and Reporting Year
Hazardous Waste Incidents

Mode	1992	1993	1994	1995	1996	1997	1998	1999	Total
Incidents by Mode									
Air	1	1	1	0	0	2	3	2	10
Highway	377	549	519	652	424	379	378	402	3,680
Railway	33	23	27	24	34	38	40	32	251
Water	0	1	0	0	0	0	0	0	1
Other	0	0	0	0	0	0	0	0	0
TOTALS	411	574	547	676	458	419	421	436	3,942
Deaths by Mode									
Air	0	0	0	0	0	0	0	0	0
Highway	0	0	0	0	1	0	0	0	1
Railway	0	0	0	0	0	0	0	0	0
Water	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0
TOTALS	0	0	0	0	1	0	0	0	1
Injuries by Mode									
Air	0	0	0	0	0	0	2	0	2
Highway	50	5	4	23	10	9	4	21	126
Railway	1	0	1	1	3	1	1	6	14
Water	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0
TOTALS	51	5	5	24	13	10	7	27	142
Damages by Mode (in Dollars)									
Air	0	1	0	0	0	75	5,175	2,000	7,251
Highway	1,132,085	832,944	1,153,436	1,612,542	1,861,803	3,376,202	872,908	1,271,362	12,113,282
Railway	67,487	63,789	1,296,204	466,580	43,960	35,520	29,645	1,071,257	3,074,442
Water	0	17,630	0	0	0	0	0	0	17,630
Other	0	0	0	0	0	0	0	0	0
TOTALS	1,199,572	914,364	2,449,640	2,079,122	1,905,763	3,411,797	907,728	2,344,619	15,212,605

Exhibit 2.1
Hazardous Materials Incidents, 1992 - 1999

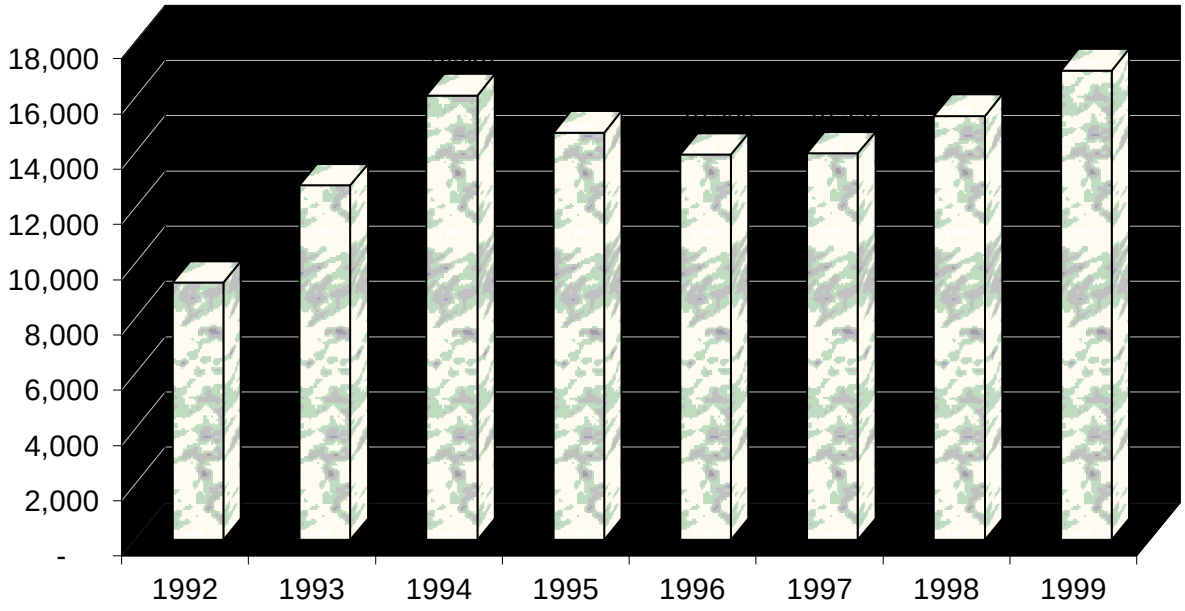


Exhibit 2.2
Fatalities due to Hazardous Materials, 1992 - 1999

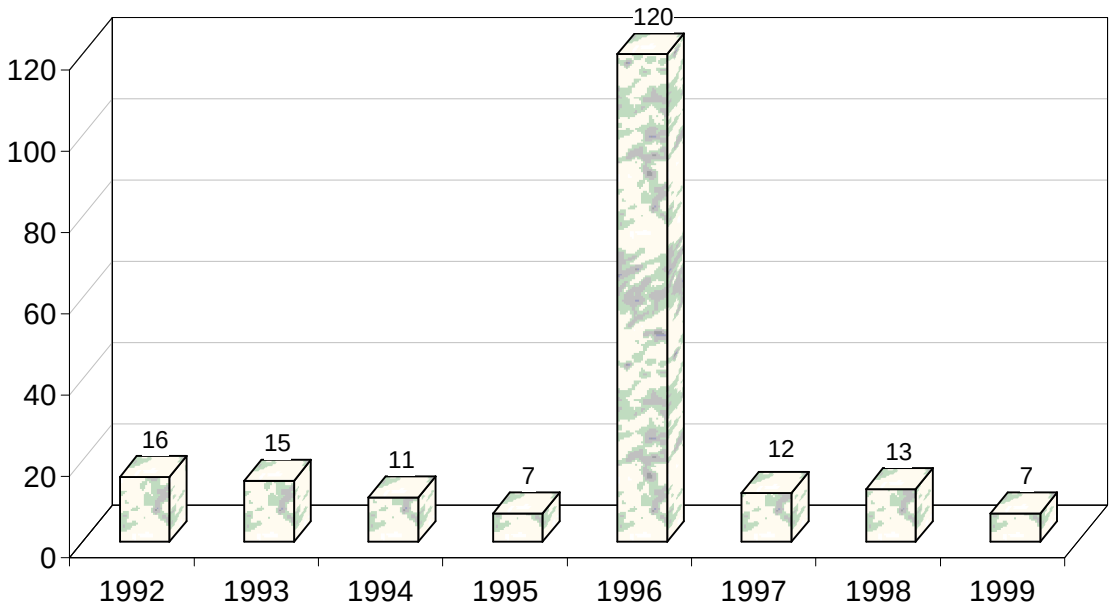


Exhibit 2.3
Hazardous Materials Incidents, 1992 - 1999
Highway by Bulk and Non-Bulk

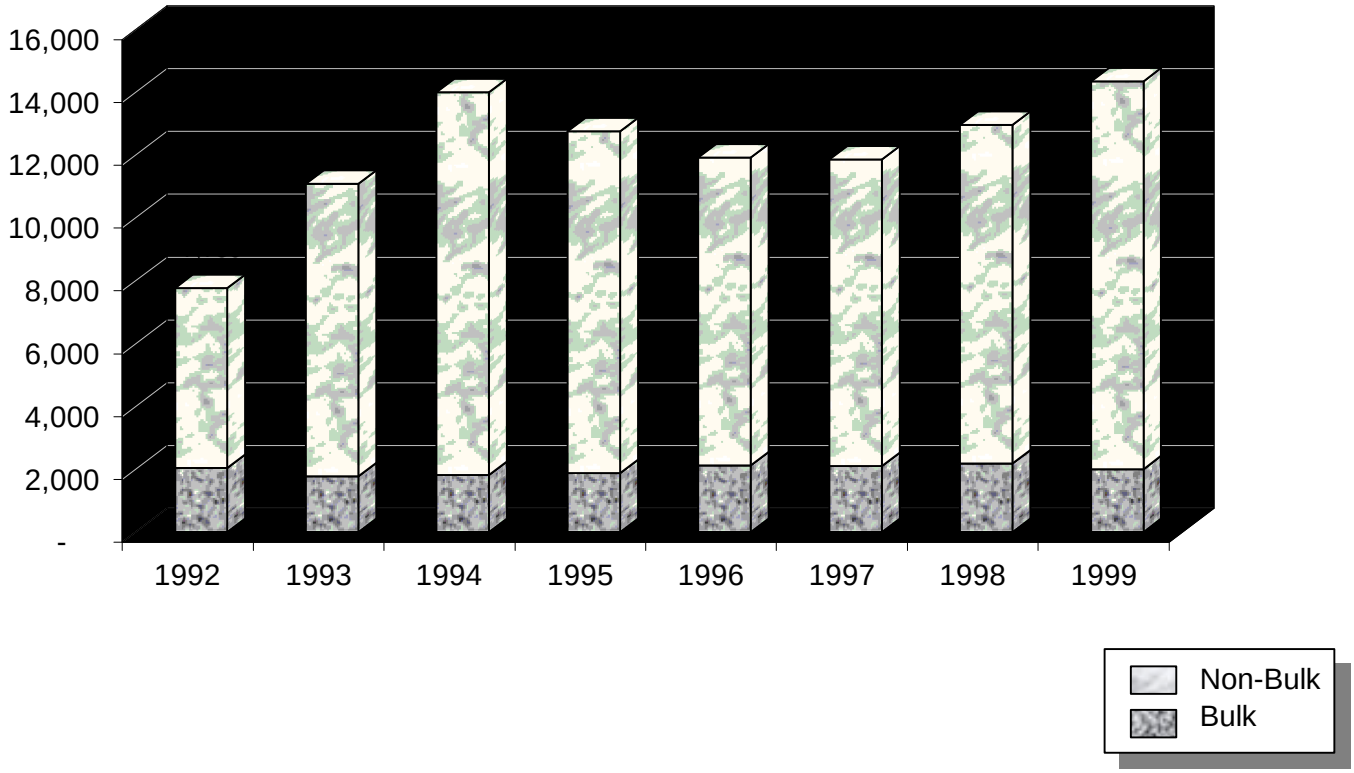


Exhibit 2.4
Hazardous Materials Incidents, 1992 - 1999
Rail by Bulk and Non-Bulk

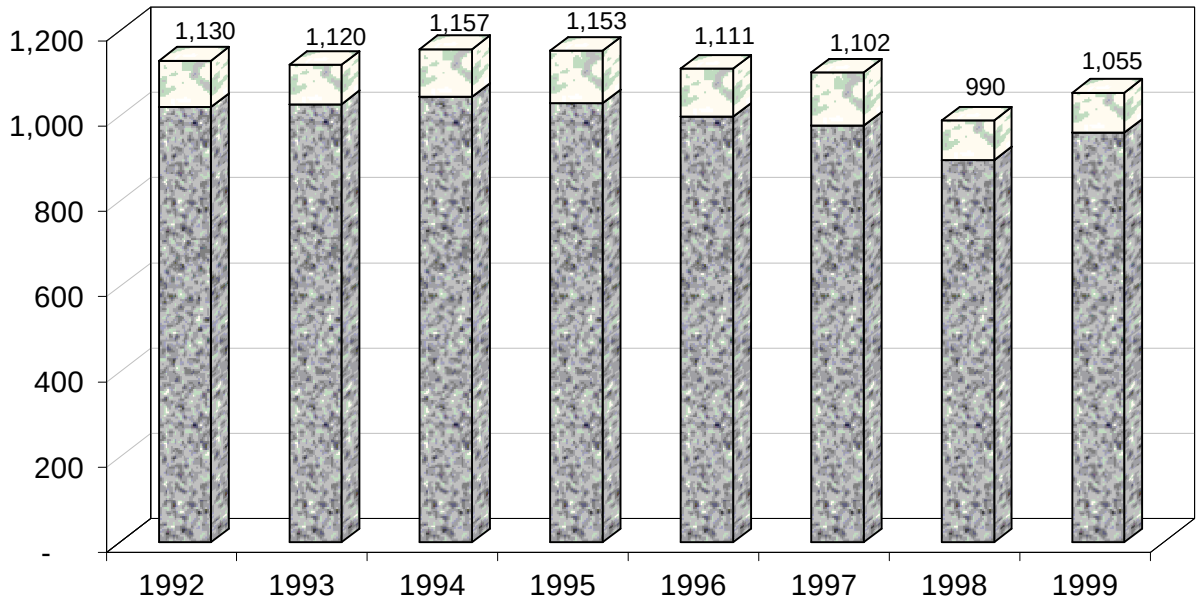


Exhibit 2.5
Hazardous Materials Incidents, 1992 - 1999
Air

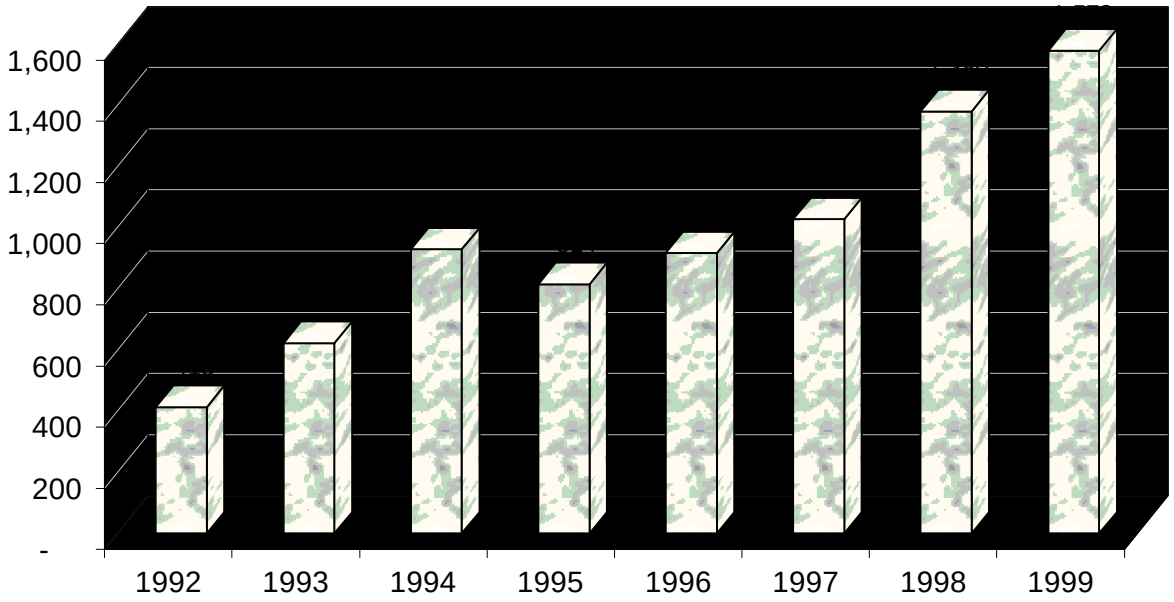


Exhibit 2.6
Hazardous Materials Incidents, 1992 - 1999
Water

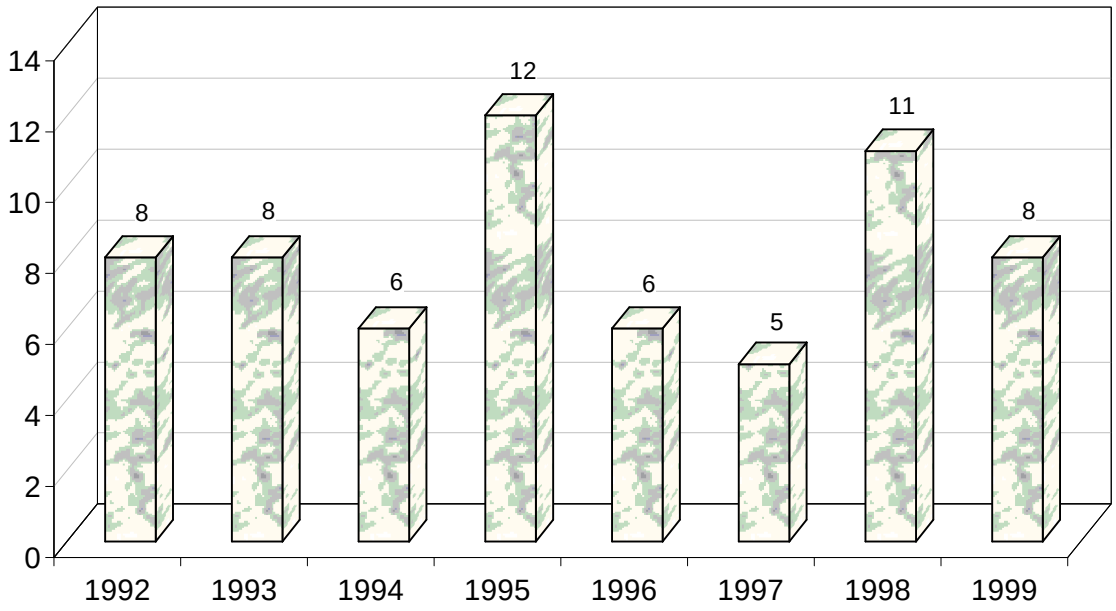


Exhibit 3.1
Hazardous Materials Incidents, 1985-1999

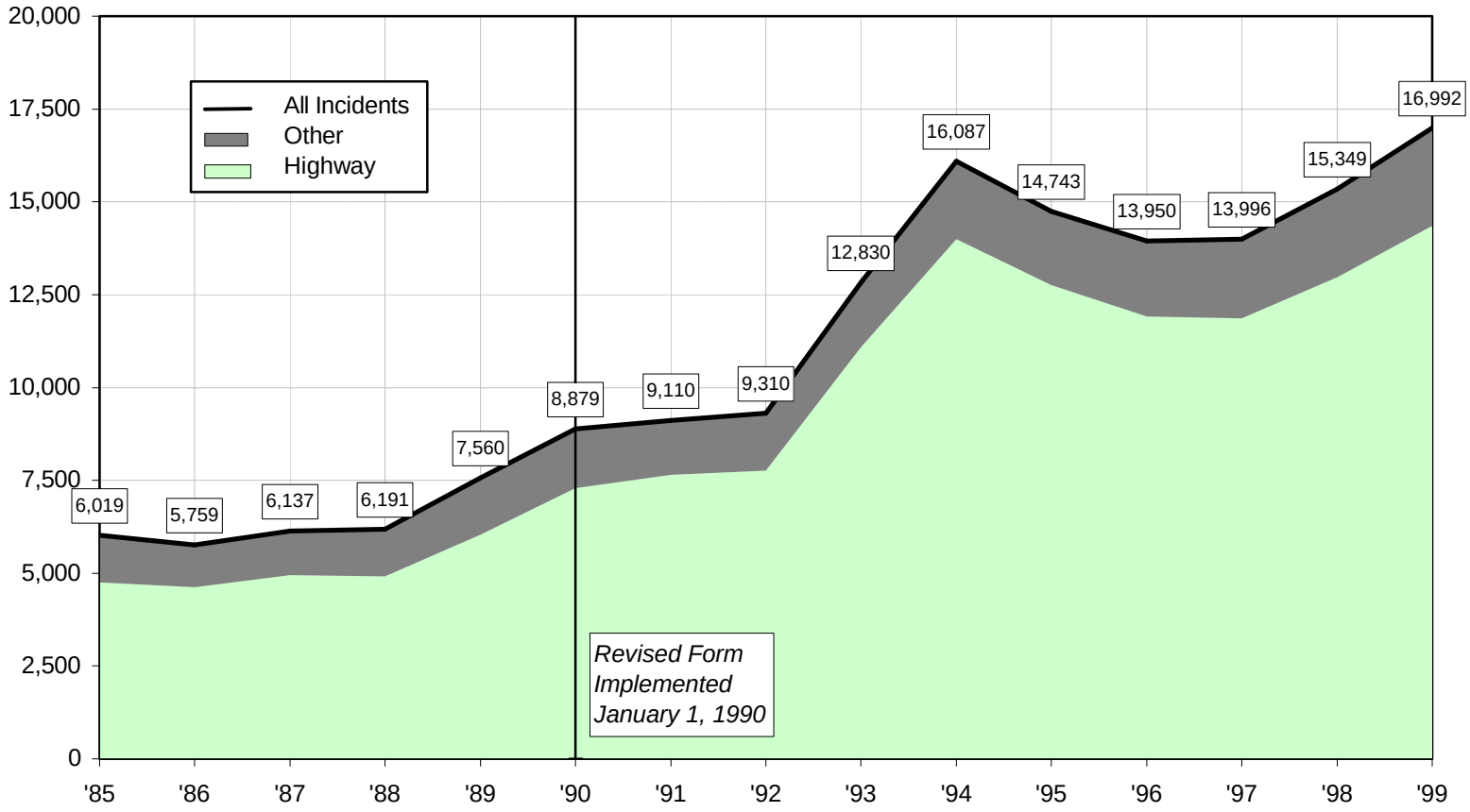
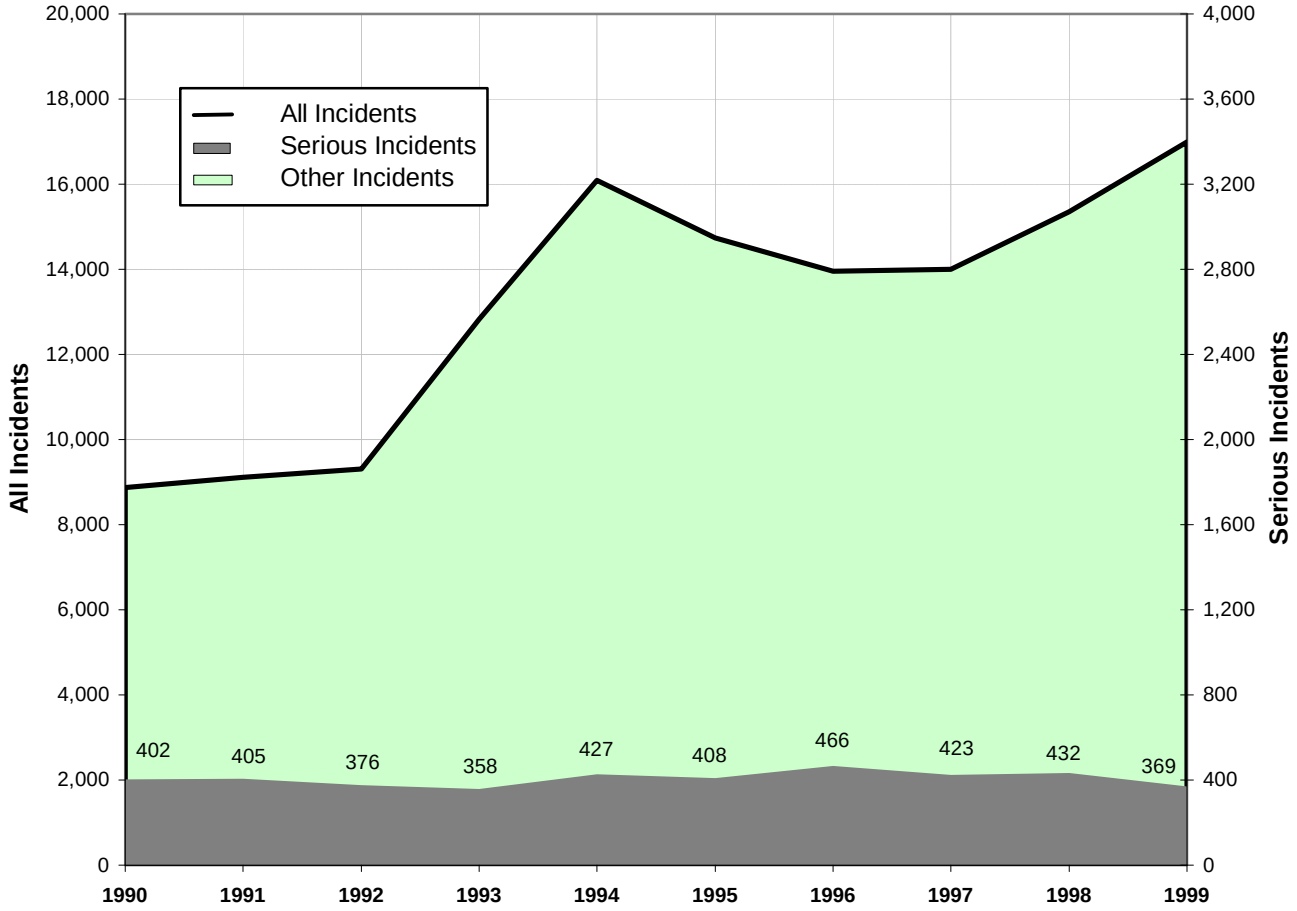
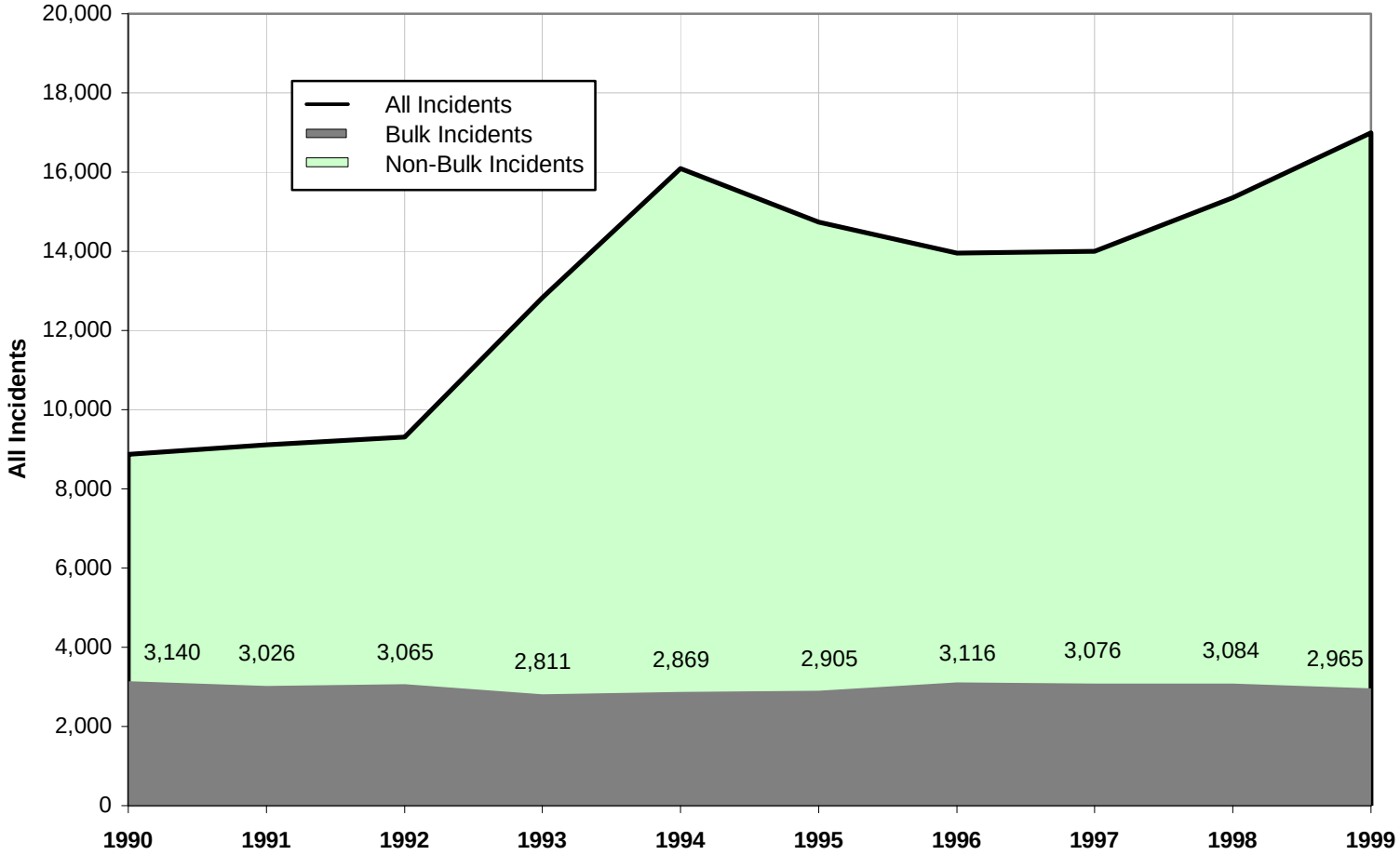


Exhibit 3.2
Hazardous Materials Incidents, 1990-1999
Serious Incidents



Note: RSPA defines serious incidents as incidents that involve: a fatality or major injury due to a hazardous material; closure of a major transportation artery or facility or evacuation of six or more persons due to the presence of a hazardous material; or a vehicle accident derailment resulting in the release of a hazardous material.

Exhibit 3.3
Hazardous Materials Incidents, 1990-1999
Bulk and Non-Bulk Incidents



Note: Bulk packages are defined as those with a maximum capacity greater than 450 L (119 gallons).

Exhibit 4.1.1
Incidents and Damages by Hazard Class - 1998

Hazard Class *	Number of Reported Incidents	Percent of Reported Incidents	Rank by Incidents	Number of Incidents Involving Damages	Amount of Damages ($)	Percent of Total Damages	Rank by $ Damages
Flammable - Combustible Liquid	6,366	41.3	1	4,393	25,915,363	56.6	1
Corrosive Material	5,508	35.7	2	3,944	12,043,763	26.3	2
Poisonous Materials	1,138	7.4	3	817	981,294	2.1	6
Miscellaneous Hazardous Material	521	3.4	4	335	2,224,586	4.9	3
Oxidizer	501	3.2	5	404	1,040,125	2.3	5
Combustible Liquid	386	2.5	6	322	1,228,827	2.7	4
Nonflammable Compressed Gas	326	2.1	7	187	533,194	1.2	8
Flammable Gas	182	1.2	8	96	923,950	2.0	7
Organic Peroxide	130	0.8	9	108	173,098	0.4	11
Other Regulated Material, Class D	122	0.8	10	93	25,532	0.1	14
Flammable Solid	104	0.7	11	70	85,705	0.2	12
Poisonous Gas	40	0.3	12	15	81,876	0.2	13
Radioactive Material	30	0.2	13	8	7,170	<.1	16
Spontaneously Combustible	27	0.2	14	19	209,342	0.5	10
Dangerous When Wet Material	16	0.1	15	8	4,660	<.1	17
Explosive No Blast Hazard	13	0.1	16	3	727	<.1	18
Infectious Substance (Etiologic)	10	0.1	17	1	20,000	<.1	15
Very Insensitive Explosive	9	0.1	18	7	296,762	0.6	9
Explosive Mass Explosion Hazard	2	<.1	19	1	10	<.1	20
Explosive Projection Hazard	1	<.1	20	1	100	<.1	19
TOTALS		**100.0**			**$45,796,084**	**99.9**	

Note: Since some incidents involve multiple hazard classes, double counting occurs in the "Number of Reported Incidents" and "Number of Incidents Involving Damages" columns. Therefore, no totals are shown for these columns.

The "Percent of Reported Incidents" is based on the sum of the "Number of Reported Incidents" column.

All percent figures are rounded to the nearest tenth.

* No reports were received for other hazard classes.

Exhibit 4.1.2
Incidents and Damages by Hazard Class - 1999

Hazard Class **	Number of Reported Incidents	Percent of Reported Incidents *	Rank by Incidents	Number of Incidents Involving Damages	Amount of Damages ($)	Percent of Total Damages *	Rank by $ Damages
Corrosive Material	6,938	40.5	1	5,394	6,285,040	19.2	2
Flammable - Combustible Liquid	6,703	39.2	2	4,659	14,777,411	45.2	1
Poisonous Materials	1,022	6.0	3	719	651,660	2.0	9
Miscellaneous Hazardous Material	459	2.7	4	296	1,348,113	4.1	5
Oxidizer	436	2.5	5	356	788,559	2.4	8
Nonflammable Compressed Gas	375	2.2	6	218	1,452,559	4.4	4
Combustible Liquid	328	1.9	7	239	3,799,895	11.6	3
Flammable Gas	210	1.2	8	98	1,146,843	3.5	6
Infectious Substance (Etiologic)	166	1.0	9	54	29,583	0.1	17
Organic Peroxide	161	0.9	10	132	93,247	0.3	15
Flammable Solid	121	0.7	11	66	1,127,685	3.5	7
Other Regulated Material,Class D	74	0.4	12	58	6,052	<.1	19
Poisonous Gas	46	0.3	13	24	234,305	0.7	12
Spontaneously Combustible	21	0.1	14	16	5,311	<.1	20
Dangerous When Wet Material	19	0.1	15	11	6,743	<.1	18
Radioactive Material	14	0.1	16	3	36,200	0.1	16
Explosive No Blast Hazard	11	6.4%	17	3	94,819	0.3	14
Very Insensitive Explosive	7	<.1	18	6	372,997	1.1	10
Explosive Fire Hazard	3	<.1	19	0	0	0.0	21
Explosive Mass Explosion Hazard	2	<.1	20	1	120,000	0.4	13
Explosive Projection Hazard	1	<.1	21	1	283,914	0.9	11
TOTALS		**100.0**			**$32,660,936**	**100.0**	

Note: Since some incidents involve multiple hazard classes, double counting occurs in the "Number of Reported Incidents" and "Number of Incidents Involving Damages" columns. Therefore, no totals are shown for these columns.

The "Percent of Reported Incidents" is based on the sum of the "Reported Number of Incidents" column.

* All percent figures are rounded to the nearest tenth.

** No reports were received for other hazard classes.

Exhibit 4.1.3
Incidents by Hazard Class - 1998

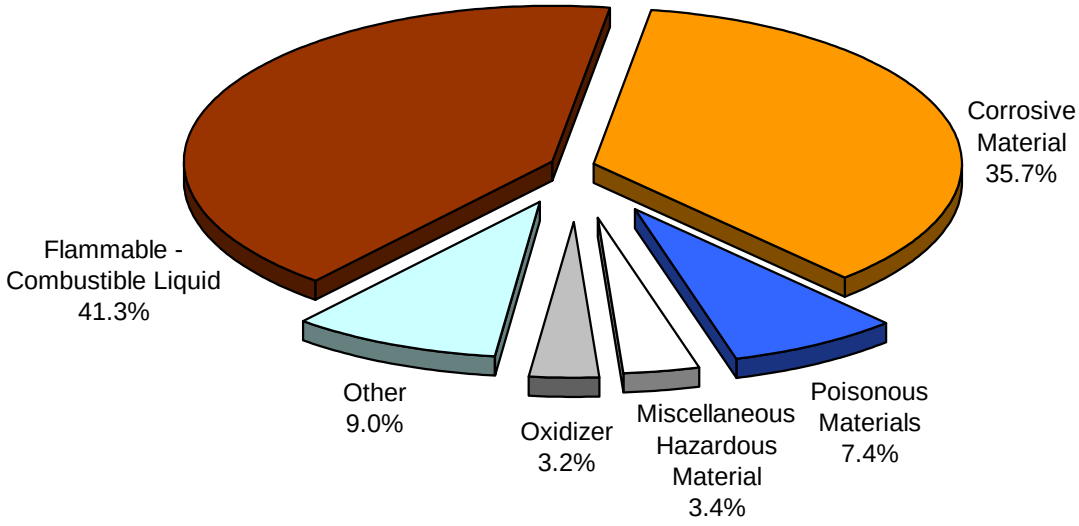


Exhibit 4.1.4
Incidents by Hazard Class - 1999

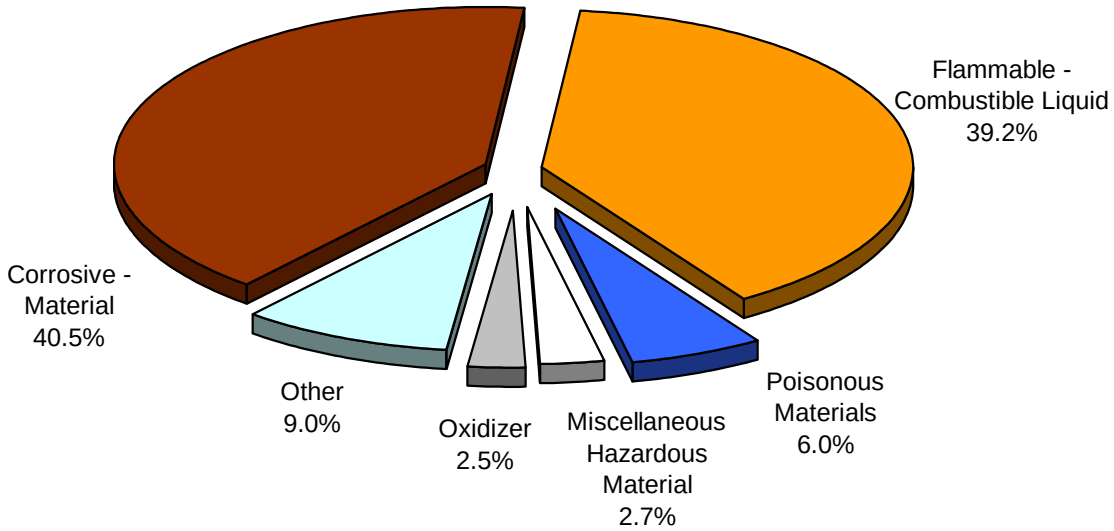


Exhibit 4.2.1

Hazardous Materials Incidents - 1998
Injuries by Hazard Class

Hazard Class *	Number of Injuries	Percent of Injuries	Major Injuries **	Minor Injuries	Number of Incidents with Injuries		
					Major	Minor	Total ***
Corrosive Material	114	57.9	12	102	12	68	78
Flammable - Combustible Liquid	37	18.8	6	31	6	21	26
Poisonous Materials	17	8.6	0	17	0	12	12
Nonflammable Compressed Gas	7	3.6	2	5	2	5	7
Oxidizer	7	3.6	0	7	0	6	6
Flammable Gas	4	2.0	0	4	0	4	4
Miscellaneous Hazardous Material	4	2.0	2	2	2	2	4
Explosive No Blast Hazard	3	1.5	1	2	1	1	2
Combustible Liquid	1	0.5	1	0	1	0	1
Dangerous When Wet Material	1	0.5	0	1	0	1	1
Flammable Solid	1	0.5	0	1	0	1	1
Organic Peroxide	1	0.5	0	1	0	1	1
TOTALS	**197**	**100.0**	**24**	**173**	**24**	**122**	**143**

Note: All percent figures are rounded to nearest tenth.

* No reports received for other hazard classes.

** Major injuries are those requiring hospitalization or resulting in loss of time at work.

*** Since some incidents involve both major and minor incidents, the "Number of Incidents with Injuries - Total" column may not equal the sum of the two preceding columns.

Exhibit 4.2.2

Hazardous Materials Incidents - 199
Injuries by Hazard Class

Hazard Class *	Number of Injuries	Percent of Injuries	Major Injuries **	Minor Injuries	Number of Incidents with Injuries		
					Major	Minor	Total ***
Corrosive Material	110	41.7	15	95	5	72	77
Flammable - Combustible Liquid	72	27.3	16	56	11	24	35
Poisonous Materials	36	13.6	4	32	4	16	19
Poisonous Gas	14	5.3	0	14	0	6	6
Oxidizer	9	3.4	0	9	0	5	5
Nonflammable Compressed Gas	8	3.0	4	4	4	4	8
Miscellaneous Hazardous Material	4	1.5	0	4	0	2	2
Infectious Substance (Etiologic)	3	1.1	0	3	0	3	3
Combustible Liquid	2	0.8	0	2	0	1	1
Flammable Gas	2	0.8	1	1	1	1	1
Flammable Solid	2	0.8	1	1	1	1	2
Explosive No Blast Hazard	1	0.4	0	1	0	1	1
Organic Peroxide	1	0.4	0	1	0	1	1
TOTALS	**264**	**100.0**	**41**	**223**	**26**	**137**	**161**

Note: All percent figures are rounded to nearest tenth.

* No reports received for other hazard classes.

** Major injuries are those requiring hospitalization or resulting in loss of time at work.

*** Since some incidents involve both major and minor incidents, the "Number of Incidents with Injuries - Total" column may not equal the sum of the two preceding columns.

Exhibit 4.3

Hazardous Materials Incidents, 1992-1999
Fatalities by Hazard Class / Hazardous Material

Hazard Class / Hazardous Materia	Number of Fatalities 1992	1993	1994	1995	1996	1997	1998	1999	Total
Combustible Liquid	0	0	0	0	2	0	0	0	2
Fuel Oil No. 1,2,4,5,6	...	...	...	...	1	...	...	...	1
Petroleum Distillate	...	...	...	...	1	...	...	...	1
Flammable Gas	3	0	1	2	0	3	0	0	9
Acetylene Dissolved	...	...	1	...	...	...	...	...	1
Petroleum Gases Liquefiec	3	...	...	2	...	3	...	...	8
Poisonous Gas	0	0	0	0	2	0	0	0	2
Ammonia Anhydrous	...	...	...	...	1	...	...	...	1
Chlorine	...	...	...	...	1	...	...	...	1
Flammable - Combustible Liquid	12	15	9	5	6	9	13	6	75
Alcohols n.o.s.	...	...	...	...	...	1	...	...	1
Asphalt	...	1	...	...	...	...	...	...	1
Butylacrylate	...	...	...	...	...	...	2	...	2
Denatured Alcohol	...	1	...	...	...	...	...	...	1
Flammable Liquids n.o.s	...	...	...	...	1	1	...	...	2
Fuel Aviation Turbine	1	1	...	...	...	...	...	...	2
Gasoline	10	12	9	4	4	6	11	5	61
Heptanes	...	...	...	...	...	...	...	1	1
Hydrocarbons Liquid n.o.s	...	...	...	...	1	...	...	...	1
Paint Related Material	...	...	...	1	...	...	...	...	1
Petroleum Crude Oil	1	...	...	...	...	...	...	...	1
Xylenes	...	...	...	...	...	1	...	...	1
Oxidizer	0	0	0	0	110	0	0	0	110
Oxidizing Solid n.o.s	...	...	...	...	110	...	...	...	110
Corrosive Material	1	0	0	0	0	0	0	1	2
Sodium Hydrosulfide Solutior	...	...	...	...	...	...	...	1	1
Sodium Hydroxide Solutior	1	...	...	...	...	...	...	...	1
Miscellaneous Hazardous	0	0	1	0	0	0	0	0	1
Elevated Temp Material Liquic	...	...	1	...	...	...	...	...	1
Total	**16**	**15**	**11**	**7**	**120**	**12**	**13**	**7**	**201**

Exhibit 4.4.1

Incidents by Top 50 Hazardous Materials - 1998

Rank	Hazardous Material	Hazard Class	Incidents	Percent of Total Incidents	Rank	Hazardous Material	Hazard Class	Incidents	Percent of Total Incidents
1	Flammable Liquids n.o.s.	Flammable - Combustible Liquid	1,223	8.0	26	Fuel Oil (No. 1,2,4,5,6)	Flammable - Combustible Liquid	140	0.9
2	Corrosive Liquids n.o.s.	Corrosive Material	974	6.3	27	Compound Cleaning Liquid	Flammable - Combustible Liquid	136	0.9
3	Resin Solution	Flammable - Combustible Liquid	659	4.3	28	Hypochlorite Solution 5-16%	Corrosive Material	134	0.9
4	Sodium Hydroxide Solution	Corrosive Material	461	3.0	28	Methanol	Flammable - Combustible Liquid	134	0.9
5	Corrosive Liquid Basic Inorganic	Corrosive Material	404	2.6	30	Compound Cleaning Liquid	Corrosive Material	132	0.9
6	Paint Or Paint Related	Flammable - Combustible Liquid	360	2.3	31	Toxic Liquid Organic n.o.s	Poisonous Materials	127	0.8
7	Adhesives	Flammable - Combustible Liquid	343	2.2	32	Consumer Commodity	Other Regulated Material,Class D	122	0.8
8	Hydrochloric Acid Solution	Corrosive Material	338	2.2	33	Acetone	Flammable - Combustible Liquid	121	0.8
9	Gasoline	Flammable - Combustible Liquid	335	2.2	34	Diesel Fuel	Flammable - Combustible Liquid	114	0.7
10	Isopropanol	Flammable - Combustible Liquid	322	2.1	35	Extracts Flavoring Liquid	Flammable - Combustible Liquid	110	0.7
11	Corrosive Liquid Acidic Inorganic	Corrosive Material	301	2.0	36	Fuel Oil	Combustible Liquid	104	0.7
12	Phosphoric Acid	Corrosive Material	293	1.9	37	Petroleum Crude Oil	Flammable - Combustible Liquid	98	0.6
13	Petroleum Distillates n.o.s.	Flammable - Combustible Liquid	290	1.9	38	Petroleum Gases Liquefied	Flammable Gas	88	0.6
14	Printing Ink Flammable	Flammable - Combustible Liquid	236	1.5	39	Paint Related Material	Flammable - Combustible Liquid	87	0.6
15	Caustic Alkali Liquid n.o.s.	Corrosive Material	233	1.5	40	Ammonia Anhydrous	Nonflammable Compressed Gas	84	0.5
16	Corrosive Liquid Acidic Organic	Corrosive Material	228	1.5	40	Tetrachloroethylene	Poisonous Materials	84	0.5
17	Potassium Hydroxide Solution	Corrosive Material	222	1.4	42	Corrosive Liquid Basic Organic	Corrosive Material	80	0.5
18	Sulfuric Acid	Corrosive Material	211	1.4	43	Environmentally Hazardous Solid	Miscellaneous Hazardous Material	74	0.5
19	Hydrogen Perox-Peroxyacet	Oxidizer	193	1.3	44	Amines Liquid Corrosive n.o.s.	Corrosive Material	69	0.4
20	Combustible Liquid n.o.s.	Combustible Liquid	181	1.2	45	Alcohols n.o.s.	Flammable - Combustible Liquid	68	0.4
21	Ethanol	Flammable - Combustible Liquid	174	1.1	46	Ammonia Solutions 10-35%	Corrosive Material	66	0.4
22	Environmentally Hazardous Liquid	Miscellaneous Hazardous Material	174	1.1	46	Fuel Aviation Turbine	Flammable - Combustible Liquid	66	0.4
22	Compound Cleaning Liquid Pho	Corrosive Material	162	1.1	48	Coating Solution	Flammable - Combustible Liquid	65	0.4
22	Xylenes	Flammable - Combustible Liquid	157	1.0	48	Flammable Liquid Corrosive	Flammable - Combustible Liquid	65	0.4
25	Dichloromethane	Poisonous Materials	142	0.9	50	Organophosphorus Toxic Flammable	Poisonous Materials	62	0.4
							TOTALS	**11,046**	**72.0**

Note: Percentage figures are based on 15,349 incidents reported in 1998 and are rounded to the nearest tenth.

Since some incidents involve multiple hazardous materials, double counting can occur in the "Incidents" column.

Exhibit 4.4.2

Incidents by Top 50 Hazardous Materials - 1999

Rank	Hazardous Material	Hazard Class	Incidents	Percent of Total Incidents	Rank	Hazardous Material	Hazard Class	Incidents	Percent of Total Incidents
1	Flammable Liquids n.o.s.	Flammable - Combustible Liquid	1,312	7.7	25	Dichloromethane	Poisonous Materials	144	0.8
2	Corrosive Liquids n.o.s.	Corrosive Material	1,061	6.2	27	Acetone	Flammable - Combustible Liquid	134	0.8
3	Resin Solution	Flammable - Combustible Liquid	679	4.0	27	Extracts Flavoring Liquid	Flammable - Combustible Liquid	134	0.8
4	Sodium Hydroxide Solution	Corrosive Material	582	3.4	29	Toxic Liquid Organic n.o.s.	Poisonous Materials	129	0.8
5	Caustic Alkali Liquid n.o.s.	Corrosive Material	522	3.1	30	Combustible Liquid n.o.s.	Combustible Liquid	127	0.7
6	Corrosive Liq Basic Inorganic	Corrosive Material	481	2.8	31	Hydrogen Perox-Peroxyacet	Oxidizer	122	0.7
7	Phosphoric Acid	Corrosive Material	464	2.7	32	Compound Cleaning Liquid	Corrosive Material	121	0.7
8	Corrosive Liq Acidic Inorganic	Corrosive Material	434	2.6	33	Methanol	Flammable - Combustible Liquid	115	0.7
9	Hydrochloric Acid Solution	Corrosive Material	395	2.3	34	Amines Liquid Corrosive n.o.s.	Corrosive Material	113	0.7
10	Isopropanol	Flammable - Combustible Liquid	391	2.3	35	Diesel Fuel	Flammable - Combustible Liquid	112	0.7
11	Adhesives	Flammable - Combustible Liquid	388	2.3	36	Flammable Liquid Corrosive	Flammable - Combustible Liquid	102	0.6
12	Corrosive Liq Acidic Organic	Corrosive Material	384	2.3	37	Ammonia Anhydrous	Nonflammable Compressed Gas	100	0.6
13	Potassium Hydroxide Solution	Corrosive Material	371	2.2	38	Fuel Oil	Combustible Liquid	98	0.6
14	Paint or Paint Related	Flammable - Combustible Liquid	363	2.1	39	Petroleum Gases Liquefied	Flammable Gas	93	0.5
15	Gasoline	Flammable - Combustible Liquid	354	2.1	39	Paint Related Material	Flammable - Combustible Liquid	93	0.5
16	Printing Ink Flammable	Flammable - Combustible Liquid	286	1.7	39	Environmentally Haz Solid	Miscellaneous Hazardous Material	93	0.5
17	Sulfuric Acid	Corrosive Material	256	1.5	42	Corrosive Liquids Toxic	Corrosive Material	86	0.5
18	Petroleum Distillates n.o.s.	Flammable - Combustible Liquid	232	1.4	43	Disinfectant Corrosive Liquid	Corrosive Material	84	0.5
19	Hypochlorite Solution 5-16%	Corrosive Material	201	1.2	44	Toluene	Flammable - Combustible Liquid	77	0.5
20	Xylenes	Flammable - Combustible Liquid	196	1.2	45	Alcohols n.o.s.	Flammable - Combustible Liquid	75	0.4
21	Ethanol	Flammable - Combustible Liquid	195	1.1	45	Corros Liq Basic Organic	Corrosive Material	75	0.4
22	Fuel Oil (No. 1,2,4,5,6)	Flammable - Combustible Liquid	178	1.0	47	Consumer Commodity	Other Regulated Material,Class D	74	0.4
23	Regulated Medical Waste	Infectious Substance (Etiologic)	161	0.9	48	Fire Extinguishers	Nonflammable Compressed Gas	73	0.4
24	Environmentally Haz Liquid	Miscellaneous Hazardous Material	145	0.9	49	Fuel Aviation Turbine	Flammable - Combustible Liquid	72	0.4
25	Compound Cleaning Liq Pho	Corrosive Material	144	0.8	50	Ammonia Solutions 10-35%	Corrosive Material	68	0.4
							TOTALS	**12,689**	**74.7**

Note: Percentage figures are based on 16,992 incidents reported in 1999.

Since some incidents involve multiple hazardous materials, double counting can occur in the "Incidents" column.

Exhibit 4.5.1

Serious Incidents by Hazardous Material - 1998

Rank	Hazardous Material	Hazard Class	Incidents	Percent of Total Incidents
1	Gasoline	Flammable - Combustible Liquid	66	0.4
2	Petroleum Gases Liquefied	Flammable Gas	20	0.1
3	Diesel Fuel	Flammable - Combustible Liquid	14	<.1
4	Sodium Hydroxide Solution	Corrosive Material	13	<.1
4	Sulfuric Acid	Corrosive Material	13	<.1
4	Fuel Oil (No. 1,2,4,5,6)	Flammable - Combustible Liquid	13	<.1
7	Flammable Liquids n.o.s.	Flammable - Combustible Liquid	12	<.1
7	Environmentally Hazardous Liquid	Miscellaneous Hazardous Material	12	<.1
9	Hydrochloric Acid Solution	Corrosive Material	11	<.1
10	Ammonium Nitrate <0.2%	Oxidizer	9	<.1
11	Ammonia Anhydrous	Nonflammable Compressed Gas	8	<.1
11	Corrosive Liquids n.o.s.	Corrosive Material	8	<.1
11	Elevated Temp Material Liquid	Miscellaneous Hazardous Material	8	<.1
14	Fuel Oil No. 1,2,4,5,6	Combustible Liquid	7	<.1
15	Caustic Alkali Liquid n.o.s.	Corrosive Material	6	<.1
15	Combustible Liquid n.o.s.	Combustible Liquid	6	<.1
15	Petroleum Crude Oil	Flammable - Combustible Liquid	6	<.1
15	Nitric Acid <70%	Corrosive Material	6	<.1
15	Nitrogen Refrigerated Liquid	Nonflammable Compressed Gas	6	<.1
20	Adhesives	Flammable - Combustible Liquid	5	<.1
20	Sulfur Molten	Miscellaneous Hazardous Material	5	<.1
20	Corros Liquid Basic Inorganic	Corrosive Material	5	<.1
23	Fuel Aviation Turbine	Flammable - Combustible Liquid	4	<.1
23	Hypochlorite Solution 5-16%	Corrosive Material	4	<.1
23	Isopropanol	Flammable - Combustible Liquid	4	<.1
23	Oxygen Refrigerated Liquid	Nonflammable Compressed Gas	4	<.1
23	Paint or Paint Related	Flammable - Combustible Liquid	4	<.1
23	Phosphoric Acid	Corrosive Material	4	<.1
23	Corrosive Liquid Acidic Inorganic	Corrosive Material	4	<.1
30	Ammonium Nitrate - Fuel Oil	Very Insensitive Explosive	3	<.1
30	Carbon Dioxide Refrig Liquid	Nonflammable Compressed Gas	3	<.1
30	Fuel Oil	Combustible Liquid	3	<.1
30	Hydrogen Peroxide 20-40%	Oxidizer	3	<.1
30	Propane	Flammable Gas	3	<.1
30	Sodium Hydroxide Solid	Corrosive Material	3	<.1
30	Triethylamine	Flammable - Combustible Liquid	3	<.1
30	Methanol	Flammable - Combustible Liquid	3	<.1
30	Explosive Blasting Type E	Very Insensitive Explosive	3	<.1
30	Sodium Dithionite	Spontaneously Combustible	3	<.1
30	Environmentally Hazardous Solid	Miscellaneous Hazardous Material	3	<.1
30	Toxic Liquid Organic n.o.s.	Poisonous Materials	3	<.1
42	*28 materials tied for this rank*	…	2 each	0.4
70	*86 materials tied for this rank*	…	1 each	0.6
			TOTAL	**2.8**

Note: Percentage figures are based on 15,349 incidents reported in 1998 and are rounded to the nearest tenth.

RSPA defines serious incidents as incidents that involve: a fatality or major injury due to a hazardous material; closure of a major transportation artery or facility or evacuation of six or more persons due to the presence of a hazardous material; or

Since some incidents involve multiple hazardous materials, double counting can occur in the "Incidents" column. Therefore, no total is shown for this column.

Exhibit 4.5.2

Serious Incidents by Hazardous Material - 1999

Rank	Hazardous Material	Hazard Class	Incidents	Percent of Total Incidents
1	Gasoline	Flammable - Combustible Liquid	55	0.3
2	Petroleum Gases Liquefied	Flammable Gas	23	0.1
3	Fuel Oil (No. 1,2,4,5,6)	Flammable - Combustible Liquid	19	0.1
4	Diesel Fuel	Flammable - Combustible Liquid	16	<.1
5	Flammable Liquids n.o.s.	Flammable - Combustible Liquid	12	<.1
6	Elevated Temp Material Liquid	Miscellaneous Hazardous Material	11	<.1
7	Hypochlorite Solutn 5-16%	Corrosive Material	8	<.1
8	Hydrochloric Acid Solution	Corrosive Material	7	<.1
8	Sodium Hydroxide Solution	Corrosive Material	7	<.1
10	Ammonia Anhydrous	Nonflammable Compressed Gas	6	<.1
10	Environmentally Haz Liquid	Miscellaneous Hazardous Material	6	<.1
12	Ammonium Nitrate <0.2%	Oxidizer	5	<.1
12	Petroleum Crude Oil	Flammable - Combustible Liquid	5	<.1
12	Ethyl Acrylate Inhibited	Flammable - Combustible Liquid	5	<.1
12	Nitrogen Refrigerated Liquid	Nonflammable Compressed Gas	5	<.1
16	Combustible Liquid n.o.s.	Combustible Liquid	4	<.1
16	Corrosive Liquids n.o.s.	Corrosive Material	4	<.1
16	Fuel Aviation Turbine	Flammable - Combustible Liquid	4	<.1
16	Fuel Oil	Combustible Liquid	4	<.1
16	Phosphoric Acid	Corrosive Material	4	<.1
16	Resin Solution	Flammable - Combustible Liquid	4	<.1
16	Toluene	Flammable - Combustible Liquid	4	<.1
23	Caustic Alkali Liquid n.o.s.	Corrosive Material	3	<.1
23	Carbon Dioxide Refrig Liquid	Nonflammable Compressed Gas	3	<.1
23	Flammable Liquid Corrosive	Flammable - Combustible Liquid	3	<.1
23	Nitric Acid <70%	Corrosive Material	3	<.1
23	Oxygen Refrigerated Liquid	Nonflammable Compressed Gas	3	<.1
23	Styrene Monomer Inhibited	Flammable - Combustible Liquid	3	<.1
23	Sulfuric Acid	Corrosive Material	3	<.1
23	Toluene Diisocyanate	Poisonous Materials	3	<.1
23	Methanol	Flammable - Combustible Liquid	3	<.1
23	Explosive Blasting Type E	Very Insensitive Explosive	3	<.1
23	Environmentally Haz Solid	Miscellaneous Hazardous Material	3	<.1
23	Hazardous Waste Liquid	Miscellaneous Hazardous Material	3	<.1
23	Regulated Medical Waste	Infectious Substance (Etiologic)	3	<.1
23	Denatured Alcohol	Flammable - Combustible Liquid	3	<.1
37	*24 materials tied for this rank*	…	2 each	0.3
			TOTAL	**2.2**

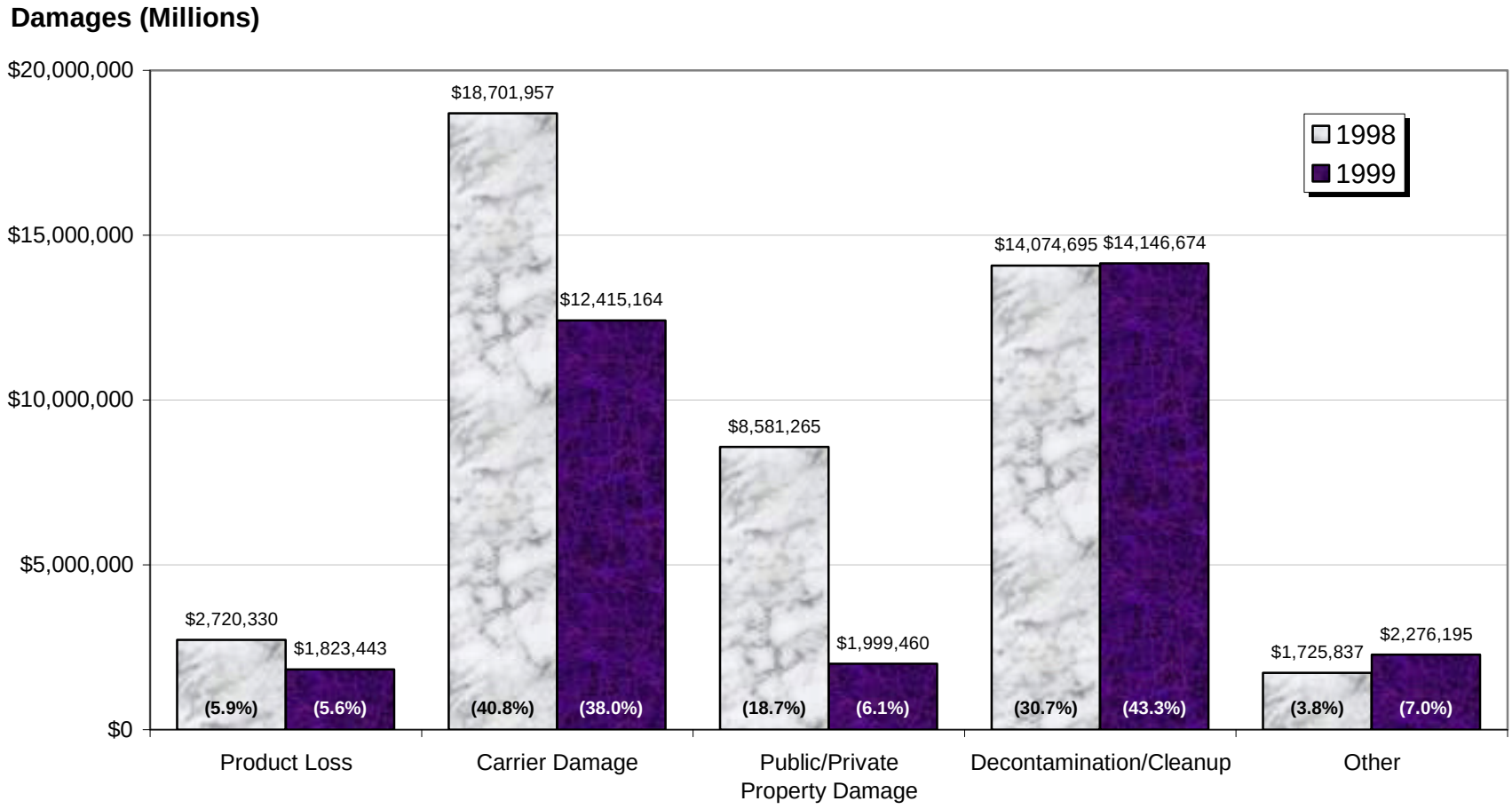
Note: Percentage figures are based on 16,992 incidents reported in 1999.

RSPA defines serious incidents as incidents that involve: a fatality or major injury due to a hazardous material; closure of a major transportation artery or facility or evacuation of six or more persons due to the presence of a hazardous material; or

Since some incidents involve multiple hazardous materials, double counting can occur in the "Incidents" column. Therefore, no total is shown for this column.

Exhibit 5

Characterization of Hazardous Materials Incident Damages, 1998-1999



Note: The numbers in parentheses show the percent of the total reported damages for each individual year

Exhibit 6.1
Hazardous Materials Incidents - 1998
Cause by Mode

Cause	Air	Highway	Rail	Water	Total	Percent of all Incidents*
Human Error	1,265	11,235	607	5	13,112	85.4
Package Failure	84	1,342	309	5	1,740	11.3
Vehicular Accident/Derailment	1	264	51	0	316	2.1
Other	30	127	23	1	181	1.2
TOTALS	**1,380**	**12,968**	**990**	**11**	**15,349**	...
Percent of Incidents by Mode	9.0	84.5	6.4	0.1	...	...

Exhibit 6.2
Hazardous Materials Incidents - 1999
Cause by Mode

Cause	Air	Highway	Rail	Water	Total	Percent of all Incidents*
Human Error	1,399	12,597	687	7	14,690	86.5
Package Failure	134	1,311	288	1	1,734	10.2
Vehicular Accident/Derailment	0	222	57	0	279	1.6
Other	45	221	23	0	289	1.7
TOTALS	**1,578**	**14,351**	**1,055**	**8**	**16,992**	...
Percent of Incidents by Mode	10.3	93.5	6.9	0.1	...	...

Note: All percent figures are rounded to the nearest tenth.

Exhibit 7.1

Hazardous Materials Incidents - 1998
Evacuations - Cause and Consequence by Mode

Mode	Incidents With Evacuations	CAUSE				CONSEQUENCE			
		Human Error	Package Failure	Accident/ Derailment	Other	People Evacuated	Deaths	Major Injuries *	Minor Injuries
Air	107	99	3	0	5	1,236	0	0	6
Highway	140	89	21	30	0	5,638	7	2	32
Railway	28	7	8	13	0	2,307	0	0	2
Water	0	0	0	0	0	0	0	0	0
TOTALS	**275**	**195**	**32**	**43**	**5**	**9,181**	**7**	**2**	**40**

Exhibit 7.2

Hazardous Materials Incidents - 1999
Evacuations - Cause and Consequence by Mode

Mode	Incidents With Evacuations	CAUSE				CONSEQUENCE			
		Human Error	Package Failure	Accident/ Derailment	Other	People Evacuated	Deaths	Major Injuries *	Minor Injuries
Air	116	105	7	0	4	744	0	0	5
Highway	106	65	15	23	3	6,444	1	13	60
Railway	23	3	1	18	1	5,880	0	1	0
Water	0	0	0	0	0	0	0	0	0
TOTALS	**245**	**173**	**23**	**41**	**8**	**13,068**	**1**	**14**	**65**

* Major injuries are those requiring hospitalization or resulting in loss of time at work.

Exhibit 8.1.1

Hazardous Materials Incidents - 1998
Consequences by Transportation Phase

TRANSPORTATION PHASE	DEATHS		MAJOR INJURIES *		MINOR INJURIES		DAMAGES > $50,000		EVACUATIONS		TOTAL INCIDENTS
	Incidents	People	Incidents	People	Incidents	People	Incidents	$	Incidents	People	
En Route/Accident	6	8	5	5	6	10	152	34,389,378	42	4,289	346
En Route/Non-Accident	0	0	4	4	25	37	12	1,973,806	61	1,523	2,694
Loading	0	0	2	2	17	20	1	173,000	21	414	2,833
Unloading	1	5	12	12	62	91	5	795,564	61	1,797	8,469
Storage/Terminal	0	0	1	1	9	11	3	228,500	86	1,086	954
TOTALS	**7**	**13**	**24**	**24**	**119**	**169**	**173**	**37,560,248**	**271**	**9,109**	**15,296**

Exhibit 8.1.2

Hazardous Materials Incidents - 1999
Consequences by Transportation Phase

TRANSPORTATION PHASE	DEATHS		MAJOR INJURIES		MINOR INJURIES		DAMAGES > $50,000		EVACUATIONS		TOTAL INCIDENTS
	Incidents	People	Incidents	People	Incidents	People	Incidents	$	Incidents	People	
En Route/Accident	4	5	6	7	3	8	114	17,852,534	34	4,561	267
En Route/Non-Accident	0	0	2	10	31	50	11	1,914,204	19	4,390	2,625
Loading	0	0	6	6	12	44	5	1,519,100	13	576	2,717
Unloading	2	2	10	15	74	95	9	1,823,027	16	2,037	9,619
Storage/Terminal	0	0	2	3	12	19	3	653,000	21	1,878	958
TOTALS	**6**	**7**	**26**	**41**	**132**	**216**	**142**	**23,761,865**	**103**	**13,442**	**16,186**

* Major injuries are those requiring hospitalization or resulting in loss of time at work.

Exhibit 8.2.1
Hazardous Materials Incidents, 1998
Consequences by Bulk and Non-Bulk

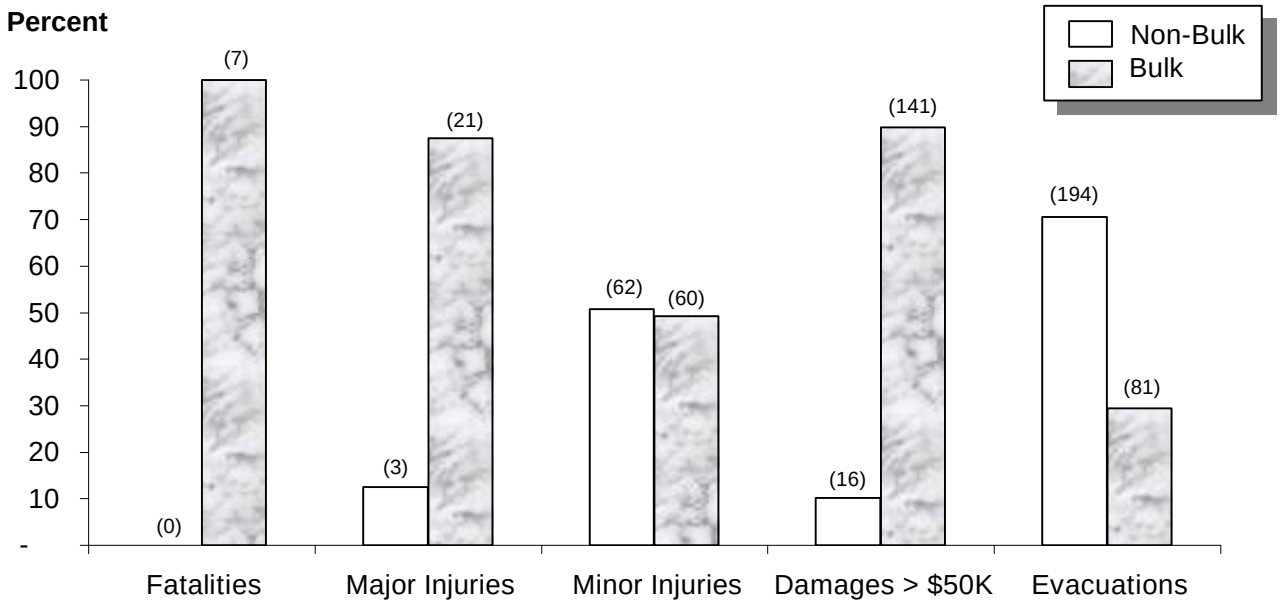
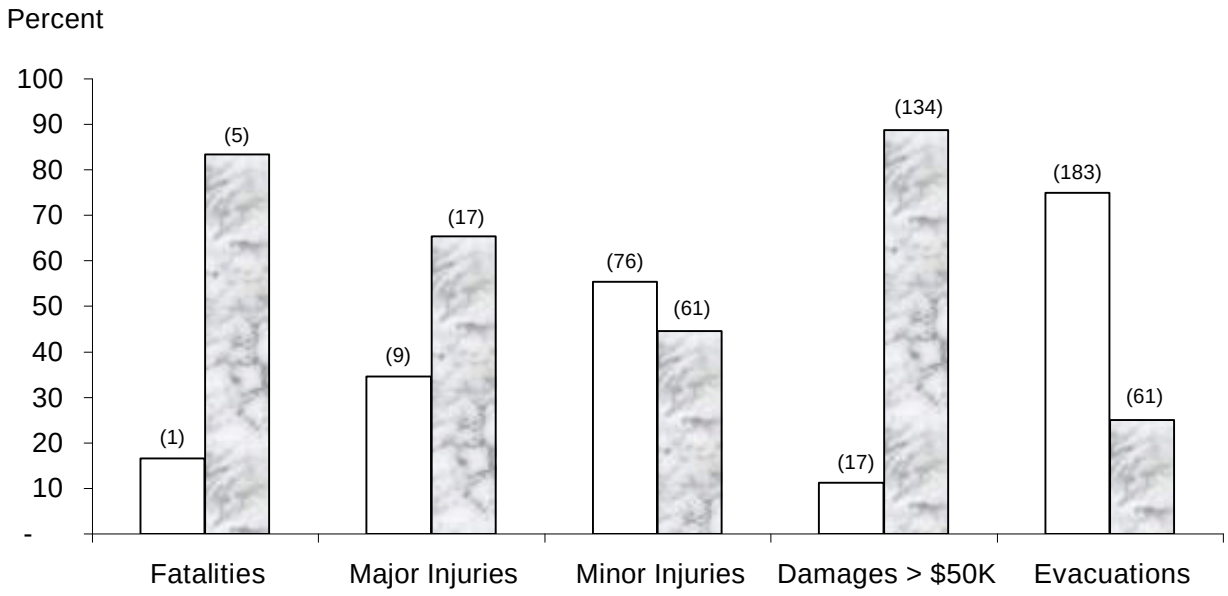


Exhibit 8.2.2
Hazardous Materials Incidents, 1999
Consequences by Bulk and Non-Bulk



Note: Numbers in parentheses show the number of incidents resulting in each consequenc

Bulk packages are defined as those with a maximum capacity greater than 450 L (119 gallon

Exhibit 8.3.1

Hazardous Materials Incidents - 1998
Consequences by Time of Day

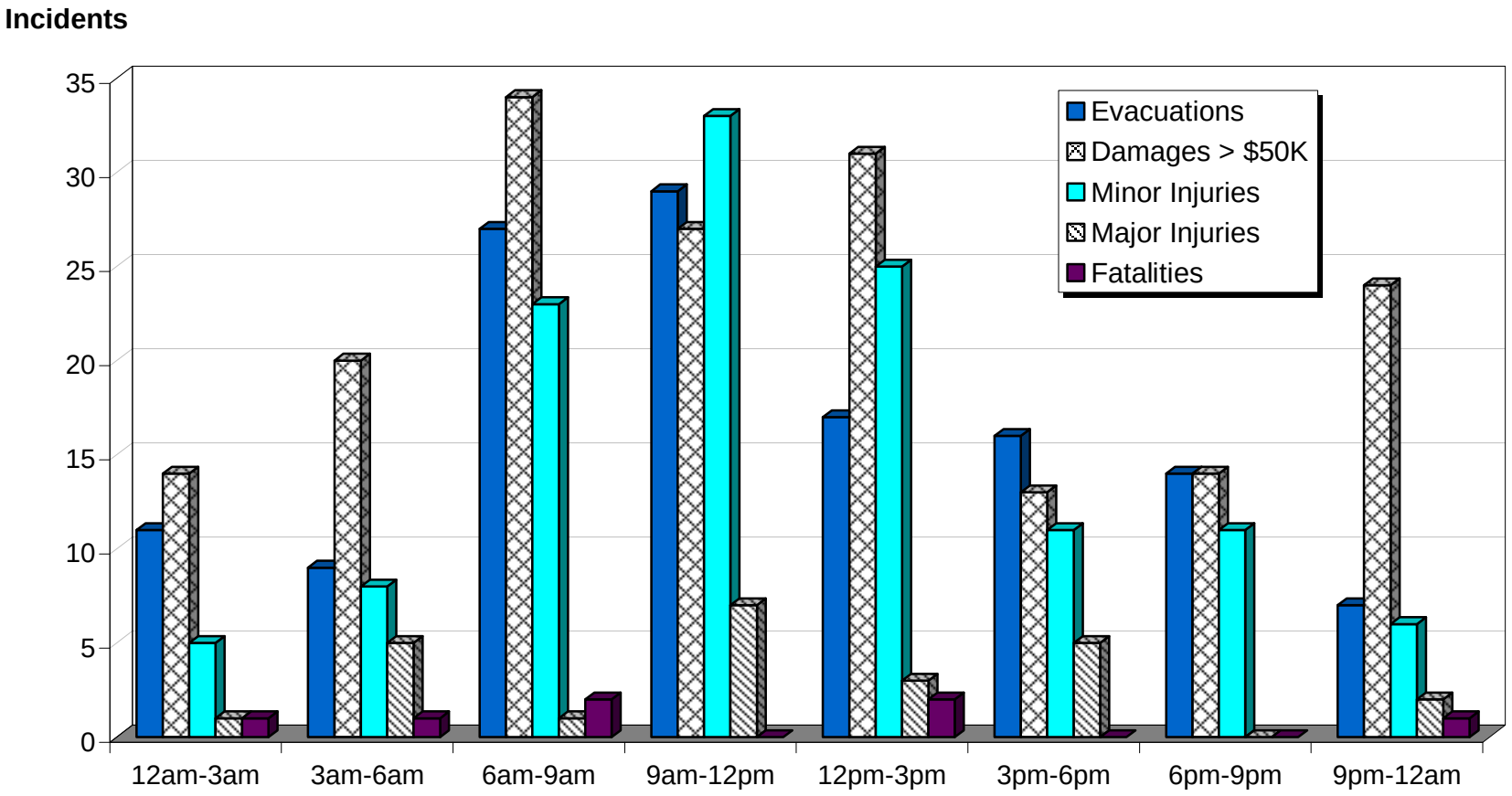


Exhibit 8.3.2

Hazardous Materials Incidents - 1999
Consequences by Time of Day

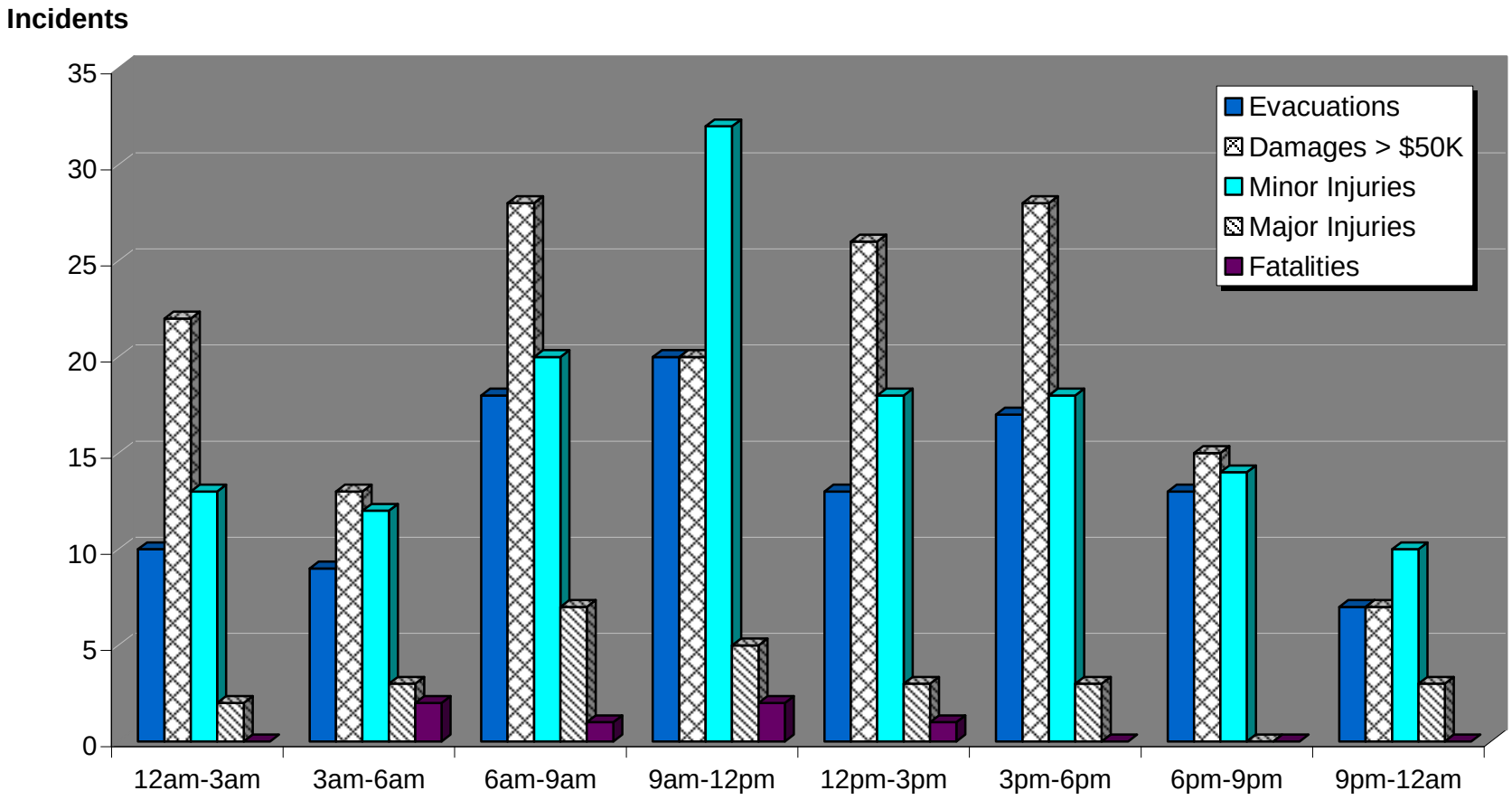
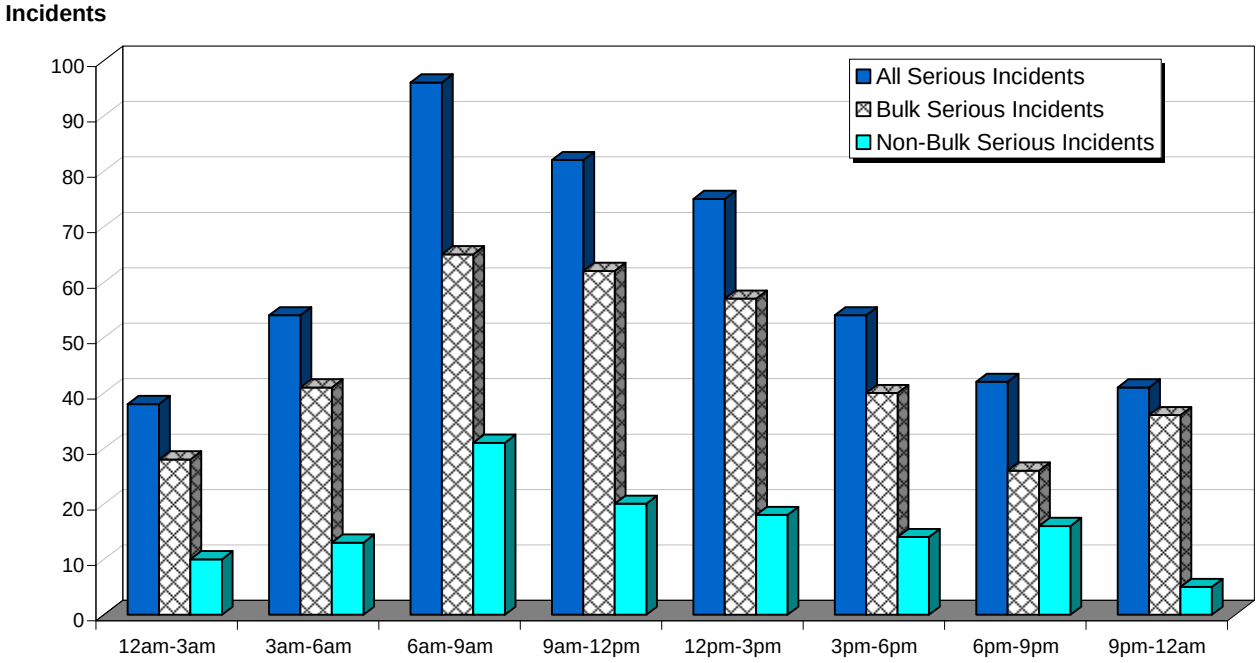


Exhibit 9.1

Hazardous Materials Incidents - 1998
Serious Incidents by Time of Day
Bulk and Non-Bulk

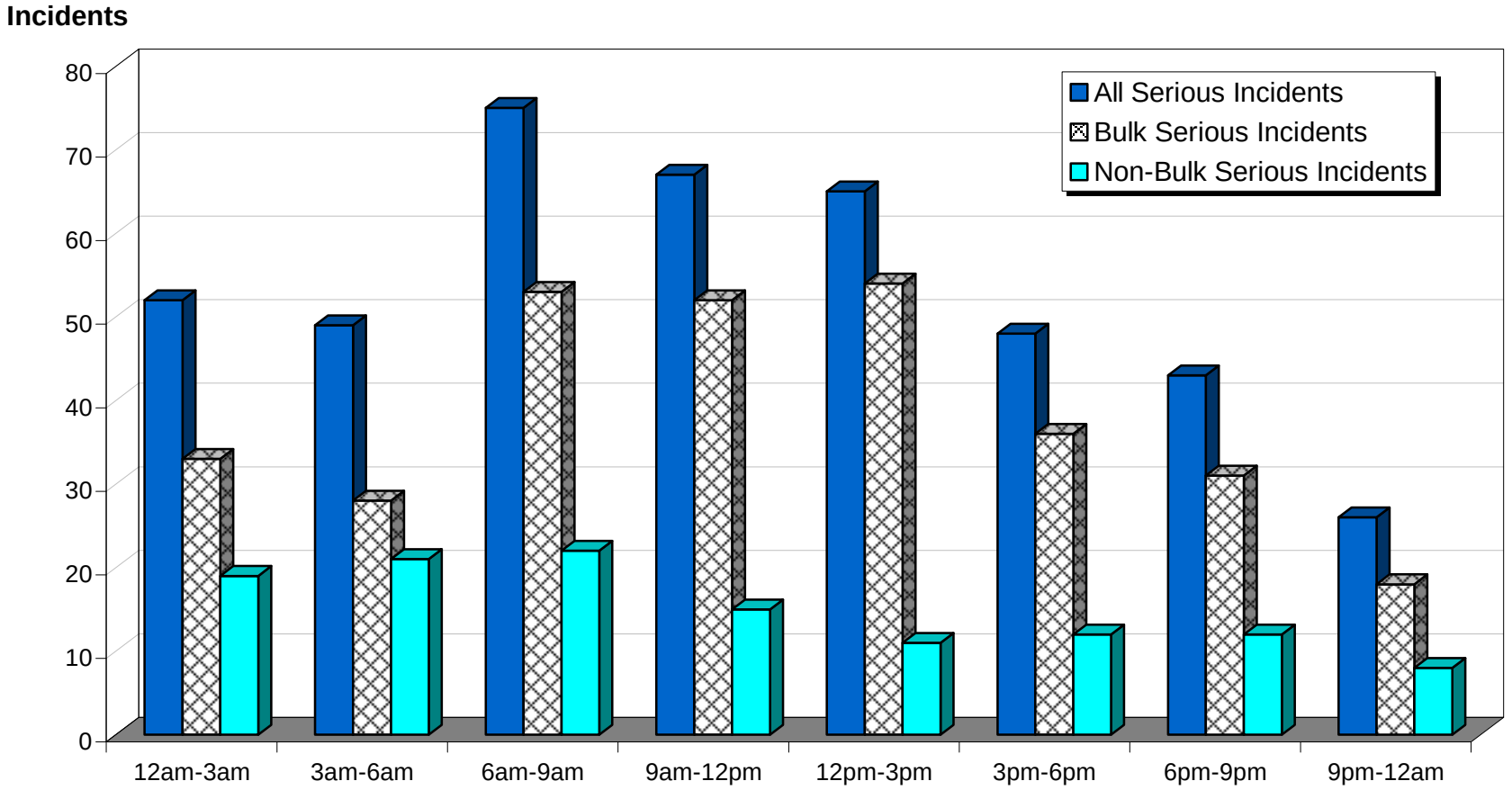


Note: RSPA defines serious incidents as incidents that involve: a fatality or major injury due to a hazardous material; closure of a major transportation artery or facility or evacuation of six or more persons due to the presence of a hazardous material; or

Bulk packages are defined as those with a maximum capacity greater than 450 L (119 gallons)

Exhibit 9.2

Hazardous Materials Incidents - 1999
Serious Incidents by Time of Day
Bulk and Non-Bulk



Note: RSPA defines serious incidents as incidents that involve: a fatality or major injury due to a hazardous material; closure of a major transportation artery or facility or evacuation of six or more persons due to the presence of a hazardous material; or

Bulk packages are defined as those with a maximum capacity greater than 450 L (119 gallons)

Exhibit 10.1

Hazardous Materials Incidents - 1998
By State

State	Incidents	Deaths	Injuries		$ Damages	State	Incidents	Deaths	Injuries		$ Damages
			Major	Minor					Major	Minor	
Alabama	218	1	1	1	927,170	Montana	35	0	0	0	98,842
Alaska	29	0	0	2	2,603	Nebraska	72	0	1	0	63,463
Arizona	209	1	0	1	704,742	Nevada	42	0	0	0	436,001
Arkansas	225	0	0	2	642,896	New Hampshire	42	0	0	0	182,543
California	1,138	0	0	16	1,382,007	New Jersey	331	0	0	3	470,060
Colorado	261	0	0	3	180,945	New Mexico	117	0	0	2	346,461
Connecticut	162	0	0	0	192,762	New York	676	0	2	4	3,397,745
Delaware	19	0	0	1	148,777	North Carolina	547	1	0	3	1,768,515
Dist. of Columbia	5	0	0	0	563	North Dakota	33	0	0	0	2,795,512
Florida	455	0	0	6	2,040,141	Ohio	1,228	0	1	5	1,566,817
Georgia	411	0	1	2	381,121	Oklahoma	132	0	4	1	1,036,686
Hawaii	13	0	0	1	131,654	Oregon	211	0	0	4	122,699
Idaho	27	0	0	0	10,537	Pennsylvania	900	2	0	15	6,020,678
Illinois	1,449	0	0	8	761,909	Rhode Island	18	0	0	0	7,072
Indiana	366	0	1	7	600,606	South Carolina	161	0	0	4	1,311,551
Iowa	102	0	0	2	1,338,127	South Dakota	22	0	0	0	10,074
Kansas	275	0	0	2	620,772	Tennessee	752	0	1	10	443,194
Kentucky	463	0	0	1	228,544	Texas	1,188	0	7	22	3,088,273
Louisiana	295	1	0	5	2,559,547	Utah	234	0	0	1	74,815
Maine	24	0	1	0	248,532	Vermont	20	0	0	0	70,910
Maryland	219	0	1	4	414,761	Virginia	208	0	0	2	3,334,217
Massachusetts	346	0	0	1	493,117	Washington	196	0	0	6	486,496
Michigan	319	0	0	12	467,401	West Virginia	50	2	0	1	2,637,516
Minnesota	260	0	1	4	721,225	Wisconsin	192	0	0	1	278,110
Mississippi	184	5	1	2	65,387	Wyoming	55	0	0	0	169,709
Missouri	377	0	1	4	208,988	Other *	36	0	0	2	103,291
						TOTAL	**15,349**	**13**	**24**	**173**	**$45,796,084**

* Incidents involving U.S. carriers that occurred in territorial possessions or foreign countries.

Exhibit 10.2

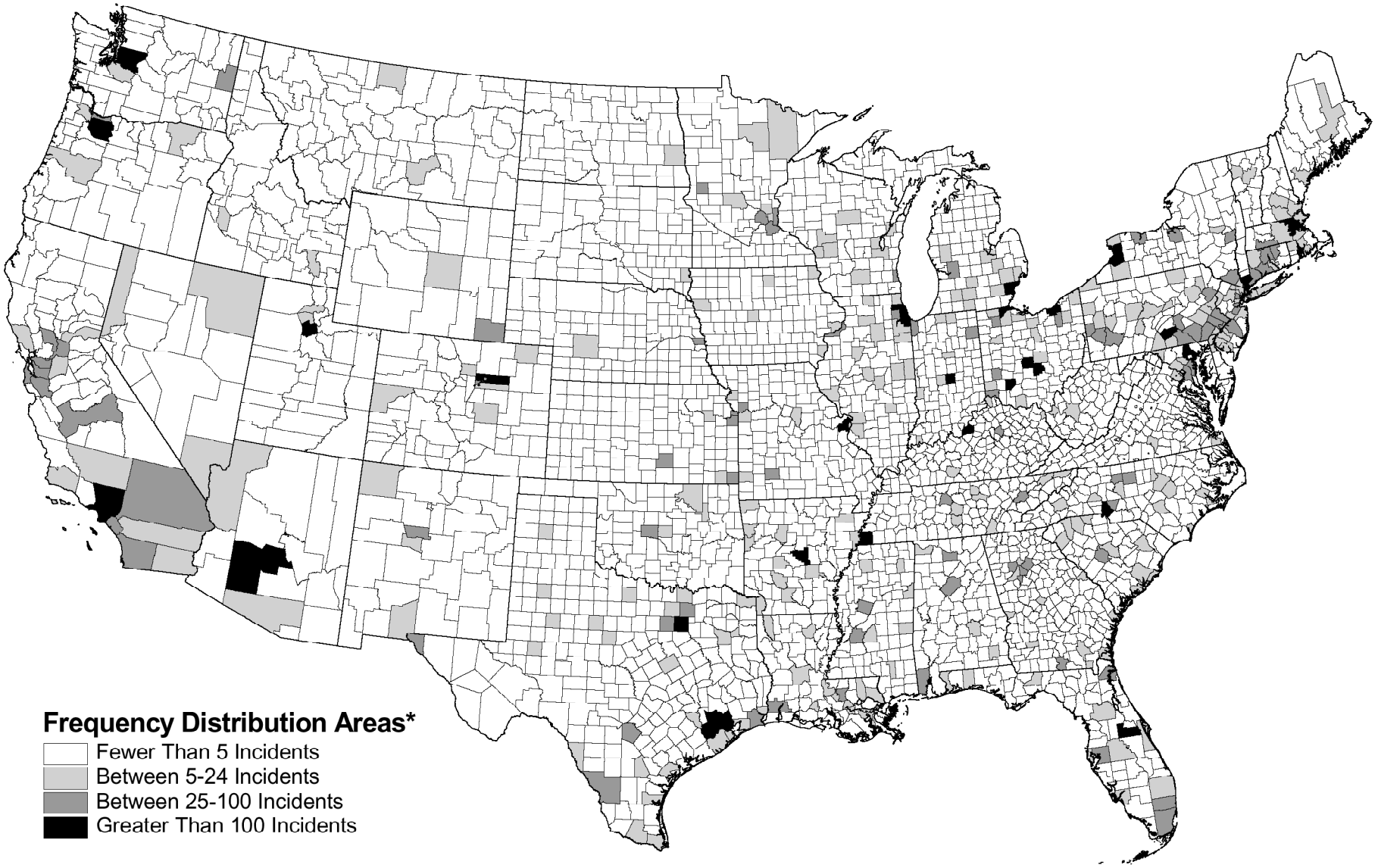
Hazardous Materials Incidents - 1999
By State

State	Incidents	Deaths	Injuries		$ Damages	State	Incidents	Deaths	Injuries		$ Damages
			Major	Minor					Major	Minor	
Alabama	212	0	0	5	498,386	Montana	54	0	0	1	982,537
Alaska	38	0	0	1	3,023,778	Nebraska	109	0	0	7	527,222
Arizona	301	0	0	3	251,265	Nevada	62	0	0	0	70,884
Arkansas	245	0	1	8	388,277	New Hampshire	34	0	0	0	10,063
California	1,194	0	5	14	1,509,744	New Jersey	412	0	2	19	1,518,425
Colorado	222	0	1	4	522,801	New Mexico	109	0	1	1	268,287
Connecticut	212	0	0	1	138,398	New York	587	1	3	6	587,042
Delaware	37	0	0	1	9,654	North Carolina	871	0	2	11	961,593
Dist. of Columbia	12	0	0	0	4,190	North Dakota	22	0	0	0	117,889
Florida	687	0	0	8	1,502,297	Ohio	1,472	0	1	8	774,733
Georgia	557	0	0	7	629,808	Oklahoma	185	0	0	1	555,010
Hawaii	15	0	0	0	153,599	Oregon	276	0	0	0	112,591
Idaho	27	0	0	1	115,163	Pennsylvania	903	0	2	14	1,270,052
Illinois	1,166	0	1	19	609,018	Rhode Island	8	0	0	0	387
Indiana	369	2	0	13	737,103	South Carolina	152	0	0	4	575,432
Iowa	131	2	1	4	1,474,943	South Dakota	15	0	0	0	34,620
Kansas	318	0	1	2	184,841	Tennessee	961	1	0	1	1,240,527
Kentucky	489	0	1	1	340,024	Texas	1,349	0	10	12	3,995,566
Louisiana	314	0	5	3	885,522	Utah	261	0	0	0	746,966
Maine	17	0	0	0	4,519	Vermont	10	0	0	0	6,830
Maryland	241	0	1	3	379,919	Virginia	157	0	0	3	959,361
Massachusetts	340	0	1	23	583,994	Washington	137	0	0	1	97,577
Michigan	398	1	0	6	304,186	West Virginia	61	0	0	0	276,930
Minnesota	303	0	0	0	679,570	Wisconsin	238	0	1	0	365,825
Mississippi	207	0	0	2	214,471	Wyoming	46	0	0	1	261,383
Missouri	391	0	1	4	473,918	Other *	58	0	0	0	723,816
						TOTAL	**16,992**	**7**	**41**	**223**	**$32,660,936**

* Incidents involving U.S. carriers that occurred in territorial possessions or foreign countries.

Exhibit 11.1.1

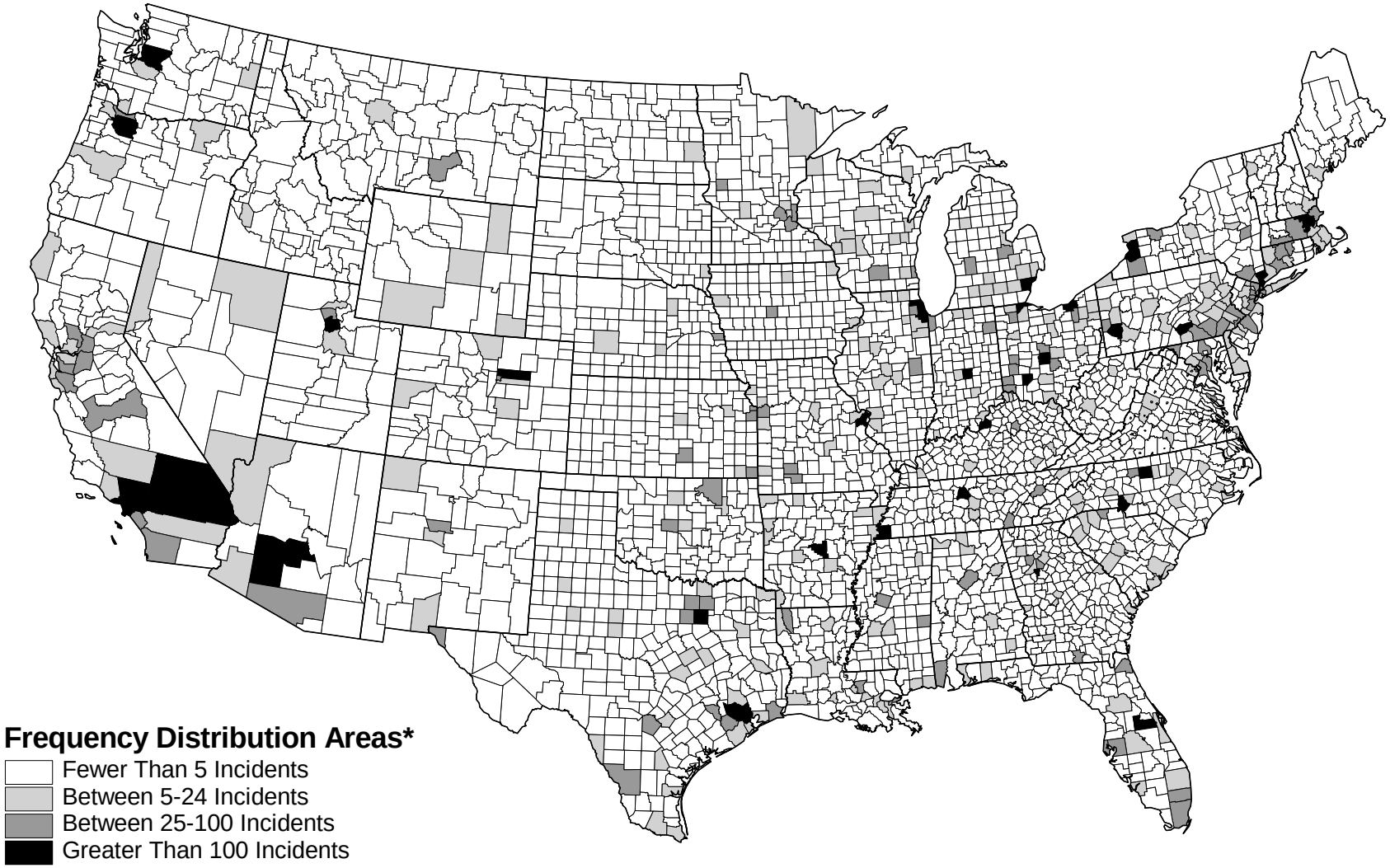
Hazardous Materials Incidents - 1998
By Incident Location



* Areas shown are U.S. Counties.

Exhibit 11.1.2

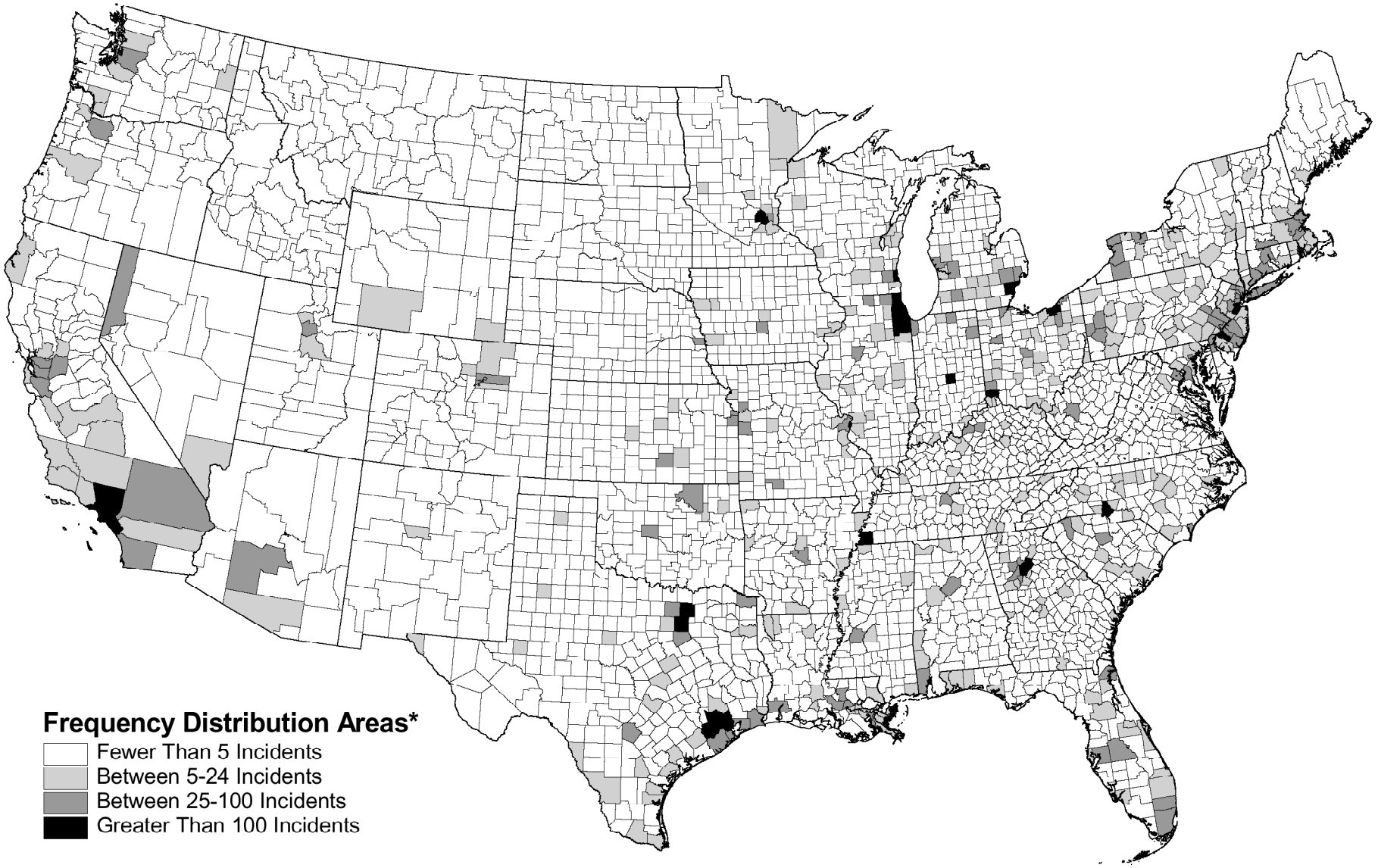
Hazardous Materials Incidents - 1999
By Incident Location



* Areas shown are U.S. Counties.

Exhibit 11.2.1

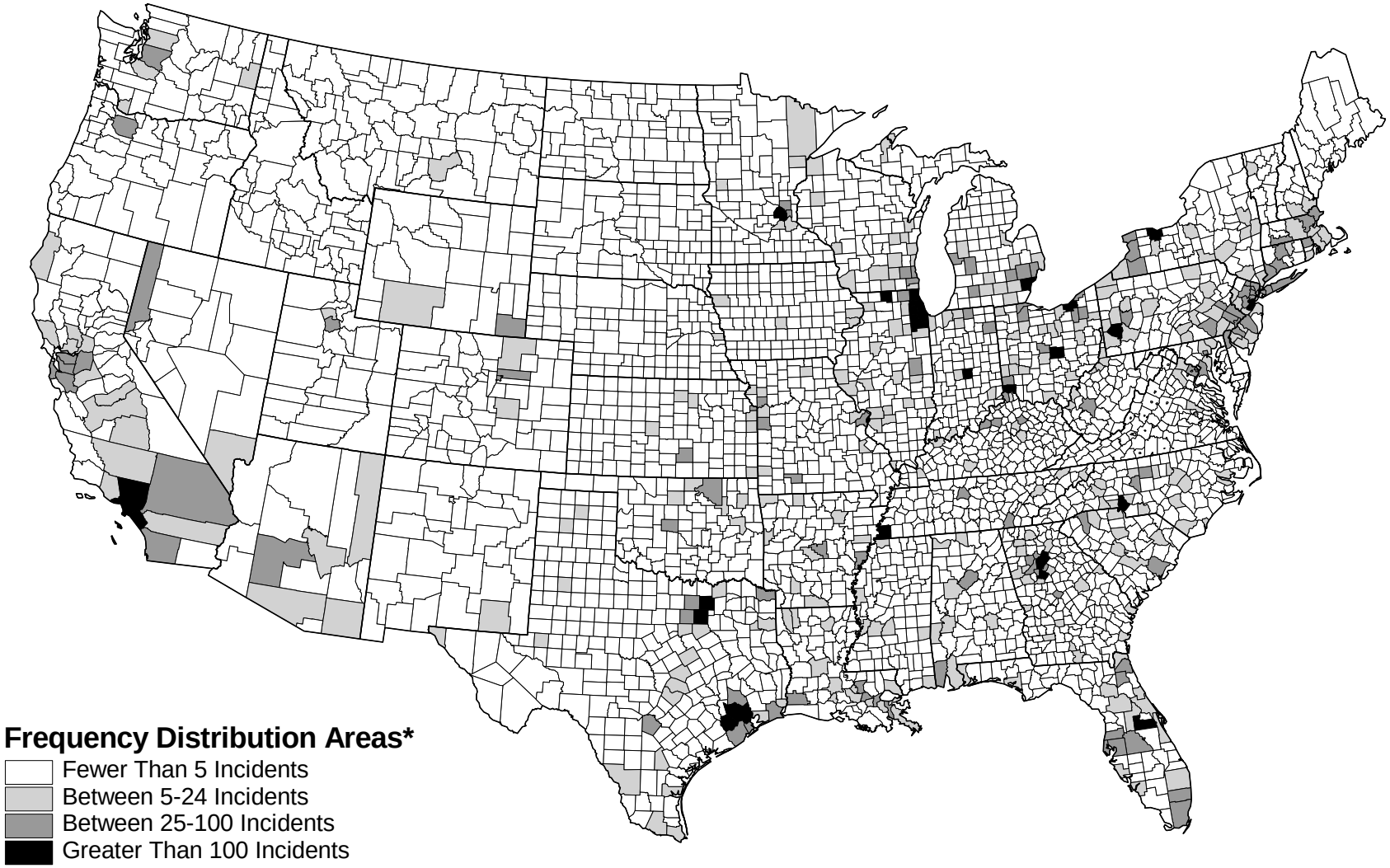
Hazardous Materials Incidents - 1998
By Shipment Origin



* Areas shown are U.S. Counties.

Exhibit 11.2.2

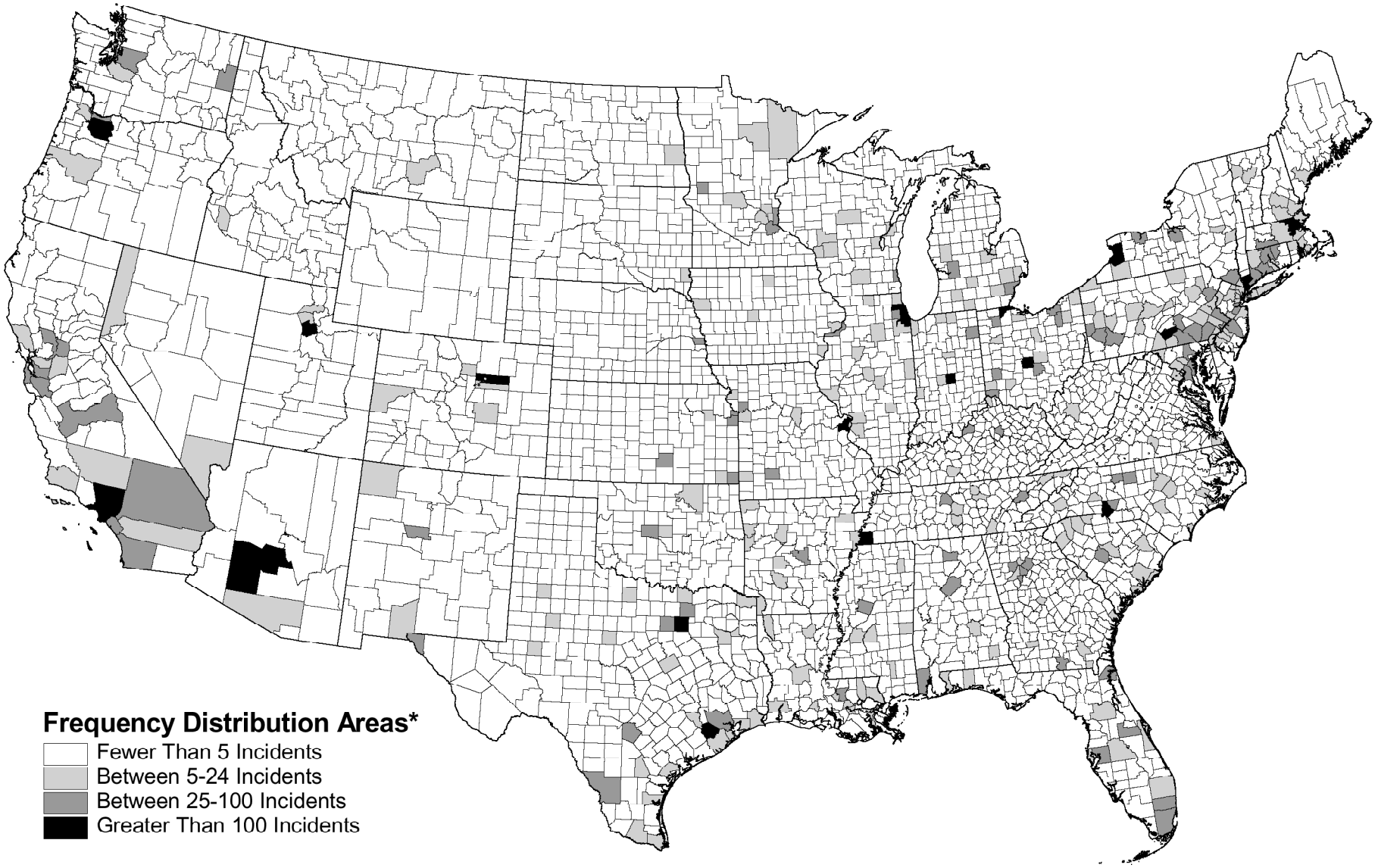
Hazardous Materials Incidents - 1999
By Shipment Origin



* Areas shown are U.S. Counties.

Exhibit 11.3.1

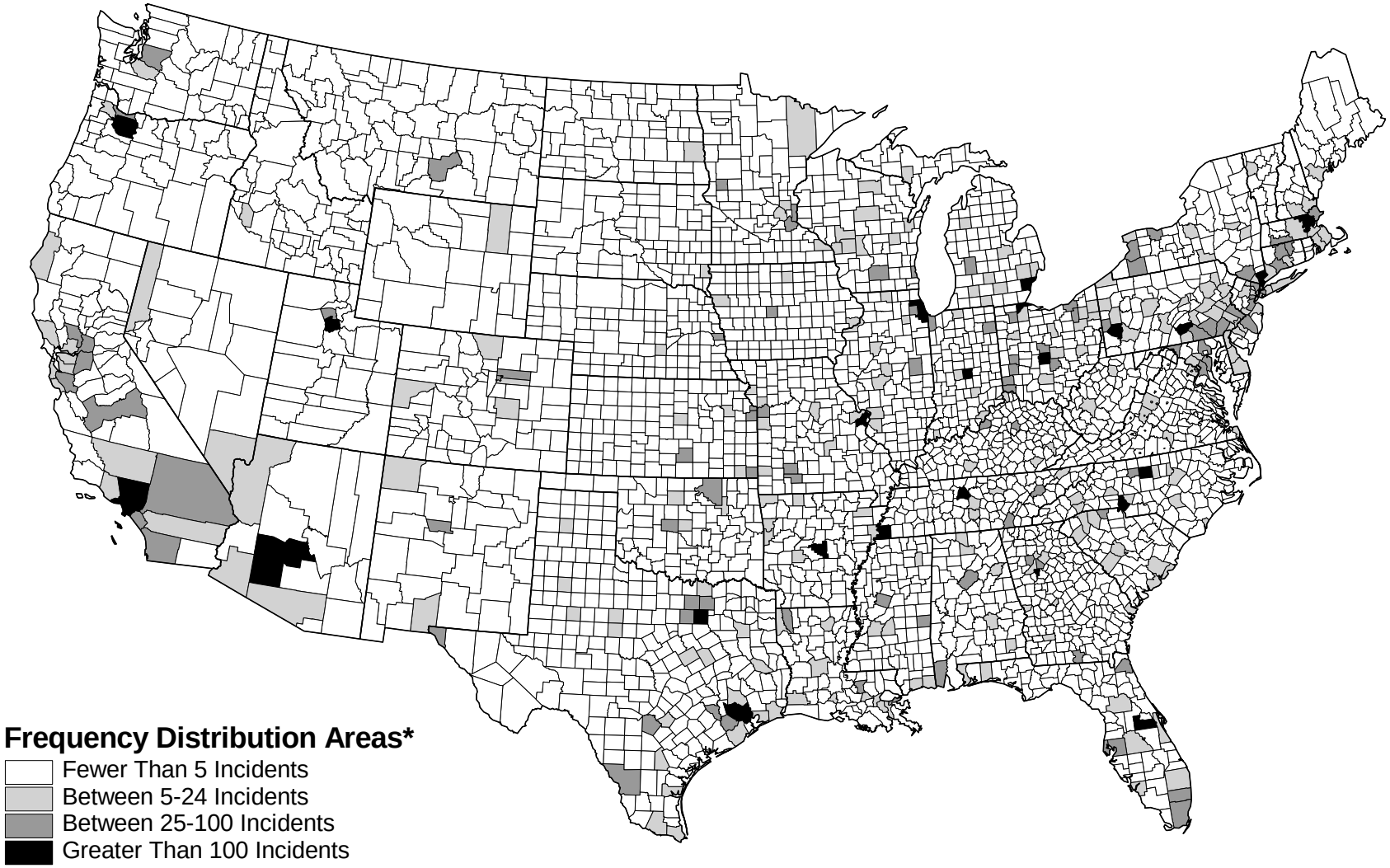
Hazardous Materials Incidents by Incident Location - 1998
Highway Incidents



* Areas shown are U.S. Counties.

Exhibit 11.3.2

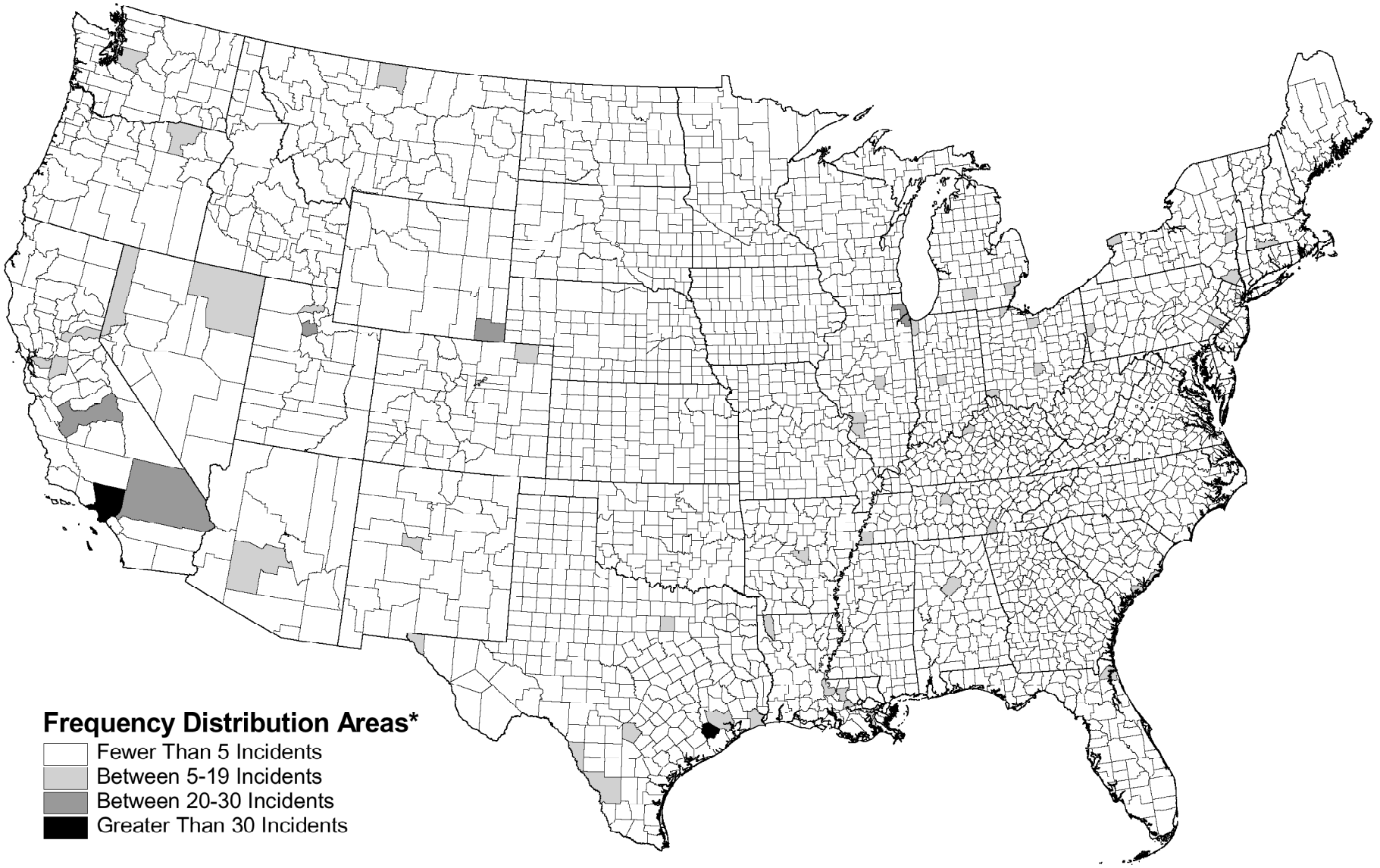
Hazardous Materials Incidents by Incident Location - 1999
Highway Incidents



* Areas shown are U.S. Counties.

Exhibit 11.4.1

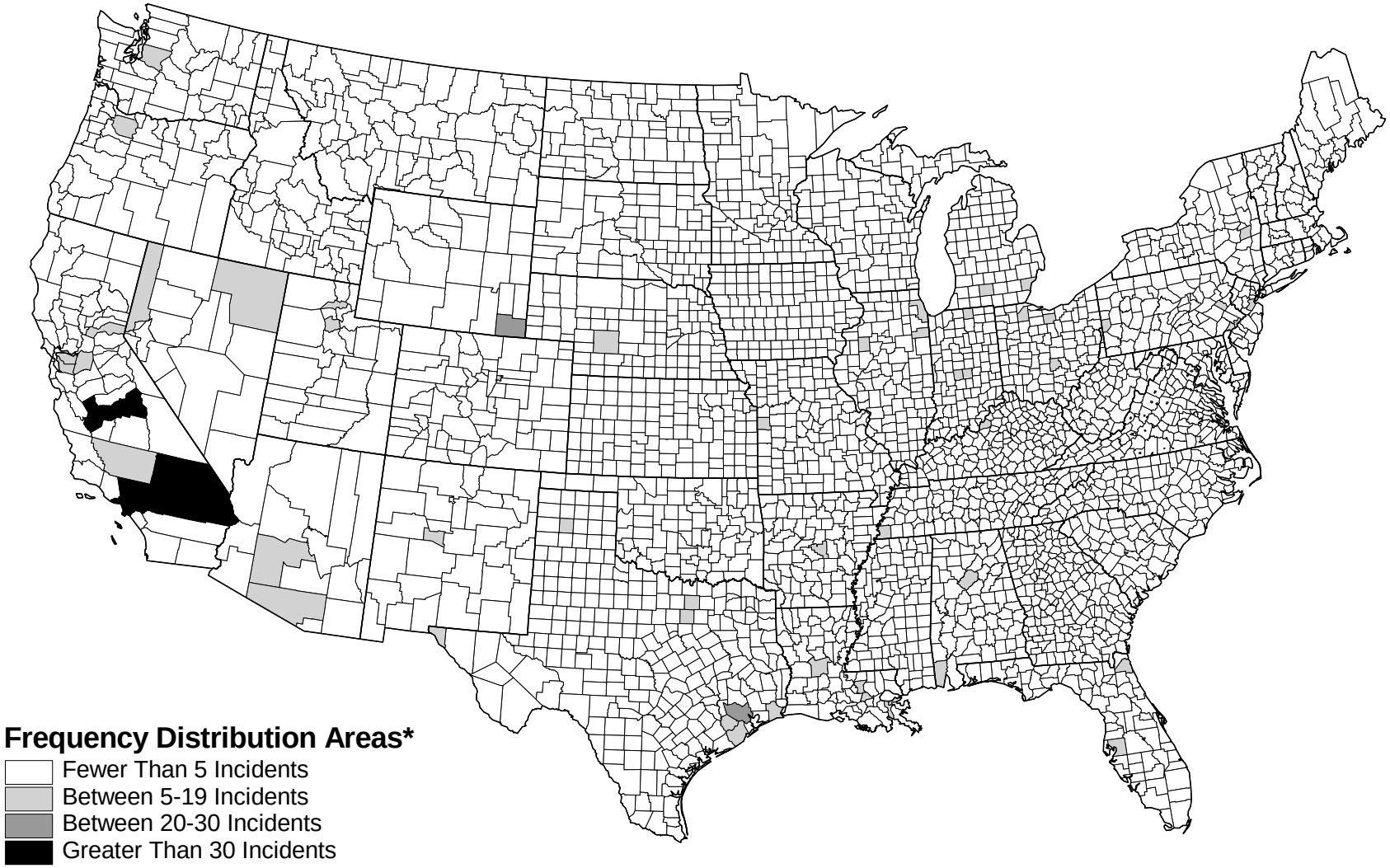
Hazardous Materials Incidents by Incident Location - 1998
Rail Incidents



* Areas shown are U.S. Counties.

Exhibit 11.4.2

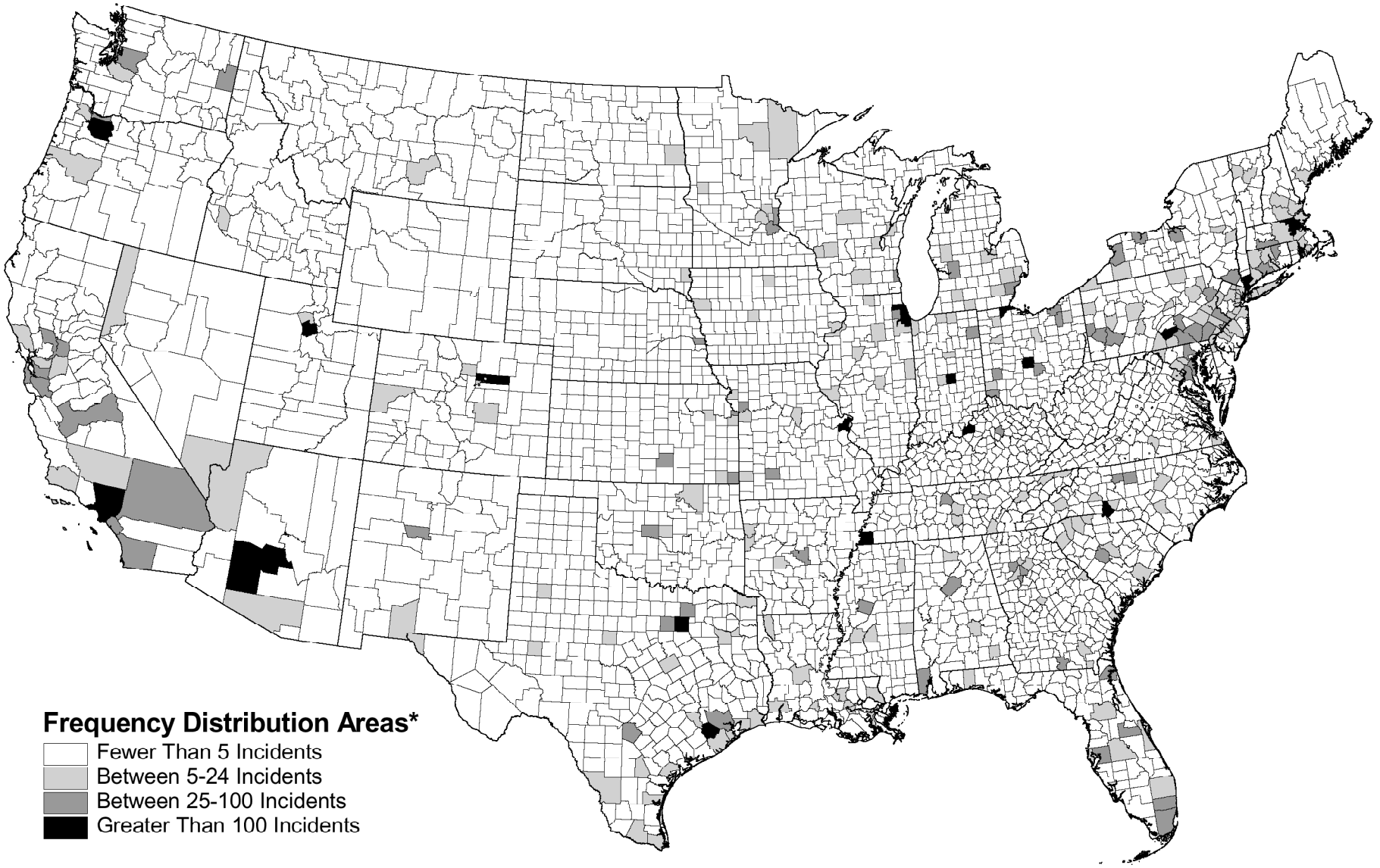
Hazardous Materials Incidents by Incident Location - 1999
Rail Incidents



* Areas shown are U.S. Counties.

Exhibit 11.5.1

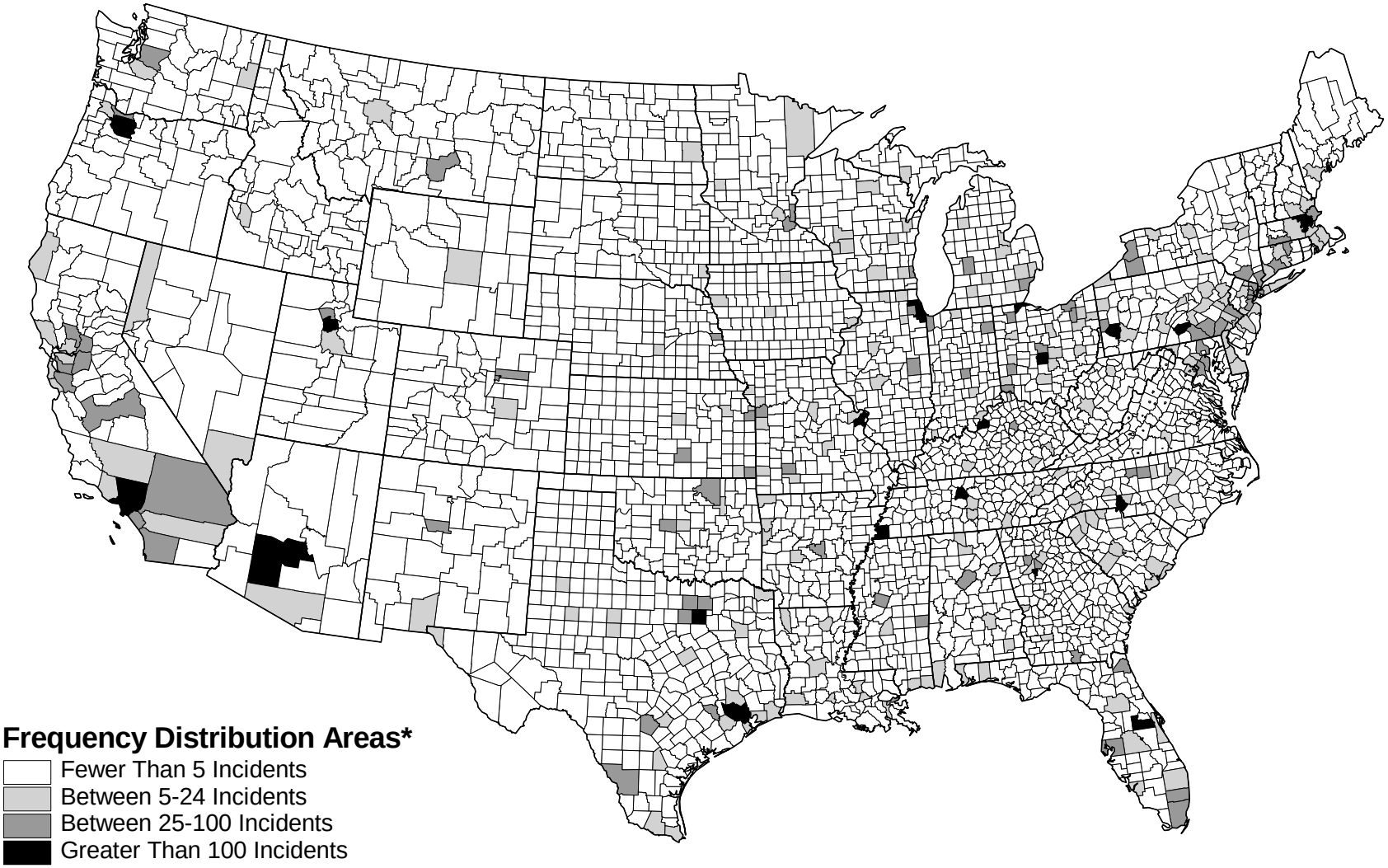
Hazardous Materials Incidents by Incident Location - 1998
Loading/Unloading Incidents



* Areas shown are U.S. Counties.

Exhibit 11.5.2

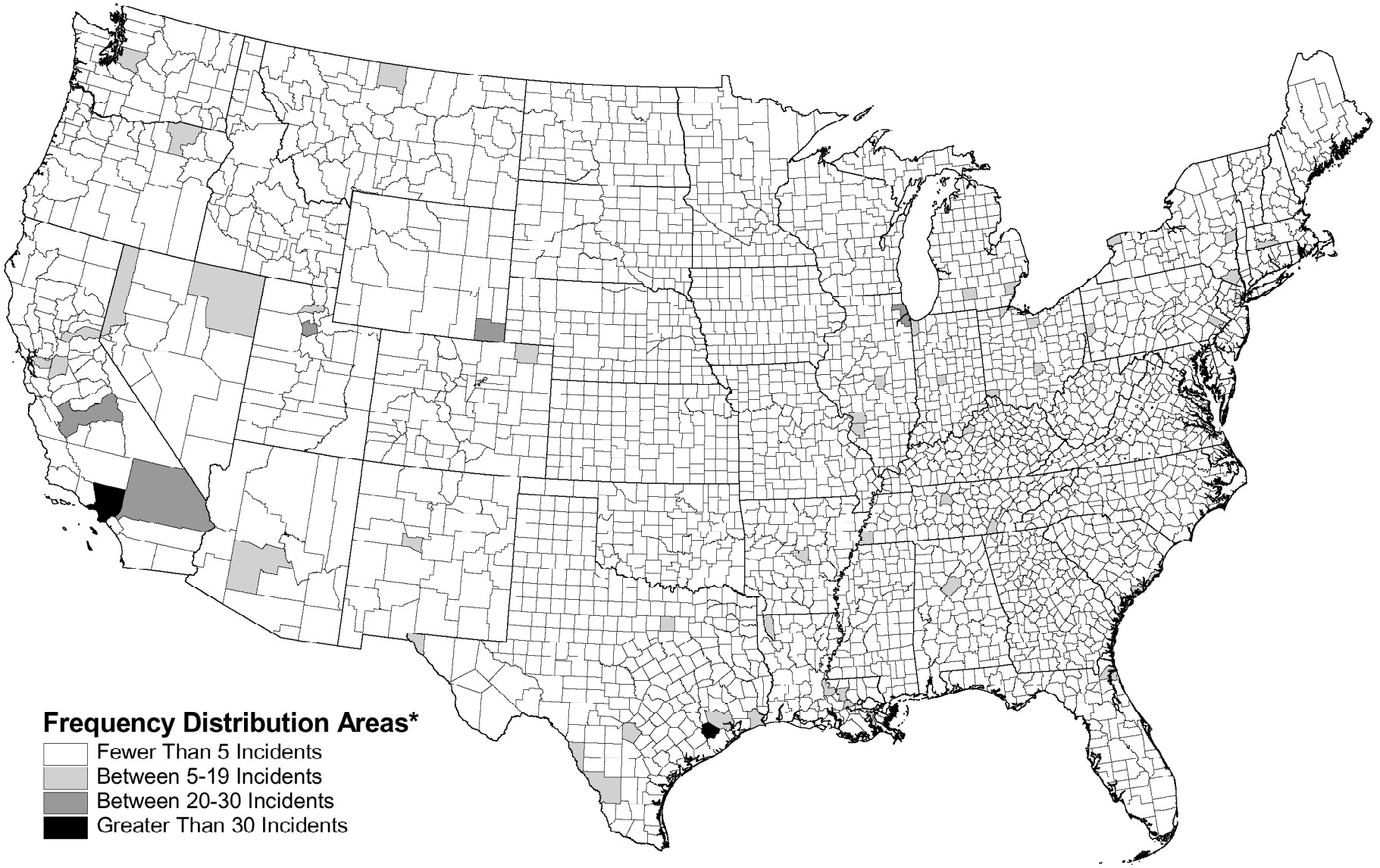
Hazardous Materials Incidents by Incident Location - 1999
Loading/Unloading Incidents



* Areas shown are U.S. Counties.

Exhibit 11.6.1

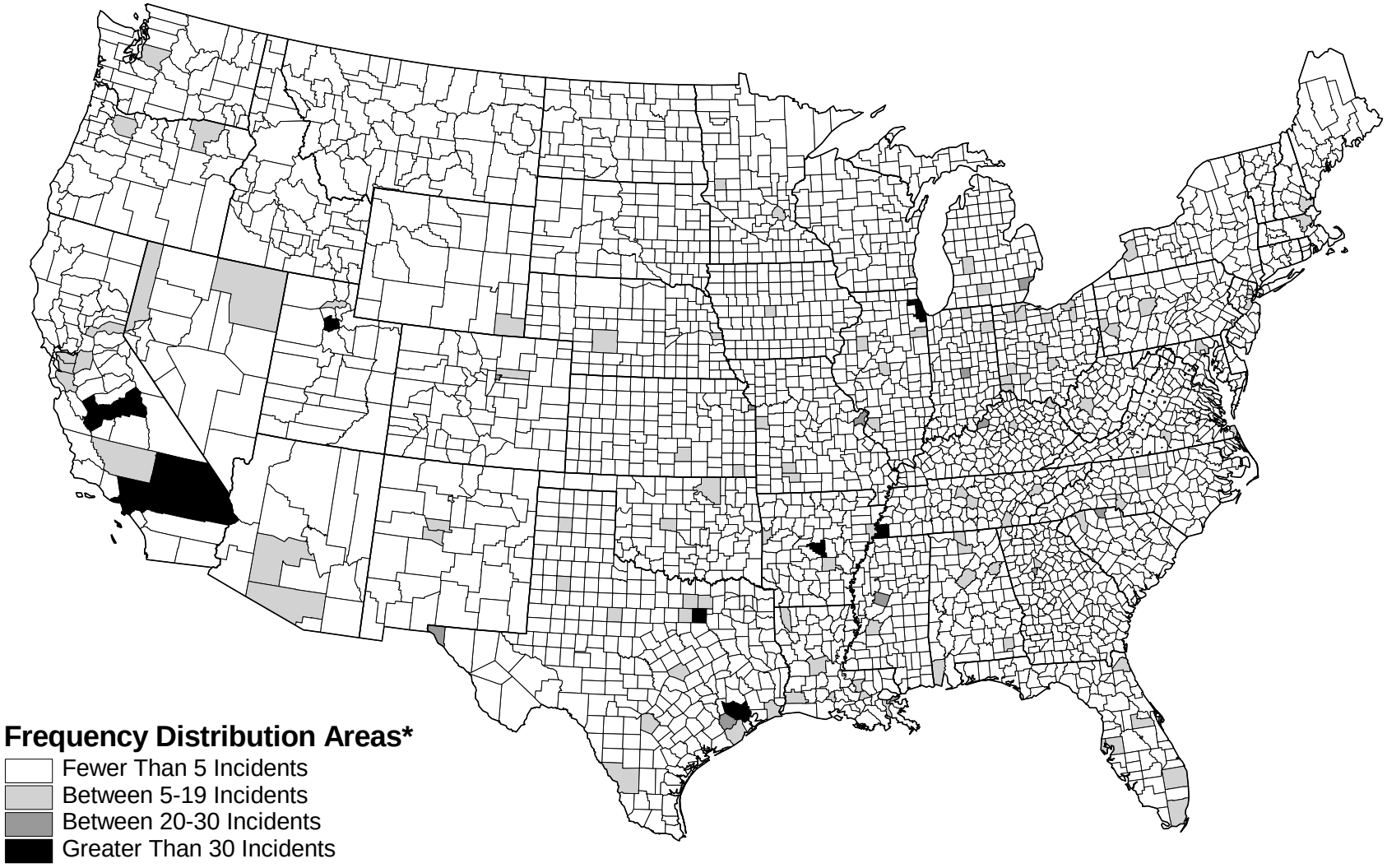
Hazardous Materials Incidents by Incident Location - 1998
En Route Incidents



* Areas shown are U.S. Counties.

Exhibit 11.6.2

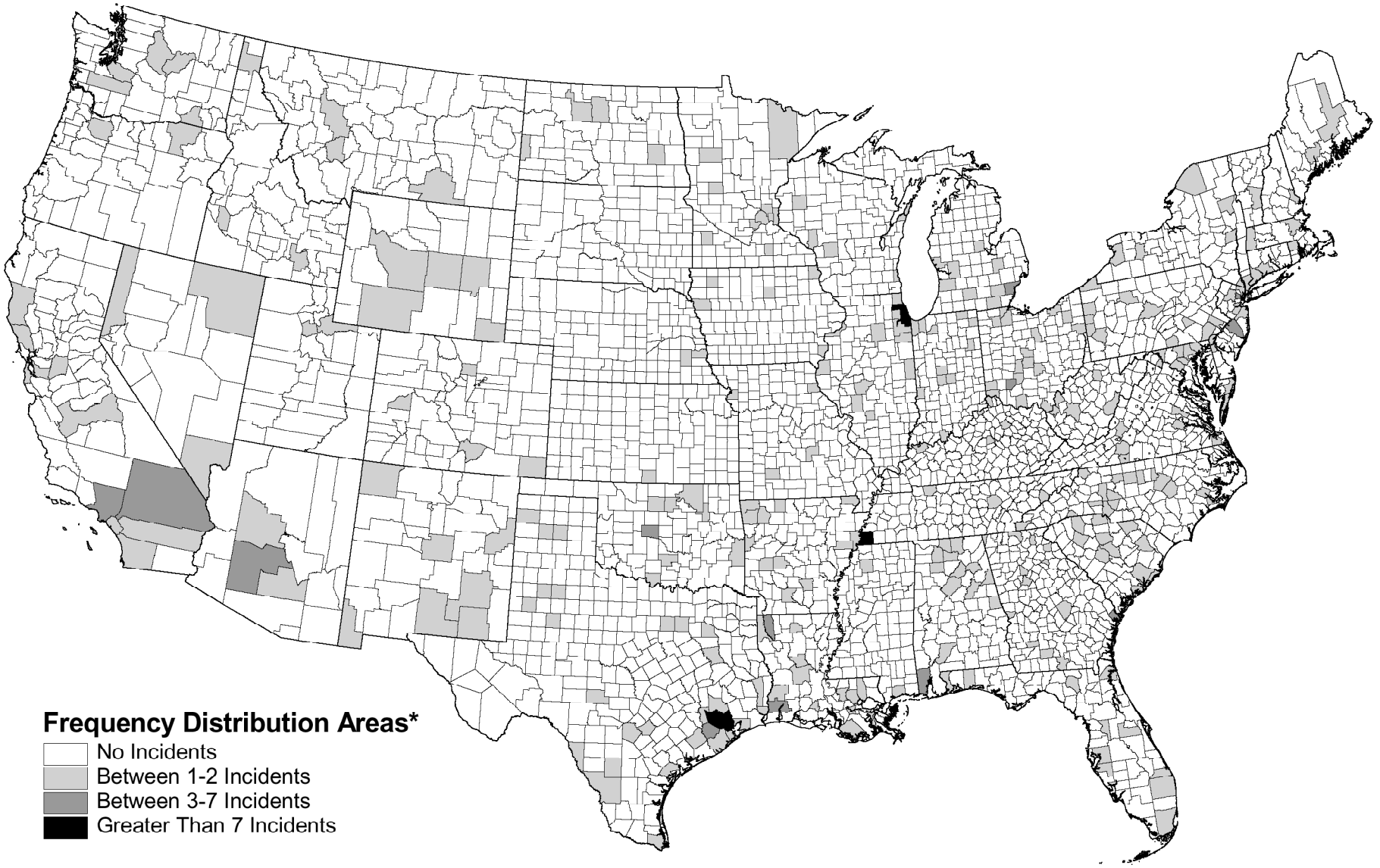
Hazardous Materials Incidents by Incident Location - 1999
En Route Incidents



* Areas shown are U.S. Counties.

Exhibit 11.7.1

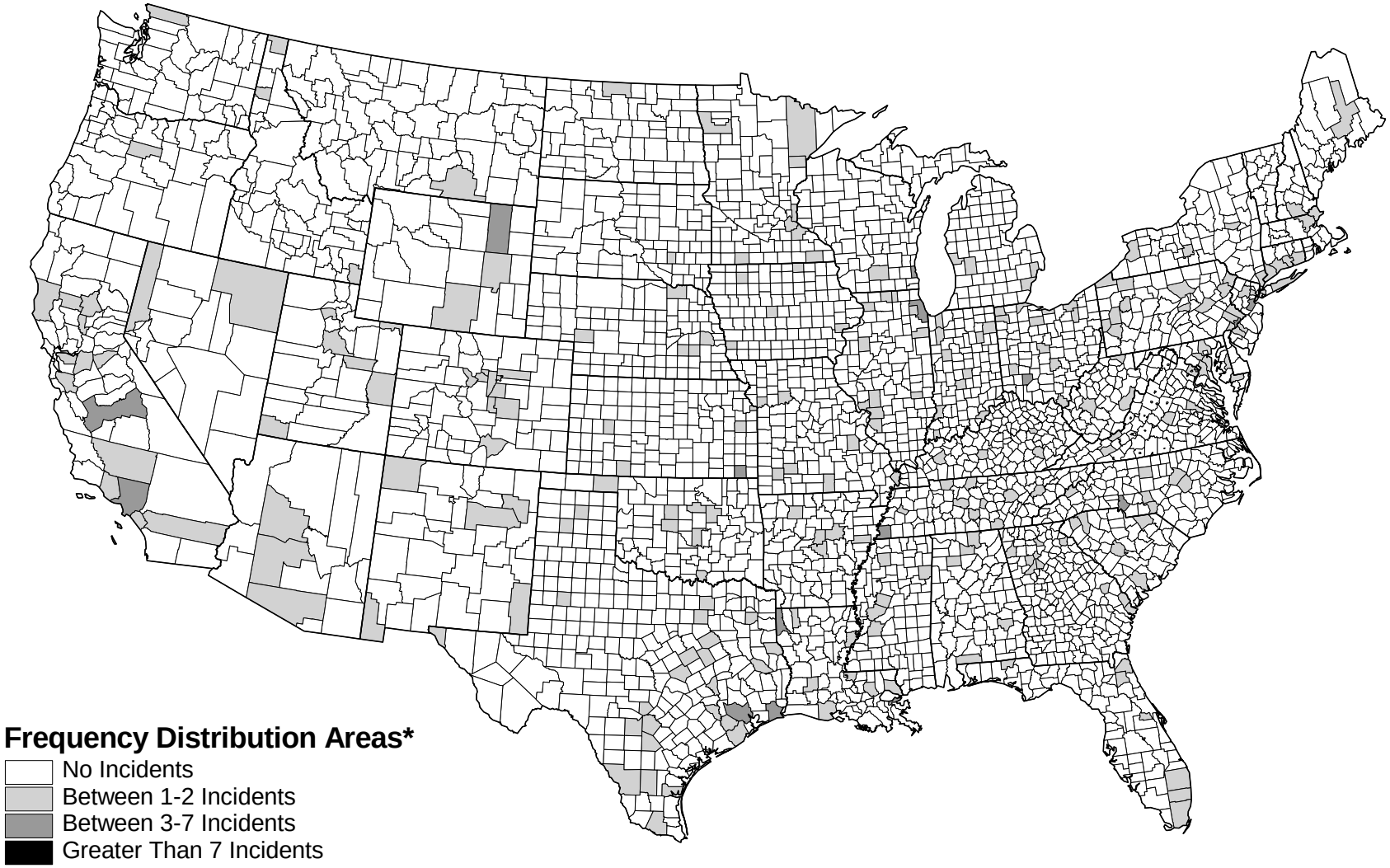
Hazardous Materials Incidents by Incident Location - 1998
Serious Incidents



* Areas shown are U.S. Counties.

Exhibit 11.7.2

Hazardous Materials Incidents by Incident Location - 1999
Serious Incidents



* Areas shown are U.S. Counties.