# SAFETY PERFORMANCE DATA

In 1971, the Research and Special Programs Administration (RSPA) of the Department of Transportation (DOT) established the Hazardous Materials Information System (HMIS) to fulfill the requirements of the Federal Hazardous Materials Transportation law. RSPA's Office of Hazardous Materials Safety maintains the 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.

The HMIS migration from its existing database management system into a more robust environment continued in 2001. RSPA expects this migration to improve system performance, maintenance, and accessibility. Alternative methods of archiving incident source documents are ongoing to improve the HMIS storage capability and the ease of retrieving reports. RSPA continues to make more data and reports available to the public on the Office of Hazardous Materials Safety Internet Home Page.

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**PLEASE NOTE:**
The following analysis is based on HMIS Incident Reports received by DOT through June 12, 2002, and is not based on the most current incident information. Each month DOT continues to receive and process Incident Reports for the current and previous years.

To see the most up-to-date Incident information, please see the "Hazardous Materials Incident Summary Statistics and Data" reached from the SPILLS section of the Office of Hazardous Materials Safety web site:

http://hazmat.dot.gov/spills.htm

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**2000 and 2001 Safety Statistics** (Data as of June 12, 2002)

The Department of Transportation has received hazardous materials incident reports since 1971. The total number of reported hazardous materials incidents peaked in 1999. As shown in the table below, the number of reported incidents remained close to that level in 2000 and 2001, dropping 0.4 percent each year.

**Evaluation of Change**
**Total Hazardous Materials Incidents from 1999 to 2001 by Year and Mode**

| | 1999 | 2000 | | | | 2001 | | | |
|---|---|---|---|---|---|---|---|---|---|
| Transportation Modes | 1999 Incidents | 2000 Incidents | Mode % of Total | 2000 Diff from 1999 | % Diff from 1999 | 2001 Incidents | Mode % of Total | 2001 Diff from 2000 | % Diff from 2000 |
| **Air** | **1,583** | **1,420** | 8.1% | -163 | -10.3% | **1,074** | 6.1% | -346 | -24.4% |
| **Highway** | **14,989** | **15,089** | 85.8% | +100 | 0.7% | **15,535** | 88.7% | +446 | 3.0% |
| **Rail** | **1,074** | **1,054** | 6.0% | -20 | -1.9% | **893** | 5.1% | -161 | -15.3% |
| **Water** | **8** | **17** | 0.1% | +9 | 112.5% | **4** | >.1% | -13 | -76.5% |
| **Total Incidents** | **17,654** | **17,580** | | -74 | -0.4% | **17,506** | | -74 | -0.4% |

The majority of reported incidents are highway incidents. Highway incidents increased each year, while air and rail incidents decreased. Air incidents, in particular, have decreased significantly since 1999 when air incidents were at their highest since the beginning of the program. Additionally, air incident injuries continued their downward trend from a high of 57 in 1994 to 5 in 2000 and 13 in 2001. Although there are very few non-bulk water incidents, the 17 non-bulk water incidents in 2000 are the highest number reported in twenty years.

Serious incidents, which RSPA has defined 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, increased by 8.2 percent from 1999 to 2000 and then decreased by 16.9 percent from 2000 to 2001.

**Evaluation of Change**
**Serious Hazardous Materials Incidents from 1999 to 2001 by Year and Mode**

| | 1999 | 2000 | | | | 2001 | | | |
|---|---|---|---|---|---|---|---|---|---|
| Transportation Modes | 1999 Serious Incidents | 2000 Serious Incidents | Mode % of Total | 2000 Diff from 1999 | % Diff from 1999 | 2001 Serious Incidents | Mode % of Total | 2001 Diff from 2000 | % Diff from 2000 |
| **Air** | **15** | **12** | 2.4% | -3 | -20.0% | **11** | 2.6% | -1 | -8.3% |
| **Highway** | **379** | **394** | 78.3% | +15 | 4.0% | **341** | 81.6% | -53 | -13.5% |
| **Rail** | **71** | **95** | 18.9% | +24 | 33.8% | **66** | 15.8% | -29 | -30.5% |
| **Water** | **0** | **2** | 0.4% | +2 | | **0** | 0.0% | -2 | -100.0% |
| **Total Serious** | **465** | **503** | | +38 | 8.2% | **418** | | -85 | -16.9% |

Serious incidents were 2.9 percent of all 2000 incidents and 2.4 percent of all 2001 incidents. In 2000, bulk incidents, while only 18.4 percent of all incidents, accounted for 80.9 percent of all serious incidents. In 2001, bulk incidents were 17.3 percent of all incidents and 81.1 percent of all serious incidents.

Examining the incidents by hazard class, corrosive materials and flammable-combustible liquids were involved in the most incidents, accounting for about 80 percent of all incidents in both 2000 and 2001. Flammable-combustible liquids, corrosive materials, and flammable gas accounted for over 70 percent of serious incidents in both 2000 and 2001.

**2000 and 2001 Incidents Resulting in Fatalities**

Fourteen incidents in 2000 resulted in 16 fatalities:

- Eight were the result of a vehicle crash that caused the loads to ignite (seven loads were gasoline and the other was fuel oil).
- One fatality incident was the result of a vehicle crash that released anhydrous ammonia vapor.
- Five were caused by problems that occurred while unloading the material. One of these unloading incidents also caused a fire that burned down a public school (after school hours).

Four incidents in 2001 resulted in seven fatalities:

- All four incidents involved flammable liquids transported by highway.
- Six of the fatalities were caused by three incidents of gasoline cargo tank crashes.
- One fatality occurred as a result of improper unloading of hydrocarbon liquid from a tank truck into a storage tank.

**2000 and 2001 Incidents Resulting in Evacuations**

Five rail incidents and two highway incidents in 2000 involved the evacuation of a thousand or more people:

- Five rail cars released 86,000 gallons of a flammable liquid, n.o.s., in Scottsbluff, NE. Local authorities evacuated approximately 3,200 people in the surrounding 25 square blocks for about two days.
- As a result of a multi-car derailment in Eunice, LA, various hazardous materials were released from seven rail cars and 2,500 people were evacuated.
- A release of hydrochloric acid vapor, due to the failure of a rail car's rubber liner, resulted in the evacuation of approximately 2,400 people in Sterling Heights, MI, for about twelve hours.
- An eleven block area of New Iberia, LA, was evacuated for about 24 hours after a train derailment resulted in a release of 600 gallons of xylenes.
- A highway shipment of nitric acid in an unlabeled 55 gallon drum was accidently unloaded into a container of hypochlorite solution at a high school in St. Paul, MN, causing a chemical reaction resulting in a vapor release. 1,500 people at the school were evacuated while the site was neutralized.
- When the rear wheels detached from the trailer of a truckload of 1.2E explosives in Keystone, NJ, the road was closed and 1,200 people in the immediate area were evacuated as a safety precaution.

- The crew of a passing train observed smoke coming from a boxcar under seal in Danville, KY. The boxcar, containing sodium dithionite, was isolated in the yard by evacuating 1,000 people in the surrounding community for about three hours. The car was then moved to a more isolated area for emergency handling and five residences in that area were evacuated for four days.

In each 2001 evacuation incident, less than 1,000 people were evacuated. The two highest incidents of evacuation involved 500 and 700 people respectively.

- A tank car of sodium hydroxide solution was sideswiped and derailed in the Gadsden, AL, rail yard. Ten gallons of the product was released and approximately 500 people were evacuated.
- Due to a track failure, a tank car of acrylamide derailed, turned over on its side, and released about 300 gallons of the product. As a result, 700 people were evacuated.

**2000 and 2001 Incidents Resulting in High Damage Costs**

There were five train derailments and seven tank truck crashes in 2000 that resulted in damages greater than $1 million. The five derailments accounted for 80.4 percent of all damages due to rail and 27.8 percent of all reported damages. The seven crashes accounted for 34.3 percent of all damages due to highway and 22.2 percent of all reported damages.

There were five train derailments and four tank truck crashes in 2001 that resulted in damages greater than $1 million. The five train derailments accounted for 62.7 percent of all damages due to rail and 22.2 percent of all reported damages. The four tank truck crashes accounted for 14.6 percent of all damages due to highway and 9.4 percent of all reported damages.

The incidents described above maintain the urgency of DOT's continuous work to improve safety in transporting hazardous materials.

**Description of Charts and Graphs** (Data as of June 12, 2002)

Exhibits 1.1 and 1.2 summarize hazardous materials transportation incidents over the past eight years. The number of incidents increased significantly in 1994 and dropped through 1995 and 1996. Since then, the number of incidents gradually increased to over 17,000 in 1999, 2000, and 2001. Highway, clearly the most prevalent mode for incidents, accounted for the majority of incidents (86 percent) in the period from 1992 to 2001. Highway accounted for all fatalities except in 1996, when an air incident and two rail incidents resulted in fatalities, and in 2000, when one rail incident resulted in a fatality. The high number of rail injuries in 1996 were due to one derailment incident that resulted in 787 minor injuries. Serious incidents have remained relatively steady from 1992 through 2001, with the average number of serious incidents per year being just under 450.

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

Exhibit 1.4 summarizes hazardous waste incidents over the past eight years. The average number of hazardous waste incidents over the last eight years has been just over 450. However, the number of incidents in 2000 is 23 percent lower than that average, and the number in 2001 is 30 percent lower. The only hazardous waste incident that resulted in a fatality occurred in 1996. 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 and a return to previous years' levels by 2001. 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 noticeable reductions in bulk rail incidents in 1998 and 2001.

Exhibit 3.1 displays the hazardous materials incidents reported since 1987 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 increases in incident reporting in 1994 and in 1999 and the subsequent plateau through 2001 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 over the last 12 years.

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 corrosive materials and flammable-combustible liquids. 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 2000, corrosive materials, spontaneously combustible materials, flammable-combustible liquids, and poisonous materials accounted for more than 72 percent of injuries. In 2001 corrosive materials and flammable-combustible liquids, alone, accounted for over 68 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 each year.

Exhibits 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 74.5 percent of all incidents in 2000 and 75.6 percent of all incidents in 2001. 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. Serious incidents equaled less than three percent of all incidents in 2000 as well as in 2001. 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 79.8 percent of the costs associated with incidents involving damages in 2000 and 83.2 percent of those costs in 2001.

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 both 2000 and 2001. Combined with package failure, these two causes are responsible for over 97 percent of all incidents each year. Note that for accidents and derailments the cause of the crash 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 2000 and 2001. While highway had the highest number of incidents with evacuations, rail incidents caused the greatest number of people to be evacuated.

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 resulted in the highest number of fatalities. Unloading incidents result in the second largest number of fatalities, the most minor 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 injury incidents result from bulk and non-bulk incidents, bulk incidents lead to significantly more incidents with major injuries and damages greater than $50,000, and accounted for all the incidents with fatalities. Non-bulk incidents accounted for the majority of evacuation incidents.

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. Fatalities are distributed from 9 a.m. to midnight in 2000, but were distributed throughout the 24 hour period in 2001.

Exhibits 9.1 and 9.2 show the number of serious bulk and non-bulk hazardous materials incidents by time of day. Most serious incidents occurred between 6 a.m. and 3 p.m.

Exhibits 10.1 and 10.2 display the breakdown of hazardous materials incidents, fatalities, injuries, 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 2000 and 2001 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 - location of all incidents reported to RSPA.
- Exhibits 11.2.1 and 11.2.2 - origin of shipments that resulted in an incident.
- Exhibits 11.3.1 and 11.3.2 - location of highway incidents.
- Exhibits 11.4.1 and 11.4.2 - location of rail incidents.
- Exhibits 11.5.1 and 11.5.2 - location of loading and unloading incidents.
- Exhibits 11.6.1 and 11.6.2 - location of incidents that occurred en route.
- Exhibits 11.7.1 and 11.7.2 - 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 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | Total |
|---|---|---|---|---|---|---|---|---|---|
| **Incidents by Mode** | | | | | | | | | |
| Air | 929 | 813 | 918 | 1,029 | 1,386 | 1,583 | 1,420 | 1,074 | 9,152 |
| Highway | 13,995 | 12,764 | 11,916 | 11,864 | 13,111 | 14,989 | 15,089 | 15,535 | 109,263 |
| Railway | 1,157 | 1,153 | 1,112 | 1,103 | 989 | 1,074 | 1,054 | 893 | 8,535 |
| Water | 6 | 12 | 6 | 5 | 14 | 8 | 17 | 4 | 72 |
| Other | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTALS | 16,087 | 14,742 | 13,952 | 14,001 | 15,500 | 17,654 | 17,580 | 17,506 | 127,022 |
| **Deaths by Mode** | | | | | | | | | |
| Air | 0 | 0 | 110 | 0 | 0 | 0 | 0 | 0 | 110 |
| Highway | 11 | 7 | 8 | 12 | 13 | 8 | 15 | 7 | 81 |
| Railway | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 3 |
| Water | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTALS | 11 | 7 | 120 | 12 | 13 | 8 | 16 | 7 | 194 |
| **Injuries by Mode** | | | | | | | | | |
| Air | 57 | 33 | 33 | 24 | 20 | 12 | 5 | 13 | 197 |
| Highway | 425 | 296 | 216 | 152 | 151 | 217 | 161 | 93 | 1,711 |
| Railway | 95 | 71 | 926 | 45 | 22 | 35 | 82 | 29 | 1,305 |
| Water | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 2 |
| Other | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTALS | 577 | 400 | 1,175 | 221 | 195 | 264 | 248 | 135 | 3,215 |
| **Damages by Mode (in Dollars)** | | | | | | | | | |
| Air | 177,695 | 100,582 | 87,188 | 336,178 | 266,628 | 286,082 | 271,629 | 308,126 | 1,834,108 |
| Highway | 25,242,713 | 22,144,029 | 29,256,831 | 24,719,802 | 28,613,957 | 32,192,927 | 49,607,673 | 38,188,548 | 249,966,480 |
| Railway | 18,673,002 | 8,485,159 | 17,385,078 | 8,355,659 | 16,363,506 | 30,606,652 | 26,520,313 | 21,019,834 | 147,409,203 |
| Water | 92,003 | 173,511 | 120,146 | 38,145 | 1,014,931 | 60,500 | 283,183 | 25,119 | 1,807,538 |
| Other | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTALS | 44,185,413 | 30,903,281 | 46,849,243 | 33,449,784 | 46,259,022 | 63,146,161 | 76,682,798 | 59,541,627 | 401,017,329 |

Source: Hazardous Materials Information System, U.S. Department of Transportation. Data as of 06/12/2002.

# Exhibit 1.2
## Incident Statistics by Mode and Reporting Year
## Serious Incidents

| Mode | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | Total |
|---|---|---|---|---|---|---|---|---|---|
| **Incidents by Mode** | | | | | | | | | |
| Air | 15 | 11 | 13 | 12 | 23 | 15 | 12 | 11 | 112 |
| Highway | 335 | 329 | 376 | 345 | 340 | 379 | 394 | 341 | 2,839 |
| Railway | 76 | 68 | 77 | 66 | 69 | 71 | 95 | 66 | 588 |
| Water | 1 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 4 |
| Other | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTALS | 427 | 409 | 466 | 423 | 432 | 465 | 503 | 418 | 3,543 |
| **Deaths by Mode** | | | | | | | | | |
| Air | 0 | 0 | 110 | 0 | 0 | 0 | 0 | 0 | 110 |
| Highway | 11 | 7 | 8 | 12 | 13 | 8 | 15 | 7 | 81 |
| Railway | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 3 |
| Water | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTALS | 11 | 7 | 120 | 12 | 13 | 8 | 16 | 7 | 194 |
| **Injuries by Mode** | | | | | | | | | |
| Air | 33 | 22 | 21 | 4 | 4 | 4 | 0 | 3 | 91 |
| Highway | 188 | 88 | 85 | 66 | 52 | 109 | 41 | 24 | 653 |
| Railway | 45 | 20 | 892 | 6 | 9 | 3 | 57 | 8 | 1,040 |
| Water | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTALS | 266 | 130 | 998 | 76 | 65 | 116 | 98 | 35 | 1,784 |
| **Damages by Mode (in Dollars)** | | | | | | | | | |
| Air | 69,871 | 6,041 | 11,410 | 6,209 | 26,168 | 6,262 | 49,134 | 68,034 | 243,129 |
| Highway | 14,485,766 | 16,744,937 | 23,826,872 | 18,777,697 | 22,419,418 | 24,166,372 | 41,622,838 | 29,962,036 | 192,005,936 |
| Railway | 12,385,233 | 7,492,260 | 16,619,721 | 7,399,115 | 15,506,579 | 28,777,181 | 25,498,079 | 20,062,796 | 133,740,964 |
| Water | 0 | 71,141 | 0 | 0 | 0 | 0 | 75,000 | 0 | 146,141 |
| Other | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTALS | 26,940,870 | 24,314,379 | 40,458,003 | 26,183,021 | 37,952,165 | 52,949,815 | 67,245,051 | 50,092,866 | 326,136,170 |

* 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.

Source: Hazardous Materials Information System, U.S. Department of Transportation. Data as of 06/12/2002.

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

| Mode | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | Total |
|---|---|---|---|---|---|---|---|---|---|
| **Incidents by Mode** | | | | | | | | | |
| Air | 0 | 0 | 0 | 1 | 2 | 0 | 1 | 1 | 5 |
| Highway | 243 | 245 | 290 | 259 | 265 | 302 | 318 | 283 | 2,205 |
| Railway | 52 | 50 | 43 | 53 | 51 | 64 | 62 | 53 | 428 |
| Water | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTALS | 295 | 295 | 333 | 313 | 318 | 366 | 381 | 337 | 2,638 |
| **Deaths by Mode** | | | | | | | | | |
| Air | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Highway | 11 | 6 | 5 | 10 | 8 | 6 | 10 | 6 | 62 |
| Railway | 0 | 0 | 2 | 0 | 0 | 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 | 11 | 6 | 7 | 10 | 8 | 6 | 10 | 6 | 64 |
| **Injuries by Mode** | | | | | | | | | |
| Air | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Highway | 95 | 14 | 22 | 11 | 9 | 15 | 15 | 8 | 189 |
| Railway | 16 | 4 | 842 | 5 | 4 | 0 | 1 | 0 | 872 |
| Water | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTALS | 111 | 18 | 864 | 16 | 13 | 15 | 16 | 8 | 1,061 |
| **Damages by Mode (in Dollars)** | | | | | | | | | |
| Air | 0 | 0 | 0 | 0 | 0 | 0 | 42,164 | 50,000 | 92,164 |
| Highway | 13,528,095 | 16,268,066 | 22,293,396 | 17,785,687 | 21,488,847 | 20,996,510 | 36,712,293 | 28,923,413 | 177,996,307 |
| Railway | 12,013,577 | 7,260,124 | 15,460,065 | 7,338,960 | 15,441,681 | 28,568,371 | 23,978,356 | 19,892,439 | 129,953,573 |
| Water | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTALS | 25,541,672 | 23,528,190 | 37,753,461 | 25,124,647 | 36,930,528 | 49,564,881 | 60,732,813 | 48,865,852 | 308,042,044 |

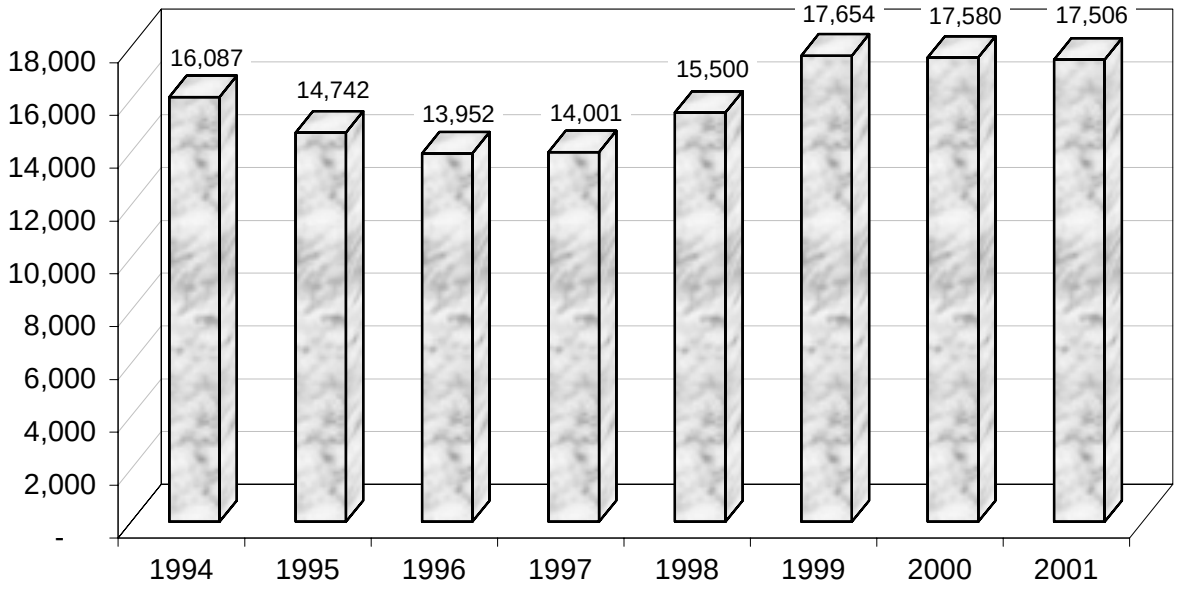
Source: Hazardous Materials Information System, U.S. Department of Transportation. Data as of 06/12/2002.

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

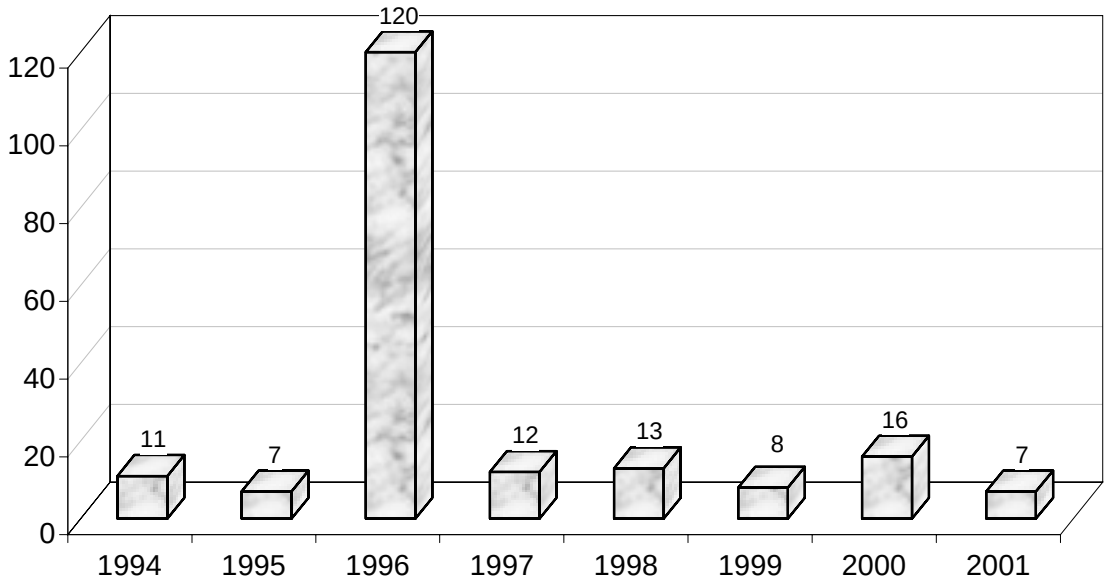
| Mode | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | Total |
|---|---|---|---|---|---|---|---|---|---|
| **Incidents by Mode** | | | | | | | | | |
| Air | 1 | 0 | 0 | 2 | 3 | 2 | 1 | 1 | 10 |
| Highway | 519 | 652 | 424 | 379 | 381 | 420 | 325 | 288 | 3,388 |
| Railway | 27 | 24 | 34 | 38 | 40 | 34 | 25 | 29 | 251 |
| Water | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTALS | 547 | 676 | 458 | 419 | 424 | 456 | 351 | 318 | 3,649 |
| **Deaths by Mode** | | | | | | | | | |
| Air | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Highway | 0 | 0 | 1 | 0 | 0 | 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 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| **Injuries by Mode** | | | | | | | | | |
| Air | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 3 |
| Highway | 4 | 23 | 10 | 9 | 4 | 21 | 12 | 6 | 89 |
| Railway | 1 | 1 | 3 | 1 | 1 | 6 | 1 | 0 | 14 |
| Water | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTALS | 5 | 24 | 13 | 10 | 7 | 27 | 13 | 7 | 106 |
| **Damages by Mode (in Dollars)** | | | | | | | | | |
| Air | 0 | 0 | 0 | 75 | 5,175 | 2,000 | 0 | 0 | 7,250 |
| Highway | 1,153,436 | 1,612,542 | 1,861,803 | 3,376,202 | 907,838 | 1,285,017 | 1,042,343 | 473,562 | 11,712,743 |
| Railway | 1,296,204 | 466,580 | 43,960 | 35,520 | 31,445 | 1,306,262 | 73,490 | 89,725 | 3,343,186 |
| Water | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTALS | 2,449,640 | 2,079,122 | 1,905,763 | 3,411,797 | 944,458 | 2,593,279 | 1,115,833 | 563,287 | 15,063,179 |

Source: Hazardous Materials Information System, U.S. Department of Transportation. Data as of 06/12/2002.

# Exhibit 2.1
## Hazardous Materials Incidents, 1994 - 2001

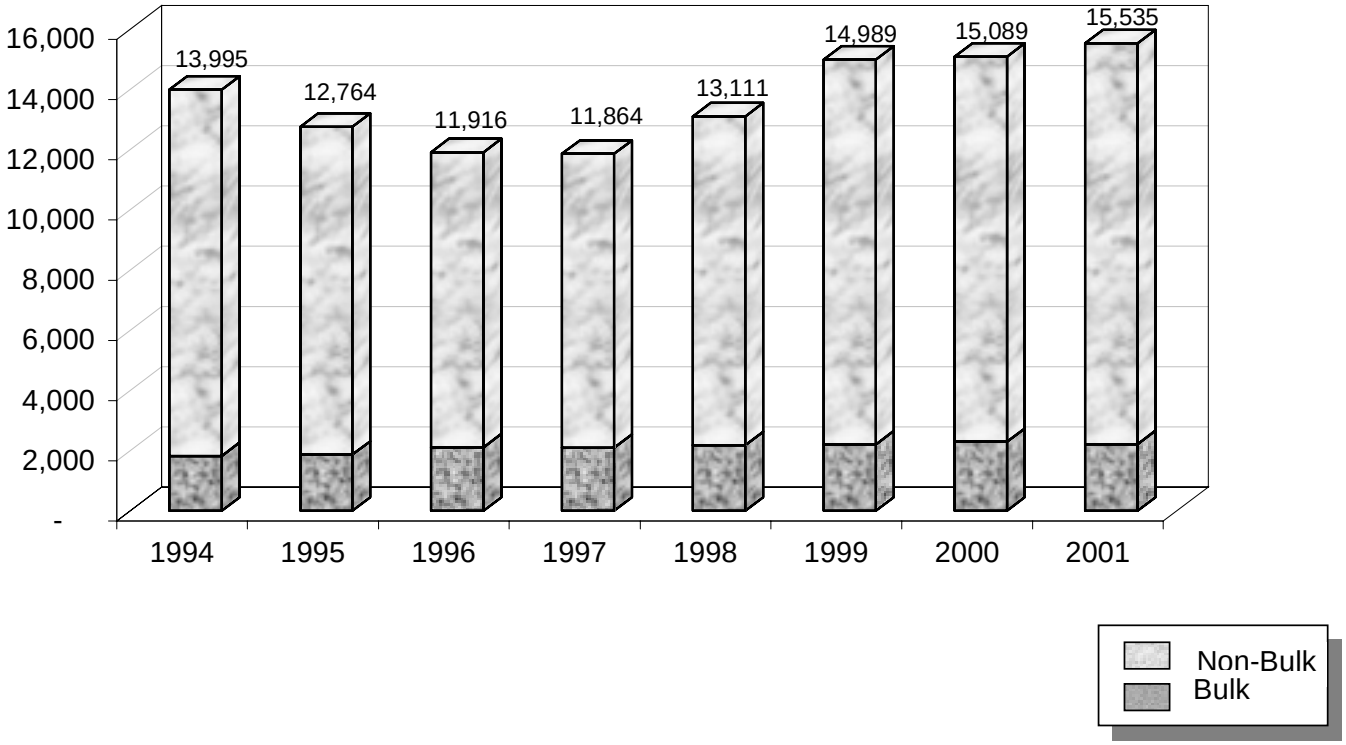



# Exhibit 2.2
## Fatalities due to Hazardous Materials, 1994 - 2001

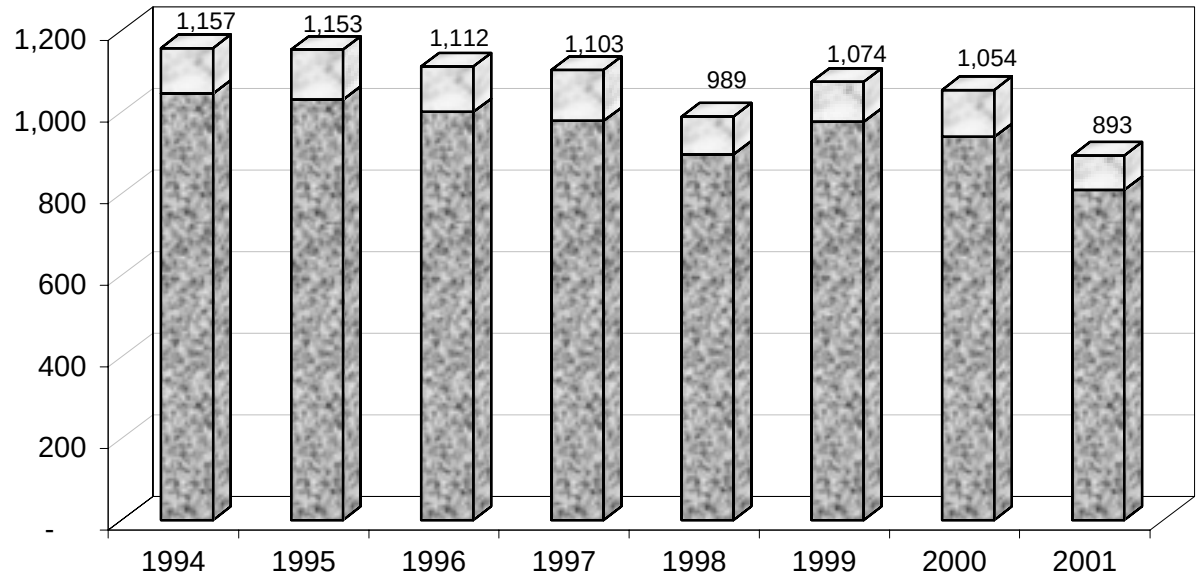



Source: Hazardous Materials Information System, U.S. Department of Transportation. Data as of 06/12/2002.

# Exhibit 2.3
## Hazardous Materials Incidents, 1994 - 2001
## Highway by Bulk and Non-Bulk

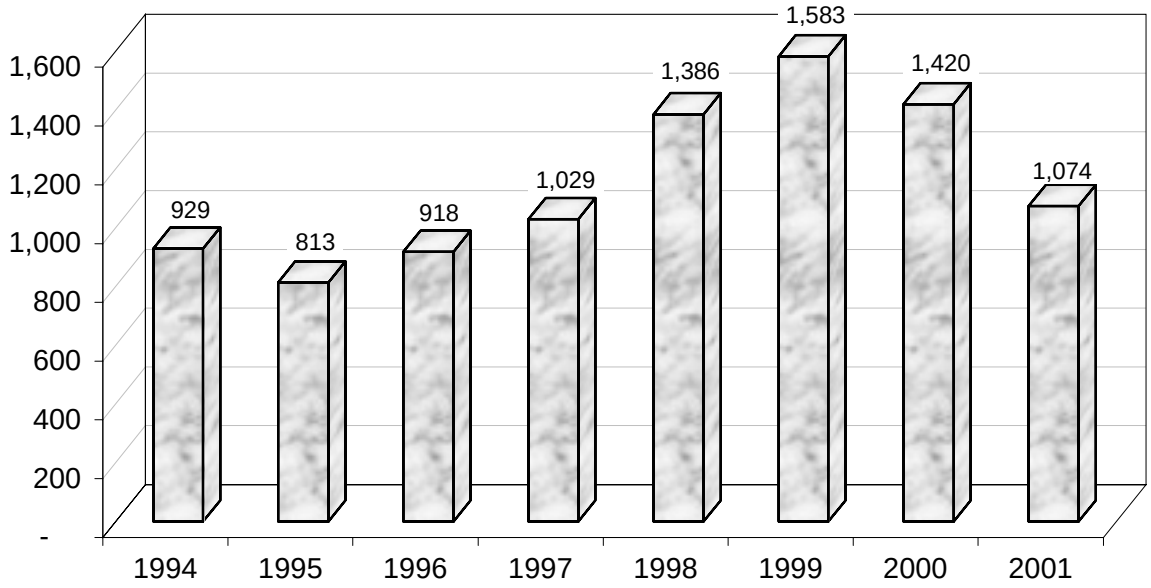



# Exhibit 2.4
## Hazardous Materials Incidents, 1994 - 2001
## Rail by Bulk and Non-Bulk

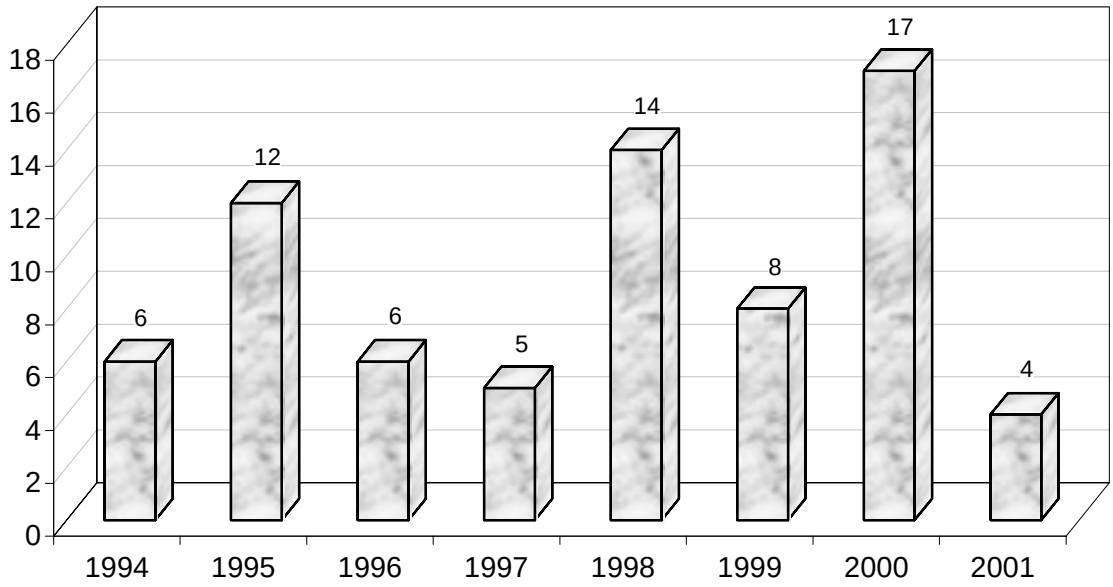



Source: Hazardous Materials Information System, U.S. Department of Transportation. Data as of 06/12/2002.

# Exhibit 2.5
## Hazardous Materials Incidents, 1994 - 2001
## Air

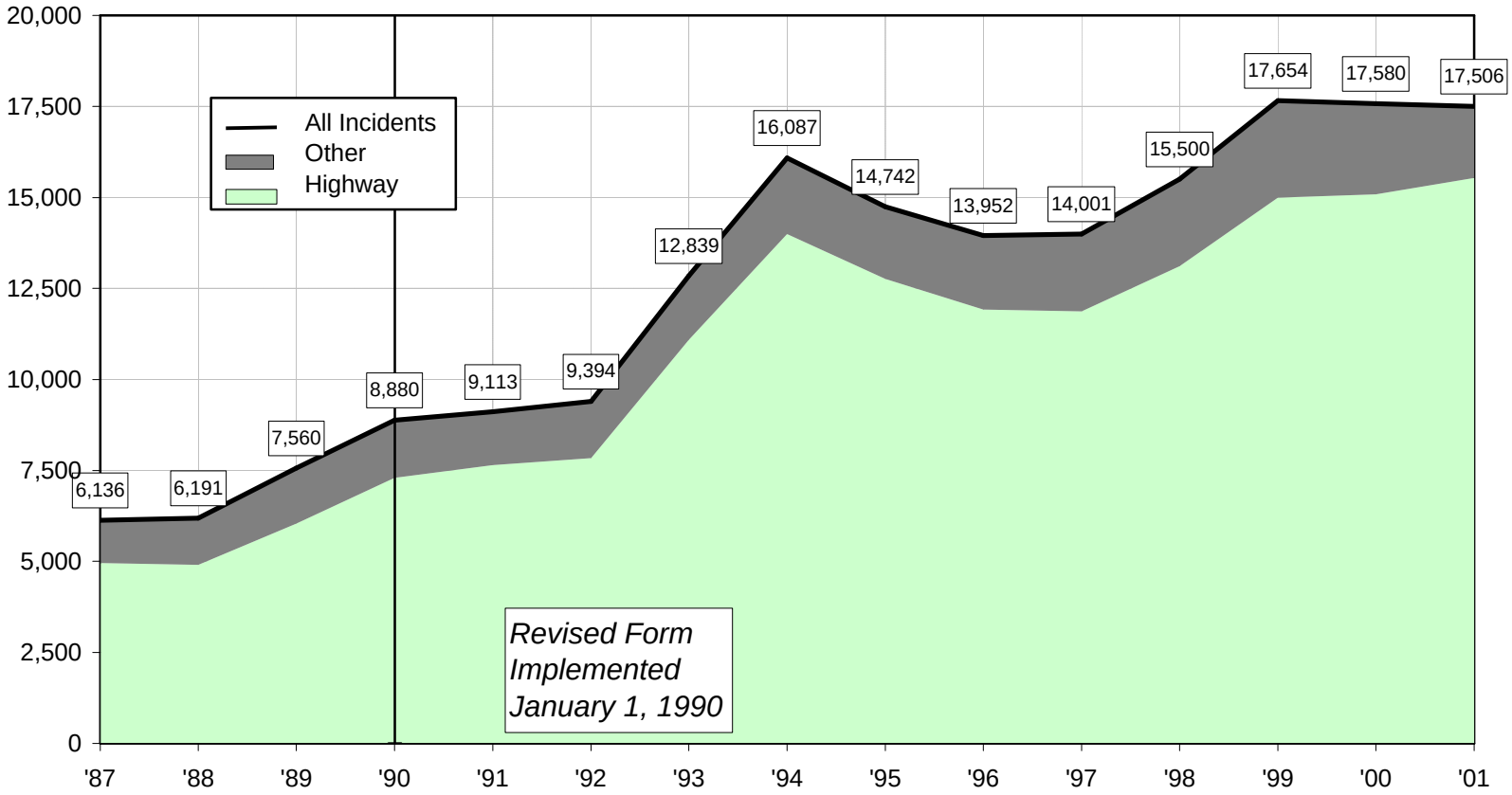



# Exhibit 2.6
## Hazardous Materials Incidents, 1994 - 2001
## Water



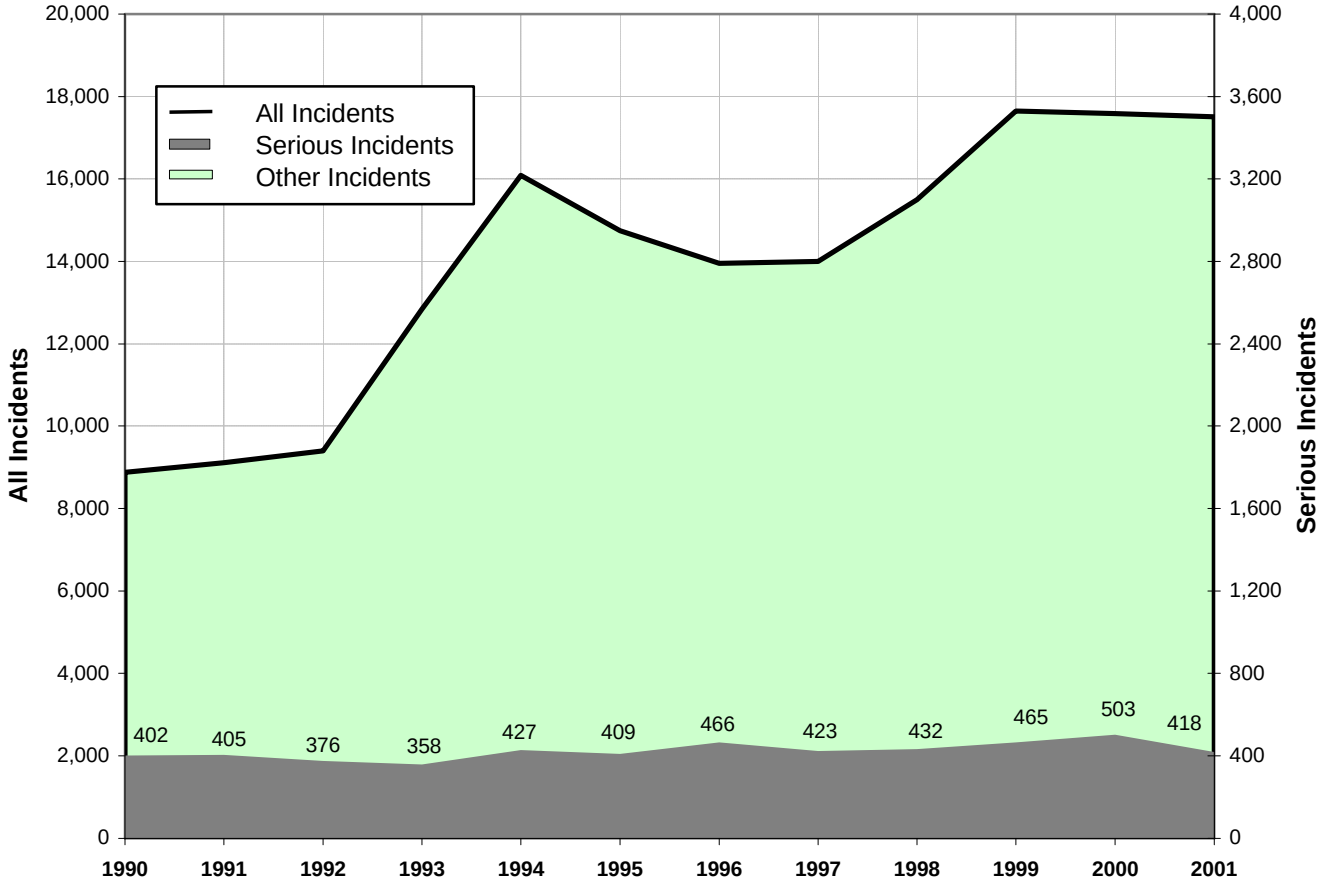

Source: Hazardous Materials Information System, U.S. Department of Transportation. Data as of 06/12/2002.

# Exhibit 3.1
## Hazardous Materials Incidents, 1987-2001




Source: Hazardous Materials Information System, U.S. Department of Transportation. Data as of 06/12/2002.

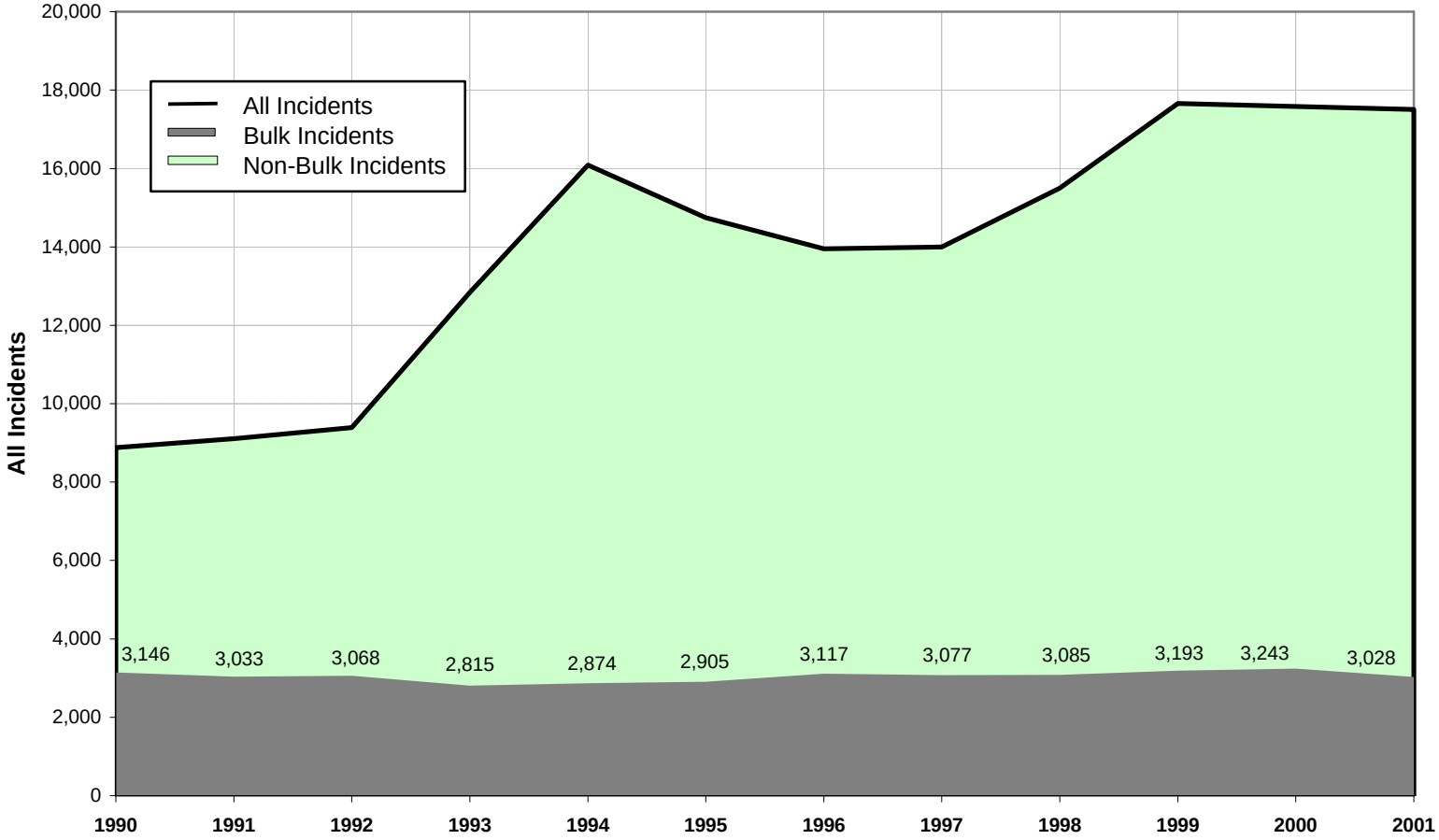
# Exhibit 3.2
## Hazardous Materials Incidents, 1990-2001
## Serious Incidents




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 or derailment resulting in the release of a hazardous material.

Source: Hazardous Materials Information System, U.S. Department of Transportation. Data as of 06/12/2002.

# Exhibit 3.3
## Hazardous Materials Incidents, 1990-2001
## Bulk and Non-Bulk Incidents




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

Source: Hazardous Materials Information System, U.S. Department of Transportation. Data as of 06/12/2002.

# Exhibit 4.1.1
# Incidents and Damages by Hazard Class - 2000

| 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 | 7,100 | 40.3 | 1 | 5,648 | 10,646,799 | 13.9 | 3 |
| Flammable - Combustible Liquid | 6,861 | 39.0 | 2 | 5,143 | 34,752,183 | 45.3 | 1 |
| Poisonous Materials | 1,010 | 5.7 | 3 | 720 | 4,788,172 | 6.2 | 5 |
| Miscellaneous Hazardous Material | 574 | 3.3 | 4 | 337 | 11,560,036 | 15.1 | 2 |
| Nonflammable Compressed Gas | 423 | 2.4 | 5 | 280 | 1,181,257 | 1.5 | 9 |
| Oxidizer | 417 | 2.4 | 6 | 314 | 1,214,290 | 1.6 | 8 |
| Combustible Liquid | 338 | 1.9 | 7 | 246 | 2,098,760 | 2.7 | 6 |
| Flammable Gas | 249 | 1.4 | 8 | 117 | 6,875,211 | 9.0 | 4 |
| Organic Peroxide | 203 | 1.2 | 9 | 192 | 173,991 | 0.2 | 12 |
| Infectious Substance (Etiologic) | 140 | 0.8 | 10 | 75 | 4,476 | <.1 | 19 |
| Flammable Solid | 116 | 0.7 | 11 | 70 | 1,644,665 | 2.1 | 7 |
| Other Regulated Material,Class D | 61 | 0.3 | 12 | 33 | 2,252 | <.1 | 20 |
| Poisonous Gas | 47 | 0.3 | 13 | 27 | 878,537 | 1.1 | 10 |
| Dangerous When Wet Material | 19 | 0.1 | 14 | 13 | 83,407 | 0.1 | 13 |
| Spontaneously Combustible | 17 | 0.1 | 15 | 12 | 579,833 | 0.8 | 11 |
| Radioactive Material | 13 | 0.1 | 16 | 2 | 83,000 | 0.1 | 14 |
| Explosive No Blast Hazard | 10 | 0.1 | 17 | 4 | 42,269 | 0.1 | 16 |
| Very Insensitive Explosive | 4 | <.1 | 18 | 2 | 53,140 | 0.1 | 15 |
| Explosive Mass Explosion Hazard | 2 | <.1 | 19 | 1 | 5,000 | <.1 | 18 |
| Explosive Projection Hazard | 2 | <.1 | 19 | 1 | 15,435 | <.1 | 17 |
| Explosive Fire Hazard | 1 | <.1 | 21 | 1 | 85 | <.1 | 21 |
| **TOTALS** | | **100.0** | | | **$76,682,798** | **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 "Number of Reported Incidents" column.

All percent figures are rounded to the nearest tenth.

* No reports were received for other hazard classes.

Source: Hazardous Materials Information System, U.S. Department of Transportation. Data as of 06/12/2002.

# Exhibit 4.1.2
## Incidents and Damages by Hazard Class - 2001

| 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 | 7,038 | 40.2 | 1 | 5,771 | 10,408,766 | 17.5 | 2 |
| Flammable - Combustible Liquid | 6,813 | 38.9 | 2 | 5,231 | 32,438,846 | 54.5 | 1 |
| Poisonous Materials | 1,143 | 6.5 | 3 | 909 | 4,192,138 | 7.0 | 4 |
| Miscellaneous Hazardous Material | 582 | 3.3 | 4 | 343 | 6,203,016 | 10.4 | 3 |
| Oxidizer | 456 | 2.6 | 5 | 372 | 1,067,695 | 1.8 | 7 |
| Nonflammable Compressed Gas | 423 | 2.4 | 6 | 304 | 1,334,796 | 2.2 | 6 |
| Combustible Liquid | 298 | 1.7 | 7 | 215 | 2,767,032 | 4.6 | 5 |
| Flammable Gas | 203 | 1.2 | 8 | 106 | 718,142 | 1.2 | 8 |
| Organic Peroxide | 178 | 1.0 | 9 | 145 | 106,237 | 0.2 | 9 |
| Infectious Substance (Etiologic) | 139 | 0.8 | 10 | 21 | 2,329 | <.1 | 19 |
| Flammable Solid | 119 | 0.7 | 11 | 77 | 58,745 | 0.1 | 11 |
| Other Regulated Material,Class D | 47 | 0.3 | 12 | 21 | 28,504 | <.1 | 13 |
| Poisonous Gas | 38 | 0.2 | 13 | 21 | 51,547 | 0.1 | 12 |
| Spontaneously Combustible | 16 | 0.1 | 14 | 11 | 10,320 | <.1 | 18 |
| Dangerous When Wet Material | 14 | 0.1 | 15 | 8 | 24,100 | <.1 | 16 |
| Explosive No Blast Hazard | 8 | <.1 | 16 | 3 | 61,025 | 0.1 | 10 |
| Radioactive Material | 8 | <.1 | 16 | 2 | 24,694 | <.1 | 15 |
| Explosive Mass Explosion Hazard | 3 | <.1 | 18 | 2 | 25,120 | <.1 | 14 |
| Explosive Fire Hazard | 2 | <.1 | 19 | 2 | 18,075 | <.1 | 17 |
| Very Insensitive Explosive | 1 | <.1 | 20 | 1 | 500 | <.1 | 20 |
| **TOTALS** | | **100.0** | | | **$59,541,627** | **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.

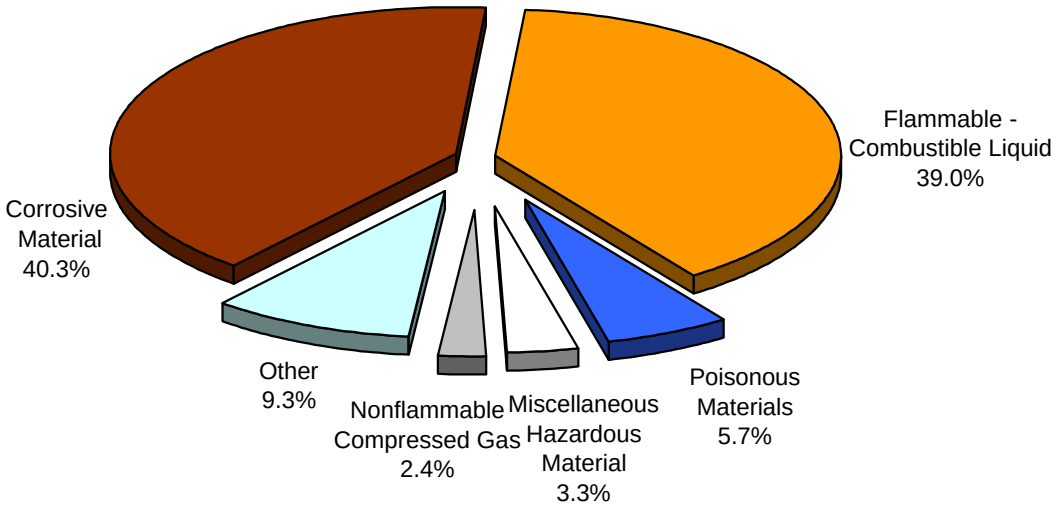
The "Percent of Reported Incidents" is based on the sum of the "Reported Number of Incidents" column.

* All percent figures are rounded to the nearest tenth.

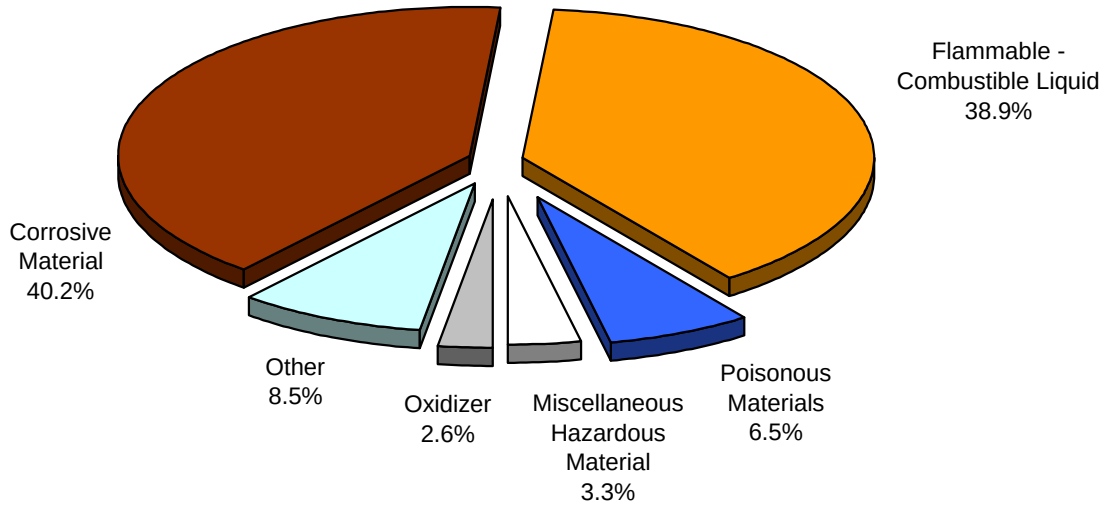
** No reports were received for other hazard classes.

Source: Hazardous Materials Information System, U.S. Department of Transportation. Data as of 06/12/2002.

# Exhibit 4.1.3
## Incidents by Hazard Class - 2000




# Exhibit 4.1.4
## Incidents by Hazard Class - 2001




Source: Hazardous Materials Information System, U.S. Department of Transportation. Data as of 06/12/2002.

# Exhibit 4.2.1

## Hazardous Materials Incidents - 2000
## 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 | 88 | 35.5 | 5 | 83 | 5 | 67 | 69 |
| Spontaneously Combustible | 40 | 16.1 | 0 | 40 | 0 | 1 | 1 |
| Flammable - Combustible Liquid | 26 | 10.5 | 5 | 21 | 5 | 16 | 21 |
| Poisonous Materials | 26 | 10.5 | 3 | 23 | 2 | 13 | 14 |
| Nonflammable Compressed Gas | 17 | 6.9 | 1 | 16 | 1 | 9 | 9 |
| Flammable Gas | 16 | 6.5 | 5 | 11 | 5 | 6 | 11 |
| Oxidizer | 14 | 5.6 | 0 | 14 | 0 | 1 | 1 |
| Infectious Substance (Etiologic) | 10 | 4.0 | 0 | 10 | 0 | 10 | 10 |
| Poisonous Gas | 6 | 2.4 | 0 | 6 | 0 | 3 | 3 |
| Miscellaneous Hazardous Material | 3 | 1.2 | 0 | 3 | 0 | 3 | 3 |
| Combustible Liquid | 1 | 0.4 | 0 | 1 | 0 | 1 | 1 |
| Organic Peroxide | 1 | 0.4 | 0 | 1 | 0 | 1 | 1 |
| **TOTALS** | **248** | **100.0** | **19** | **229** | **18** | **131** | **144** |

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.

Source: Hazardous Materials Information System, U.S. Department of Transportation. Data as of 06/12/2002.

# Exhibit 4.2.2

## Hazardous Materials Incidents - 2001
## 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 | 69 | 51.1 | 6 | 63 | 6 | 53 | 58 |
| Flammable - Combustible Liquid | 23 | 17.0 | 4 | 19 | 4 | 16 | 19 |
| Flammable Gas | 8 | 5.9 | 4 | 4 | 4 | 4 | 8 |
| Nonflammable Compressed Gas | 8 | 5.9 | 1 | 7 | 1 | 6 | 7 |
| Miscellaneous Hazardous Material | 7 | 5.2 | 1 | 6 | 1 | 4 | 5 |
| Infectious Substance (Etiologic) | 6 | 4.4 | 0 | 6 | 0 | 6 | 6 |
| Poisonous Materials | 4 | 3.0 | 1 | 3 | 1 | 2 | 3 |
| Oxidizer | 3 | 2.2 | 0 | 3 | 0 | 3 | 3 |
| Poisonous Gas | 3 | 2.2 | 0 | 3 | 0 | 2 | 2 |
| Combustible Liquid | 2 | 1.5 | 0 | 2 | 0 | 2 | 2 |
| Explosive No Blast Hazard | 1 | 0.7 | 0 | 1 | 0 | 1 | 1 |
| Organic Peroxide | 1 | 0.7 | 1 | 0 | 1 | 0 | 1 |
| **TOTALS** | **135** | **100.0** | **18** | **117** | **18** | **99** | **115** |

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, 1994-2001
## Fatalities by Hazard Class / Hazardous Material

| Hazard Class / Hazardous Material | Number of Fatalities | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | **1994** | **1995** | **1996** | **1997** | **1998** | **1999** | **2000** | **2001** | **Total** |
| Combustible Liquid | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 |
| Fuel Oil No. 1,2,4,5,6 | ... | ... | 1 | ... | ... | ... | ... | ... | 1 |
| Petroleum Distillate | ... | ... | 1 | ... | ... | ... | ... | ... | 1 |
| Flammable Gas | 1 | 2 | 0 | 3 | 0 | 0 | 4 | 0 | 10 |
| Acetylene Dissolved | 1 | ... | ... | ... | ... | ... | ... | ... | 1 |
| Petroleum Gases Liquefied | ... | 2 | ... | 3 | ... | ... | 4 | ... | 9 |
| Non Flammable Compressed Gas | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| Ammonia Anhydrous | ... | ... | ... | ... | ... | ... | 1 | ... | 1 |
| Poisonous Gas | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 |
| Ammonia Anhydrous | ... | ... | 1 | ... | ... | ... | ... | ... | 1 |
| Chlorine | ... | ... | 1 | ... | ... | ... | ... | ... | 1 |
| Flammable - Combustible Liquid | 9 | 5 | 6 | 9 | 13 | 7 | 10 | 7 | 66 |
| Alcohols n.o.s. | ... | ... | ... | 1 | ... | ... | ... | ... | 1 |
| Butylacrylate | ... | ... | ... | ... | 2 | ... | ... | ... | 2 |
| Diesel Fuel | ... | ... | ... | ... | ... | ... | 1 | ... | 1 |
| Flammable Liquids n.o.s. | ... | ... | 1 | 1 | ... | ... | ... | ... | 2 |
| Gasoline | 9 | 4 | 4 | 6 | 11 | 6 | 8 | 6 | 54 |
| Heptanes | ... | ... | ... | ... | ... | 1 | ... | ... | 1 |
| Hydrocarbons Liquid n.o.s. | ... | ... | 1 | ... | ... | ... | ... | 1 | 2 |
| Paint Related Material | ... | 1 | ... | ... | ... | ... | ... | ... | 1 |
| Petroleum Distillates n.o.s. | ... | ... | ... | ... | ... | ... | 1 | ... | 1 |
| Xylenes | ... | ... | ... | 1 | ... | ... | ... | ... | 1 |
| Oxidizer | 0 | 0 | 110 | 0 | 0 | 0 | 0 | 0 | 110 |
| Oxidizing Solid n.o.s. | ... | ... | 110 | ... | ... | ... | ... | ... | 110 |
| Poisonous Materials | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| Phenol Molten | ... | ... | ... | ... | ... | ... | 1 | ... | 1 |
| Corrosive Material | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| Sodium Hydrosulfide Solution | ... | ... | ... | ... | ... | 1 | ... | ... | 1 |
| Miscellaneous Hazardous | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Elevated Temp Material Liquid | 1 | ... | ... | ... | ... | ... | ... | ... | 1 |
| **Total** | **11** | **7** | **120** | **12** | **13** | **8** | **16** | **7** | **194** |

Source: Hazardous Materials Information System, U.S. Department of Transportation. Data as of 06/12/2002.

# Exhibit 4.4.1

## Incidents by Top 50 Hazardous Materials - 2000

| 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 | 1,198 | 6.8 | 26 | Toxic Liquids Organic n.o.s. | Poisonous Materials | 143 | 0.8 |
| 2 | Corrosive Liquids n.o.s. | Corrosive Material | 999 | 5.7 | 27 | Corrosive Liquid Basic Organic n.o.s. | Corrosive Material | 139 | 0.8 |
| 3 | Resin Solution | Flammable - Combustible Liquid | 752 | 4.3 | 28 | Flammable Liquids Corrosive n.o.s. | Flammable - Combustible Liquid | 137 | 0.8 |
| 4 | Corrosive Liquid Basic Inorganic n.o.s. | Corrosive Material | 615 | 3.5 | 29 | Regulated Medical Waste | Infectious Substance (Etiologic) | 136 | 0.8 |
| 5 | Sodium Hydroxide Solution | Corrosive Material | 554 | 3.2 | 30 | Compounds Cleaning Liquid PHO | Corrosive Material | 134 | 0.8 |
| 6 | Corrosive Liquid Acidic Inorganic n.o.s. | Corrosive Material | 486 | 2.8 | 31 | Petroleum Gases Liquefied | Flammable Gas | 129 | 0.7 |
| 7 | Corrosive Liquid Acidic Organic n.o.s. | Corrosive Material | 482 | 2.7 | 31 | Amines Liquid Corrosives n.o.s. | Corrosive Material | 129 | 0.7 |
| 8 | Adhesives | Flammable - Combustible Liquid | 437 | 2.5 | 33 | Organophosphorus Pesticides Solid | Poisonous Materials | 124 | 0.7 |
| 8 | Potassium Hydroxide Solution | Corrosive Material | 437 | 2.5 | 34 | Diesel Fuel | Flammable - Combustible Liquid | 123 | 0.7 |
| 10 | Phosphoric Acid | Corrosive Material | 413 | 2.3 | 35 | Extracts Flavoring Liquid | Flammable - Combustible Liquid | 120 | 0.7 |
| 11 | Caustic Alkali Liquids n.o.s. | Corrosive Material | 399 | 2.3 | 36 | Fire Extinguishers | Nonflammable Compressed Gas | 117 | 0.7 |
| 12 | Hydrochloric Acid Solution | Corrosive Material | 380 | 2.2 | 37 | Combustible Liquid n.o.s. | Combustible Liquid | 116 | 0.7 |
| 13 | Paint or Paint Related Material | Flammable - Combustible Liquid | 356 | 2.0 | 38 | Dichloromethane | Poisonous Materials | 114 | 0.6 |
| 14 | Gasoline | Flammable - Combustible Liquid | 349 | 2.0 | 39 | Coating Solution | Flammable - Combustible Liquid | 113 | 0.6 |
| 15 | Isopropanol | Flammable - Combustible Liquid | 346 | 2.0 | 40 | Environmentally Hazardous Solid n.o.s. | Miscellaneous Hazardous Material | 112 | 0.6 |
| 16 | Printing Ink Flammable | Flammable - Combustible Liquid | 311 | 1.8 | 41 | Paint Related Material | Flammable - Combustible Liquid | 108 | 0.6 |
| 17 | Sulfuric Acid | Corrosive Material | 259 | 1.5 | 42 | Corrosive Liquids Toxic n.o.s. | Corrosive Material | 96 | 0.5 |
| 18 | Petroleum Distillates n.o.s. | Flammable - Combustible Liquid | 253 | 1.4 | 42 | Methyl Ethyl Ketone | Flammable - Combustible Liquid | 96 | 0.5 |
| 19 | Fuel Oil (No. 1,2,4,5,6) | Flammable - Combustible Liquid | 237 | 1.3 | 44 | Ammonia Anhydrous | Nonflammable Compressed Gas | 91 | 0.5 |
| 20 | Ethanol | Flammable - Combustible Liquid | 209 | 1.2 | 45 | Acetone | Flammable - Combustible Liquid | 89 | 0.5 |
| 21 | Hypochlorite Solution 5-16% | Corrosive Material | 187 | 1.1 | 46 | Disinfectant Liquid Corrosive n.o.s. | Corrosive Material | 84 | 0.5 |
| 22 | Environmentally Hazardous Liquid n.o.s. | Miscellaneous Hazardous Material | 185 | 1.1 | 47 | Hydrogen Peroxide-Peroxyacetic Acid | Oxidizer | 82 | 0.5 |
| 23 | Fuel Oil No. 1,2,4,5,6 | Combustible Liquid | 165 | 0.9 | 48 | Compounds Cleaning Liquid | Flammable - Combustible Liquid | 80 | 0.5 |
| 24 | Xylenes | Flammable - Combustible Liquid | 160 | 0.9 | 49 | Compounds Cleaning Liquid | Corrosive Material | 79 | 0.4 |
| 25 | Methanol | Flammable - Combustible Liquid | 150 | 0.9 | 49 | Organic Peroxide Type E Liquid | Organic Peroxide | 79 | 0.4 |
| | | | | | | | **TOTALS** | **13,089** | **74.5** |

Note: Percentage figures are based on 17,580 incidents reported in 2000 and are rounded to the nearest tenth.

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

Source: Hazardous Materials Information System, U.S. Department of Transportation. Data as of 06/12/2002.

# Exhibit 4.4.2

## Incidents by Top 50 Hazardous Materials - 2001

| Rank | Hazardous Material | Hazard Class | Incidents | Percent of Total Incidents |
|---|---|---|---|---|
| 1 | Corrosive Liquids n.o.s. | Corrosive Material | 1,174 | 6.7 |
| 2 | Flammable Liquids n.o.s. | Flammable - Combustible Liquid | 1,171 | 6.7 |
| 3 | Resin Solution | Flammable - Combustible Liquid | 743 | 4.2 |
| 4 | Corrosive Liquid Basic Inorganic n.o.s. | Corrosive Material | 624 | 3.6 |
| 5 | Sodium Hydroxide Solution | Corrosive Material | 567 | 3.2 |
| 6 | Corrosive Liquid Acidic Organic n.o.s. | Corrosive Material | 483 | 2.8 |
| 7 | Corrosive Liquid Acidic Inorganic n.o.s. | Corrosive Material | 472 | 2.7 |
| 8 | Isopropanol | Flammable - Combustible Liquid | 441 | 2.5 |
| 9 | Phosphoric Acid | Corrosive Material | 439 | 2.5 |
| 10 | Adhesives | Flammable - Combustible Liquid | 396 | 2.3 |
| 11 | Caustic Alkali Liquids n.o.s. | Corrosive Material | 382 | 2.2 |
| 12 | Paint or Paint Related Material | Flammable - Combustible Liquid | 364 | 2.1 |
| 13 | Gasoline | Flammable - Combustible Liquid | 324 | 1.9 |
| 14 | Hydrochloric Acid Solution | Corrosive Material | 318 | 1.8 |
| 14 | Potassium Hydroxide Solution | Corrosive Material | 318 | 1.8 |
| 16 | Printing Ink Flammable | Flammable - Combustible Liquid | 317 | 1.8 |
| 17 | Organophosphorus Pesticides Solid | Poisonous Materials | 284 | 1.6 |
| 18 | Sulfuric Acid | Corrosive Material | 282 | 1.6 |
| 19 | Methanol | Flammable - Combustible Liquid | 274 | 1.6 |
| 20 | Ethanol | Flammable - Combustible Liquid | 244 | 1.4 |
| 21 | Fuel Oil (No. 1,2,4,5,6) | Flammable - Combustible Liquid | 221 | 1.3 |
| 22 | Petroleum Distillates n.o.s. | Flammable - Combustible Liquid | 202 | 1.2 |
| 23 | Fuel Oil No. 1,2,4,5,6 | Combustible Liquid | 170 | 1.0 |
| 23 | Corrosive Liquid Basic Organic n.o.s. | Corrosive Material | 170 | 1.0 |
| 25 | Xylenes | Flammable - Combustible Liquid | 165 | 0.9 |
| 25 | Environmentally Hazardous Liquid n.o.s. | Miscellaneous Hazardous Material | 165 | 0.9 |
| 27 | Fire Extinguishers | Nonflammable Compressed Gas | 154 | 0.9 |
| 28 | Disinfectant Liquid Corrosive n.o.s. | Corrosive Material | 146 | 0.8 |
| 29 | Compounds Cleaning Liquid PHO | Corrosive Material | 135 | 0.8 |
| 30 | Extracts Flavoring Liquid | Flammable - Combustible Liquid | 134 | 0.8 |
| 31 | Amines Liquid Corrosive n.o.s. | Corrosive Material | 133 | 0.8 |
| 32 | Regulated Medical Waste | Infectious Substance (Etiologic) | 132 | 0.8 |
| 33 | Flammable Liquids Corrosive n.o.s. | Flammable - Combustible Liquid | 126 | 0.7 |
| 33 | Environmentally Hazardous Solid n.o.s. | Miscellaneous Hazardous Material | 126 | 0.7 |
| 35 | Dichloromethane | Poisonous Materials | 122 | 0.7 |
| 36 | Toxic Liquids Organic n.o.s. | Poisonous Materials | 112 | 0.6 |
| 37 | Methyl Ethyl Ketone | Flammable - Combustible Liquid | 108 | 0.6 |
| 38 | Hypochlorite Solutions | Corrosive Material | 107 | 0.6 |
| 39 | Diesel Fuel | Flammable - Combustible Liquid | 104 | 0.6 |
| 40 | Corrosive Liquids Toxic n.o.s. | Corrosive Material | 100 | 0.6 |
| 41 | Acetone | Flammable - Combustible Liquid | 89 | 0.5 |
| 42 | Combustible Liquid n.o.s. | Combustible Liquid | 87 | 0.5 |
| 43 | Compounds Cleaning Liquid | Corrosive Material | 84 | 0.5 |
| 43 | Paint Related Material | Flammable - Combustible Liquid | 84 | 0.5 |
| 45 | Coating Solution | Flammable - Combustible Liquid | 82 | 0.5 |
| 46 | Ammonia Anhydrous | Nonflammable Compressed Gas | 79 | 0.5 |
| 47 | Hydrogen Peroxide-Peroxyacetic Acid | Oxidizer | 78 | 0.4 |
| 48 | Petroleum Crude Oil | Flammable - Combustible Liquid | 73 | 0.4 |
| 49 | Alcohols n.o.s. | Flammable - Combustible Liquid | 69 | 0.4 |
| 50 | Petroleum Gases Liquefied | Flammable Gas | 68 | 0.4 |
| | | **TOTALS** | **13,242** | **75.6** |

Note: Percentage figures are based on 17,506 incidents reported in 2001.

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

Source: Hazardous Materials Information System, U.S. Department of Transportation. Data as of 06/12/2002.

# Exhibit 4.5.1

## Serious Incidents by Hazardous Material - 2000

| Rank | Hazardous Material | Hazard Class | Incidents | Percent of Total Incidents |
|---|---|---|---|---|
| 1 | Gasoline | Flammable - Combustible Liquid | 92 | 0.5 |
| 2 | Petroleum Gases Liquefied | Flammable Gas | 49 | 0.3 |
| 3 | Diesel Fuel | Flammable - Combustible Liquid | 27 | 0.2 |
| 4 | Fuel Oil (No. 1,2,4,5,6) | Flammable - Combustible Liquid | 20 | 0.1 |
| 5 | Flammable Liquids n.o.s. | Flammable - Combustible Liquid | 19 | 0.1 |
| 5 | Hydrochloric Acid Solution | Corrosive Material | 19 | 0.1 |
| 7 | Fuel Oil No. 1,2,4,5,6 | Combustible Liquid | 12 | <.1 |
| 8 | Ammonia Anhydrous | Nonflammable Compressed Gas | 11 | <.1 |
| 8 | Fuel Aviation Turbine Engine | Flammable - Combustible Liquid | 11 | <.1 |
| 10 | Sulfuric Acid | Corrosive Material | 10 | <.1 |
| 10 | Environmentally Hazardous Liquid n.o.s. | Miscellaneous Hazardous Material | 10 | <.1 |
| 12 | Methanol | Flammable - Combustible Liquid | 9 | <.1 |
| 13 | Ammonium Nitrate <0.2% | Oxidizer | 8 | <.1 |
| 13 | Hypochlorite Solution 5-16% | Corrosive Material | 8 | <.1 |
| 15 | Corrosive Liquids n.o.s. | Corrosive Material | 7 | <.1 |
| 16 | Adhesives | Flammable - Combustible Liquid | 5 | <.1 |
| 16 | Paint or Paint Related Material | Flammable - Combustible Liquid | 5 | <.1 |
| 16 | Corrosive Liquid Basic Inorganic n.o.s. | Corrosive Material | 5 | <.1 |
| 16 | Elevated Temperature Material Liquid n.o.s. | Miscellaneous Hazardous Material | 5 | <.1 |
| 20 | Combustible Liquid n.o.s. | Combustible Liquid | 4 | <.1 |
| 20 | Nitric Oxide | Poisonous Gas | 4 | <.1 |
| 20 | Nitrogen Refrigerated Liquid | Nonflammable Compressed Gas | 4 | <.1 |
| 20 | Oxygen Refrigerated Liquid | Nonflammable Compressed Gas | 4 | <.1 |
| 20 | Phosphoric Acid | Corrosive Material | 4 | |
| 20 | Sodium Hydroxide Solution | Corrosive Material | 4 | <.1 |
| 20 | Environmentally Hazardous Solid n.o.s. | Miscellaneous Hazardous Material | 4 | <.1 |
| 20 | Hazardous Waste Solid n.o.s. | Miscellaneous Hazardous Material | 4 | <.1 |
| 20 | Phenol Molten | Poisonous Materials | 4 | <.1 |
| 20 | Sulfur Molten | Flammable Solid | 4 | <.1 |
| 30 | Acrylic Acid Inhibited | Corrosive Material | 3 | <.1 |
| 30 | Caustic Alkali Liquids n.o.s. | Corrosive Material | 3 | <.1 |
| 30 | Carbon Dioxide Refrigerated Liquid | Nonflammable Compressed Gas | 3 | <.1 |
| 30 | Chlorine | Poisonous Gas | 3 | <.1 |
| 30 | Petroleum Crude Oil | Flammable - Combustible Liquid | 3 | <.1 |
| 30 | Propane | Flammable Gas | 3 | <.1 |
| 30 | Nitric Acid <70% | Corrosive Material | 3 | <.1 |
| 30 | Petroleum Distillates n.o.s. | Flammable - Combustible Liquid | 3 | <.1 |
| 30 | Xylenes | Flammable - Combustible Liquid | 3 | <.1 |
| 30 | Denatured Alcohol | Flammable - Combustible Liquid | 3 | <.1 |
| 30 | Printing Ink Flammable | Flammable - Combustible Liquid | 3 | <.1 |
| 41 | Acetic Acid Glacial | Corrosive Material | 2 | <.1 |
| 41 | Acetylene Dissolved | Flammable Gas | 2 | <.1 |
| 41 | Asphalt | Flammable - Combustible Liquid | 2 | <.1 |
| 41 | Ethanol | Flammable - Combustible Liquid | 2 | <.1 |
| 41 | Hydrocarbons Liquid n.o.s. | Flammable - Combustible Liquid | 2 | <.1 |
| 41 | Hydrogen Peroxide >60% | Oxidizer | 2 | <.1 |
| 41 | Kerosene | Combustible Liquid | 2 | <.1 |
| 41 | Maleic Anhydride | Corrosive Material | 2 | <.1 |
| 41 | Methyl Chloride | Flammable Gas | 2 | <.1 |
| 41 | Methyl Methacrylate Monomer Inhibited | Flammable - Combustible Liquid | 2 | <.1 |
| 41 | Petroleum Oil | Combustible Liquid | 2 | <.1 |
| 41 | Propionic Acid | Corrosive Material | 2 | <.1 |
| 41 | Resin Solution | Flammable - Combustible Liquid | 2 | <.1 |
| 41 | Sodium Chlorate | Oxidizer | 2 | <.1 |
| 41 | Toluene Diisocyanate | Poisonous Materials | 2 | <.1 |
| 41 | Toluene | Flammable - Combustible Liquid | 2 | <.1 |
| 41 | Vinyl Acetate Inhibited | Flammable - Combustible Liquid | 2 | <.1 |
| 41 | Corrosive Liquid Acidic Inorganic n.o.s. | Corrosive Material | 2 | <.1 |
| 41 | Corrosive Liquid Acidic Organic n.o.s. | Corrosive Material | 2 | <.1 |
| 41 | Explosive Blasting Type E | Very Insensitive Explosive | 2 | <.1 |
| 41 | Ammonia Anhydrous | Poisonous Gas | 2 | <.1 |
| 41 | Elevated Temp Liquid Flammable n.o.s. | Flammable - Combustible Liquid | 2 | <.1 |
| 41 | Hypochlorite Solutions | Corrosive Material | 2 | <.1 |
| 64 | *92 materials tied for this rank* | … | 1 each | 0.5 |
| | | **TOTAL** | | **2.9** |

Note: Percentage figures are based on 17,580 incidents reported in 2000 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.

Source: Hazardous Materials Information System, U.S. Department of Transportation. Data as of 06/12/2002.

# Exhibit 4.5.2

## Serious Incidents by Hazardous Material - 2001

| Rank | Hazardous Material | Hazard Class | Incidents | Percent of Total Incidents |
|---|---|---|---|---|
| 1 | Gasoline | Flammable - Combustible Liquid | 94 | 0.5 |
| 2 | Petroleum Gases Liquefied | Flammable Gas | 25 | 0.1 |
| 3 | Diesel Fuel | Flammable - Combustible Liquid | 21 | 0.1 |
| 4 | Fuel Oil (No. 1,2,4,5,6) | Flammable - Combustible Liquid | 20 | 0.1 |
| 5 | Sodium Hydroxide Solution | Corrosive Material | 15 | <.1 |
| 6 | Fuel Oil No. 1,2,4,5,6 | Combustible Liquid | 14 | <.1 |
| 7 | Flammable Liquids n.o.s. | Flammable - Combustible Liquid | 13 | <.1 |
| 7 | Hydrochloric Acid Solution | Corrosive Material | 13 | <.1 |
| 9 | Ammonia Anhydrous | Nonflammable Compressed Gas | 9 | <.1 |
| 9 | Sulfuric Acid | Corrosive Material | 9 | <.1 |
| 11 | Nitrogen Refrigerated Liquid | Nonflammable Compressed Gas | 8 | <.1 |
| 12 | Fuel Aviation Turbine | Flammable - Combustible Liquid | 6 | <.1 |
| 12 | Environmentally Hazardous Liquid n.o.s. | Miscellaneous Hazardous Material | 6 | <.1 |
| 14 | Corrosive Liquids n.o.s. | Corrosive Material | 5 | <.1 |
| 14 | Petroleum Crude Oil | Flammable - Combustible Liquid | 5 | <.1 |
| 14 | Phosphoric Acid | Corrosive Material | 5 | <.1 |
| 14 | Environmentally Hazardous Solid n.o.s. | Miscellaneous Hazardous Material | 5 | <.1 |
| 18 | Combustible Liquid n.o.s. | Combustible Liquid | 4 | <.1 |
| 18 | Petroleum Distillates n.o.s. | Flammable - Combustible Liquid | 4 | <.1 |
| 18 | Corrosive Liquid Acidic Inorganic n.o.s. | Corrosive Material | 4 | <.1 |
| 18 | Elevated Temperature Material Liquid | Miscellaneous Hazardous Material | 4 | <.1 |
| 18 | Denatured Alcohol | Flammable - Combustible Liquid | 4 | <.1 |
| 23 | Acetone | Flammable - Combustible Liquid | 3 | <.1 |
| 23 | Ammonium Nitrate <0.2% | Oxidizer | 3 | <.1 |
| 23 | Bipyridilium Pesticides Liquid Toxic | Poisonous Materials | 3 | <.1 |
| 23 | Oxygen Refrigerated Liquid | Nonflammable Compressed Gas | 3 | <.1 |
| 23 | Paint Or Paint Related | Flammable - Combustible Liquid | 3 | <.1 |
| 23 | Methanol | Flammable - Combustible Liquid | 3 | <.1 |
| 23 | Corrosive Liquid Acidic Organic n.o.s. | Corrosive Material | 3 | <.1 |
| 23 | Gasohol | Flammable - Combustible Liquid | 3 | <.1 |
| 23 | Gas Oil | Flammable - Combustible Liquid | 3 | <.1 |
| 32 | Acetic Anhydride | Corrosive Material | 2 | <.1 |
| 32 | Alcohols n.o.s. | Flammable - Combustible Liquid | 2 | <.1 |
| 32 | Caustic Alkali Liquid n.o.s. | Corrosive Material | 2 | <.1 |
| 32 | Ammonium Nitrate-Inorganic | Oxidizer | 2 | <.1 |
| 32 | Asphalt | Flammable - Combustible Liquid | 2 | <.1 |
| 32 | Carbon Dioxide Refrigerated Liquid | Nonflammable Compressed Gas | 2 | <.1 |
| 32 | Chlorine | Poisonous Gas | 2 | <.1 |
| 32 | Compound Tree - Weed Killing Liquid | Flammable - Combustible Liquid | 2 | <.1 |
| 32 | Helium Refrigerated Liquid | Nonflammable Compressed Gas | 2 | <.1 |
| 32 | Fluorosilicic Acid | Corrosive Material | 2 | <.1 |
| 32 | Ethanolamine | Corrosive Material | 2 | <.1 |
| 32 | Petroleum Distillate | Combustible Liquid | 2 | <.1 |
| 32 | Potassium Hydroxide Solution | Corrosive Material | 2 | <.1 |
| 32 | Resin Solution | Flammable - Combustible Liquid | 2 | <.1 |
| 32 | Silicon Tetrafluoride | Poisonous Gas | 2 | <.1 |
| 32 | Styrene Monomer Inhibited | Flammable - Combustible Liquid | 2 | <.1 |
| 32 | Sulfur Molten | Miscellaneous Hazardous Material | 2 | <.1 |
| 32 | Trichloroisocyanuric Dry | Oxidizer | 2 | <.1 |
| 32 | Xylenes | Flammable - Combustible Liquid | 2 | <.1 |
| 32 | Detonators Electric (B) | Explosive No Blast Hazard | 2 | <.1 |
| 32 | Amines Liquid Corrosive n.o.s. | Corrosive Material | 2 | <.1 |
| 32 | Phosphorus White Solution | Spontaneously Combustible | 2 | <.1 |
| 32 | Other Regulated Substances Liquid | Miscellaneous Hazardous Material | 2 | <.1 |
| 32 | Silane | Flammable Gas | 2 | <.1 |
| 32 | Regulated Medical Waste | Infectious Substance (Etiologic) | 2 | <.1 |
| 32 | Printing Ink Flammable | Flammable - Combustible Liquid | 2 | <.1 |
| 58 | *69 materials tied for this rank* | … | 1 each | 0.4 |
| | | **TOTAL** | | **2.4** |

Note: Percentage figures are based on 17,506 incidents reported in 2001.

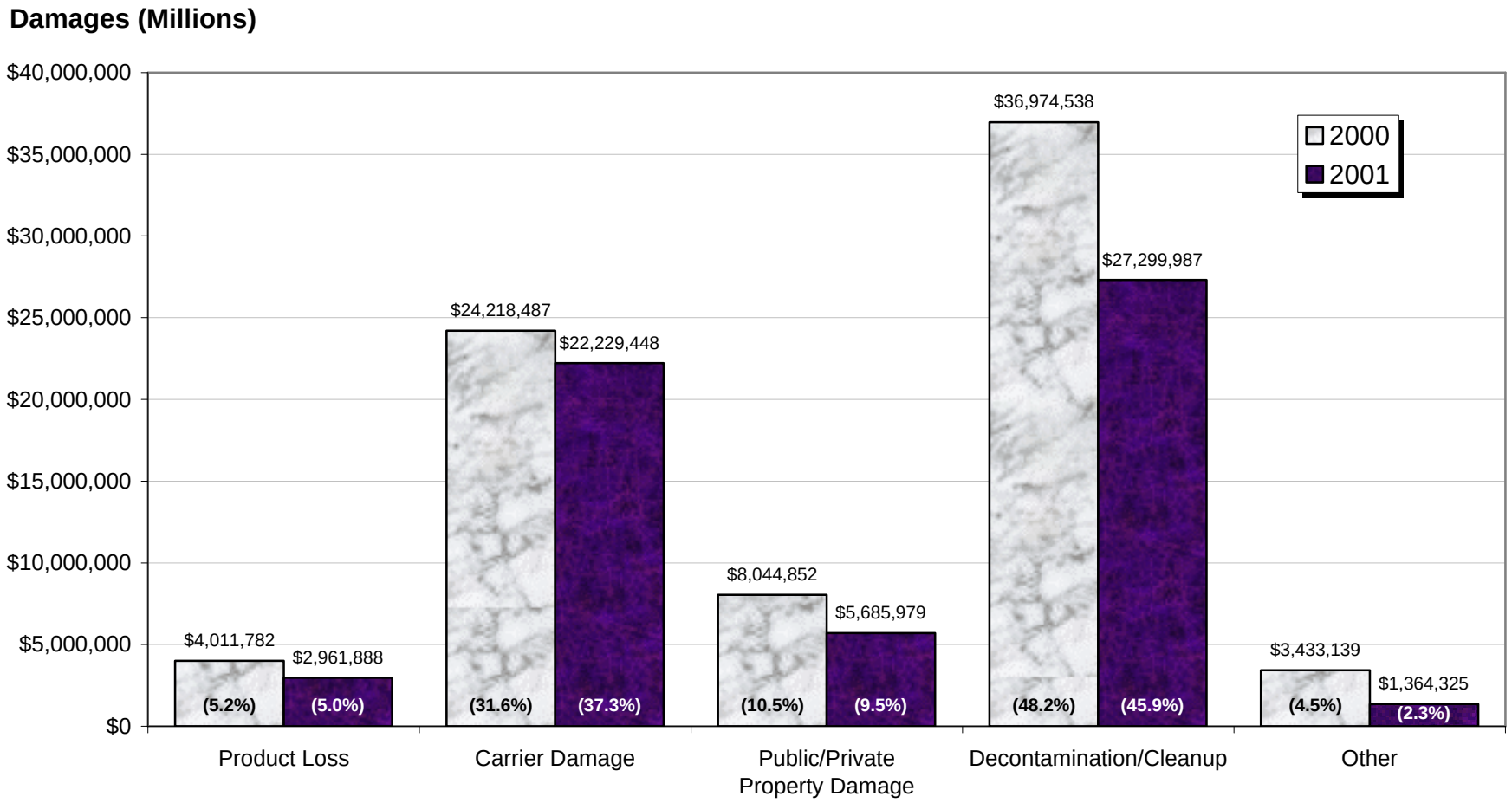
RSPA defines serious incidents as incidents that involve: a fatality or major injury due to a hazardous material; closure of a major transportation artery or facility or evacuation of six or more persons due to the presence of a hazardous material; or

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

Source: Hazardous Materials Information System, U.S. Department of Transportation. Data as of 06/12/2002.

# Exhibit 5

## Characterization of Hazardous Materials Incident Damages, 2000-2001




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

Source: Hazardous Materials Information System, U.S. Department of Transportation. Data as of 06/12/2002.

# Exhibit 6.1
## Hazardous Materials Incidents - 2000
## Cause by Mode

| Cause | Air | Highway | Rail | Water | Total | Percent of all Incidents* |
|---|---|---|---|---|---|---|
| Human Error | 1,208 | 13,182 | 652 | 11 | 15,053 | 85.6 |
| Package Failure | 202 | 1,550 | 337 | 6 | 2,095 | 11.9 |
| Vehicular Accident/Derailment | 1 | 318 | 62 | 0 | 381 | 2.2 |
| Other | 9 | 39 | 4 | 0 | 52 | 0.3 |
| **TOTALS** | **1,420** | **15,089** | **1,055** | **17** | **17,581** | ... |
| Percent of Incidents by Mode | 8.1 | 85.8 | 6.0 | 0.1 | ... | ... |

# Exhibit 6.2
## Hazardous Materials Incidents - 2001
## Cause by Mode

| Cause | Air | Highway | Rail | Water | Total | Percent of all Incidents* |
|---|---|---|---|---|---|---|
| Human Error | 937 | 13,614 | 522 | 2 | 15,075 | 86.1 |
| Package Failure | 133 | 1,613 | 313 | 2 | 2,061 | 11.8 |
| Vehicular Accident/Derailment | 1 | 282 | 53 | 0 | 336 | 1.9 |
| Other | 3 | 26 | 5 | 0 | 34 | 0.2 |
| **TOTALS** | **1,074** | **15,535** | **893** | **4** | **17,506** | ... |
| Percent of Incidents by Mode | 6.1 | 88.4 | 5.1 | <.1 | ... | ... |

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

Source: Hazardous Materials Information System, U.S. Department of Transportation. Data as of 06/12/2002.

# Exhibit 7.1

## Hazardous Materials Incidents - 2000
## 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 | 99 | 87 | 12 | 0 | 0 | 720 | 0 | 0 | 0 |
| Highway | 118 | 58 | 24 | 33 | 3 | 6,110 | 4 | 4 | 15 |
| Railway | 49 | 16 | 14 | 19 | 1 | 19,129 | 0 | 0 | 44 |
| Water | 2 | 1 | 1 | 0 | 0 | 55 | 0 | 0 | 0 |
| **TOTALS** | **268** | **162** | **51** | **52** | **4** | **26,014** | **4** | **4** | **59** |

# Exhibit 7.2

## Hazardous Materials Incidents - 2001
## 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 | 70 | 65 | 4 | 0 | 1 | 428 | 0 | 0 | 3 |
| Highway | 93 | 53 | 14 | 26 | 0 | 2,163 | 0 | 3 | 6 |
| Railway | 25 | 4 | 5 | 15 | 1 | 2,732 | 0 | 0 | 5 |
| Water | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **TOTALS** | **188** | **122** | **23** | **41** | **2** | **5,323** | **0** | **3** | **14** |

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

Source: Hazardous Materials Information System, U.S. Department of Transportation. Data as of 06/12/2002.

# Exhibit 8.1.1

## Hazardous Materials Incidents - 2000
## 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 | 9 | 10 | 5 | 5 | 6 | 11 | 165 | 57,123,570 | 51 | 9,859 | 370 |
| En Route/Non-Accident | 0 | 0 | 4 | 4 | 31 | 79 | 7 | 2,180,689 | 79 | 7,869 | 2,733 |
| Loading | 0 | 0 | 1 | 1 | 23 | 24 | 2 | 265,300 | 15 | 281 | 3,246 |
| Unloading | 5 | 6 | 7 | 7 | 61 | 80 | 12 | 5,291,702 | 44 | 3,874 | 9,881 |
| Storage/Terminal | 0 | 0 | 1 | 2 | 9 | 34 | 4 | 594,187 | 78 | 3,211 | 846 |
| **TOTALS** | **14** | **16** | **18** | **19** | **130** | **228** | **190** | **65,455,448** | **267** | **25,094** | **17,076** |

# Exhibit 8.1.2

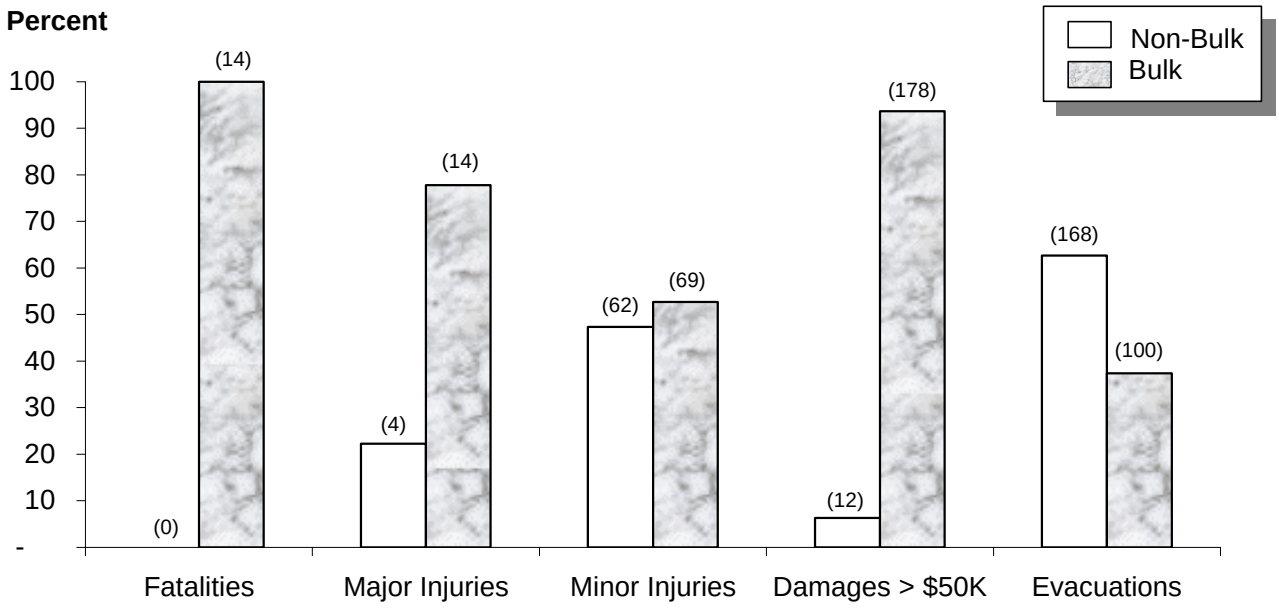
## Hazardous Materials Incidents - 2001
## Consequences by Transportation Phase

| 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 | 3 | 6 | 4 | 4 | 3 | 3 | 157 | 46,173,795 | 39 | 2,947 | 318 |
| En Route/Non-Accident | 0 | 0 | 3 | 3 | 33 | 35 | 7 | 836,147 | 27 | 788 | 1,945 |
| Loading | 0 | 0 | 0 | 0 | 8 | 11 | 2 | 135,500 | 15 | 203 | 3,004 |
| Unloading | 1 | 1 | 11 | 11 | 52 | 61 | 13 | 1,187,916 | 23 | 417 | 11,272 |
| Storage/Terminal | 0 | 0 | 0 | 0 | 2 | 6 | 0 | 0 | 81 | 916 | 784 |
| **TOTALS** | **4** | **7** | **18** | **18** | **98** | **116** | **179** | **48,333,358** | **185** | **5,271** | **17,323** |

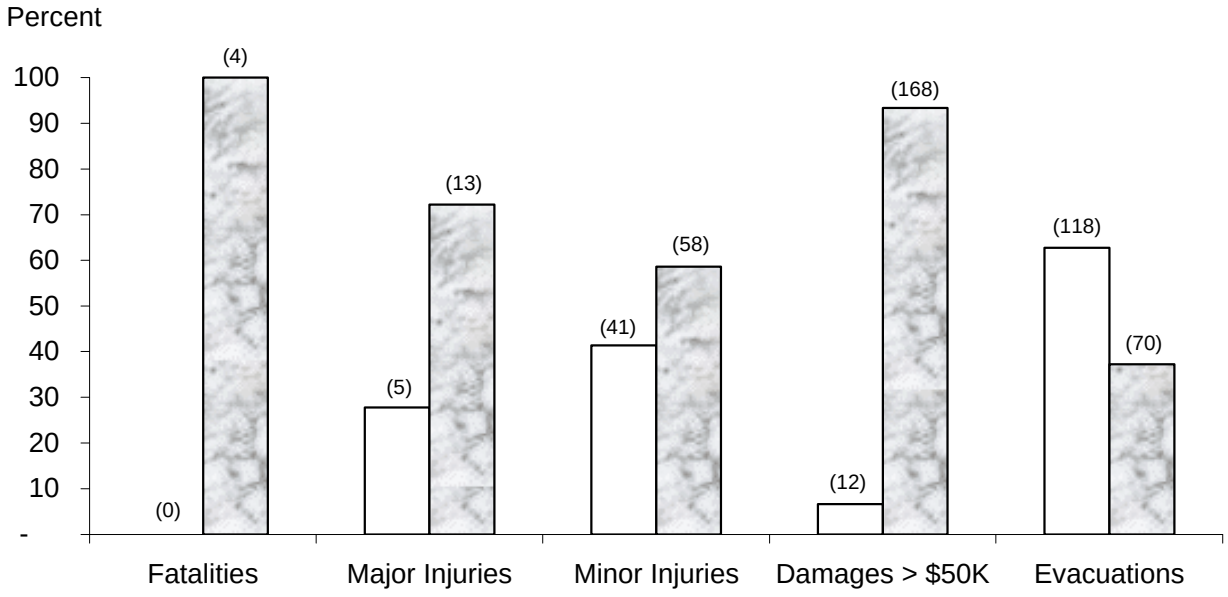
* Major injuries are those requiring hospitalization or resulting in loss of time at work.

Source: Hazardous Materials Information System, U.S. Department of Transportation. Data as of 06/12/2002.

# Exhibit 8.2.1
## Hazardous Materials Incidents - 2000
## Consequences by Bulk and Non-Bulk




# Exhibit 8.2.2
## Hazardous Materials Incidents - 2001
## Consequences by Bulk and Non-Bulk



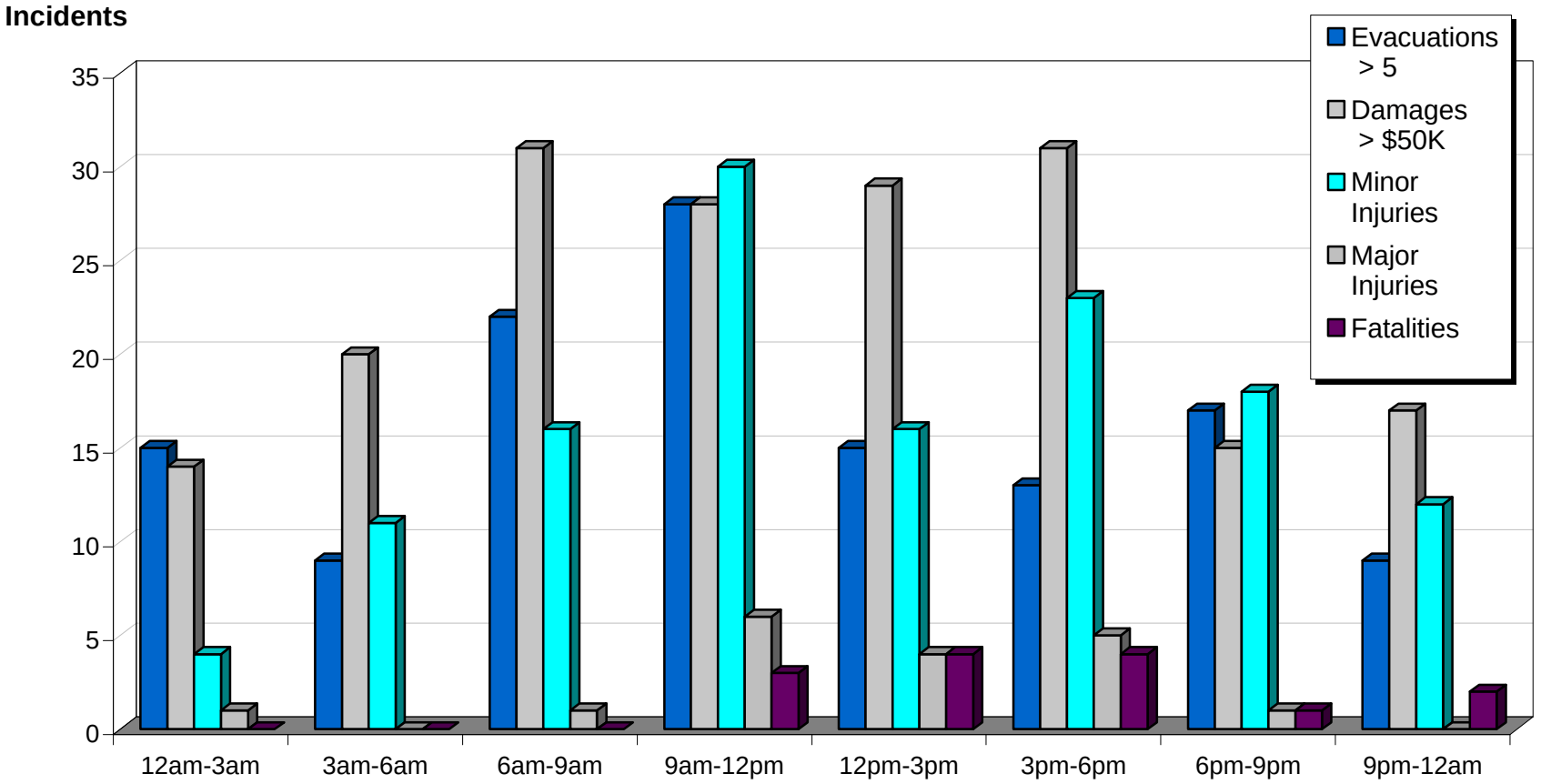

Note: Numbers in parentheses show the number of incidents resulting in each consequence.

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

Source: Hazardous Materials Information System, U.S. Department of Transportation. Data as of 06/12/2002.

# Exhibit 8.3.1

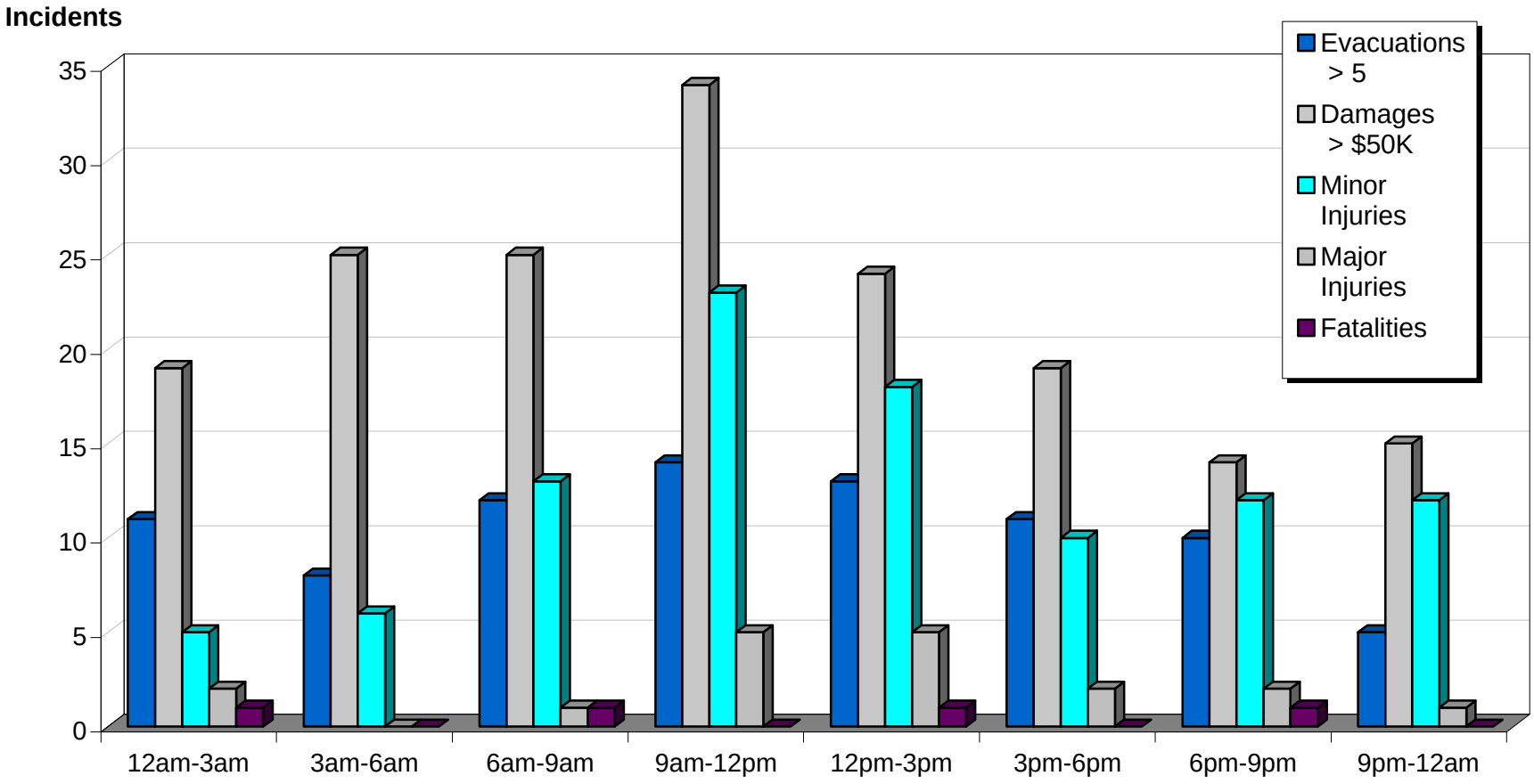
## Hazardous Materials Incidents - 2000
## Consequences by Time of Day




Source: Hazardous Materials Information System, U.S. Department of Transportation. Data as of 06/12/2002.

# Exhibit 8.3.2

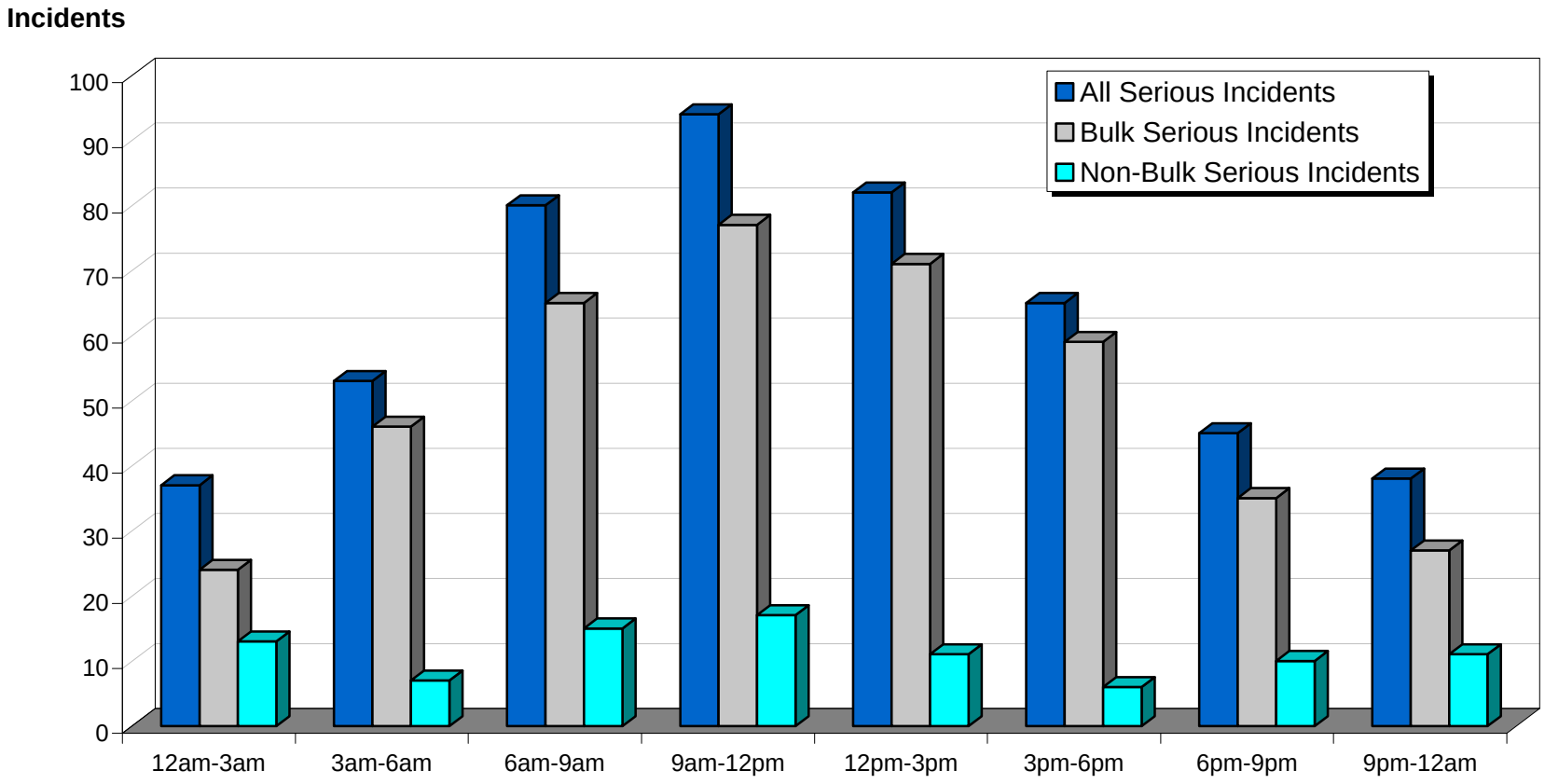
## Hazardous Materials Incidents - 2001
## Consequences by Time of Day




Source: Hazardous Materials Information System, U.S. Department of Transportation. Data as of 06/12/2002.

# Exhibit 9.1

## Hazardous Materials Incidents - 2000
## Serious Incidents by Time of Day
## Bulk and Non-Bulk



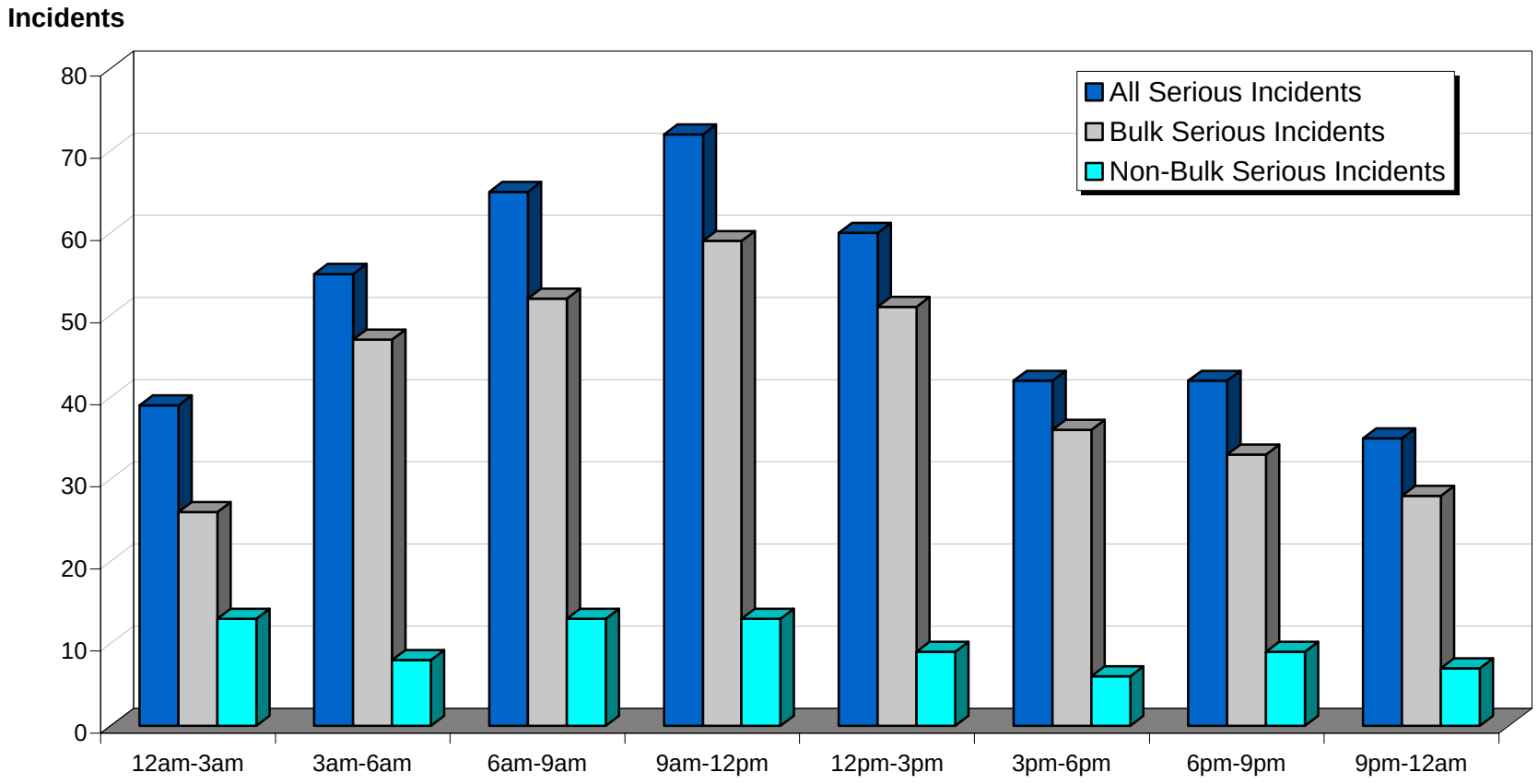

Note: RSPA defines serious incidents as incidents that involve: a fatality or major injury due to a hazardous material; closure of a major transportation artery or facility or evacuation of six or more persons due to the presence of a hazardous material; or

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

Source: Hazardous Materials Information System, U.S. Department of Transportation. Data as of 06/12/2002.

# Exhibit 9.2

## Hazardous Materials Incidents - 2001
## 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).

Source: Hazardous Materials Information System, U.S. Department of Transportation. Data as of 06/12/2002.

# Exhibit 10.1

## Hazardous Materials Incidents - 2000
## By State

| State | Incidents | Deaths | Injuries | | $ Damages | State | Incidents | Deaths | Injuries | | $ Damages |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Major | Minor | | | | | Major | Minor | |
| Alabama | 219 | 0 | 0 | 1 | 1,027,235 | Montana | 34 | 0 | 0 | 0 | 70,736 |
| Alaska | 43 | 0 | 0 | 0 | 384,168 | Nebraska | 94 | 0 | 0 | 0 | 3,106,524 |
| Arizona | 205 | 2 | 2 | 2 | 629,772 | Nevada | 60 | 1 | 0 | 0 | 348,929 |
| Arkansas | 226 | 0 | 0 | 4 | 1,058,415 | New Hampshire | 29 | 0 | 0 | 0 | 22,092 |
| California | 1,214 | 0 | 0 | 13 | 8,053,235 | New Jersey | 475 | 0 | 0 | 3 | 277,502 |
| Colorado | 262 | 0 | 1 | 3 | 650,495 | New Mexico | 95 | 0 | 0 | 1 | 97,681 |
| Connecticut | 317 | 0 | 0 | 1 | 563,847 | New York | 625 | 1 | 0 | 4 | 1,393,670 |
| Delaware | 31 | 0 | 0 | 1 | 36,147 | North Carolina | 726 | 0 | 0 | 8 | 1,717,718 |
| Dist. of Columbia | 6 | 0 | 0 | 0 | 2,304 | North Dakota | 22 | 0 | 0 | 0 | 46,475 |
| Florida | 718 | 1 | 0 | 8 | 1,202,514 | Ohio | 1,561 | 2 | 2 | 8 | 1,002,221 |
| Georgia | 465 | 0 | 2 | 5 | 3,682,520 | Oklahoma | 235 | 1 | 0 | 0 | 668,965 |
| Hawaii | 10 | 0 | 0 | 0 | 152,215 | Oregon | 307 | 0 | 0 | 3 | 6,006,301 |
| Idaho | 35 | 0 | 0 | 1 | 23,400 | Pennsylvania | 1,114 | 0 | 0 | 11 | 2,938,898 |
| Illinois | 977 | 0 | 2 | 5 | 905,399 | Rhode Island | 17 | 0 | 0 | 2 | 731,162 |
| Indiana | 486 | 0 | 0 | 3 | 1,107,691 | South Carolina | 161 | 1 | 0 | 15 | 648,356 |
| Iowa | 124 | 0 | 0 | 0 | 590,092 | South Dakota | 24 | 2 | 1 | 0 | 4,371,671 |
| Kansas | 361 | 0 | 0 | 0 | 107,978 | Tennessee | 1,014 | 0 | 0 | 5 | 416,865 |
| Kentucky | 433 | 0 | 1 | 46 | 1,636,820 | Texas | 1,457 | 1 | 6 | 40 | 4,532,010 |
| Louisiana | 339 | 0 | 1 | 11 | 16,644,109 | Utah | 249 | 1 | 0 | 0 | 1,336,862 |
| Maine | 23 | 0 | 0 | 0 | 162,516 | Vermont | 20 | 0 | 0 | 0 | 344,798 |
| Maryland | 326 | 0 | 0 | 1 | 678,624 | Virginia | 145 | 0 | 1 | 6 | 373,754 |
| Massachusetts | 346 | 0 | 0 | 2 | 717,316 | Washington | 181 | 1 | 0 | 2 | 664,194 |
| Michigan | 429 | 1 | 0 | 5 | 1,767,358 | West Virginia | 78 | 0 | 0 | 0 | 210,640 |
| Minnesota | 310 | 0 | 0 | 3 | 2,051,415 | Wisconsin | 253 | 1 | 0 | 1 | 438,395 |
| Mississippi | 205 | 0 | 0 | 3 | 158,557 | Wyoming | 35 | 0 | 0 | 0 | 128,944 |
| Missouri | 394 | 0 | 0 | 2 | 741,750 | Other * | 65 | 0 | 0 | 0 | 51,543 |
| | | | | | | **TOTAL** | **17,580** | **16** | **19** | **229** | **$76,682,798** |

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

Source: Hazardous Materials Information System, U.S. Department of Transportation. Data as of 06/12/2002.

# Exhibit 10.2

## Hazardous Materials Incidents - 2001
## By State

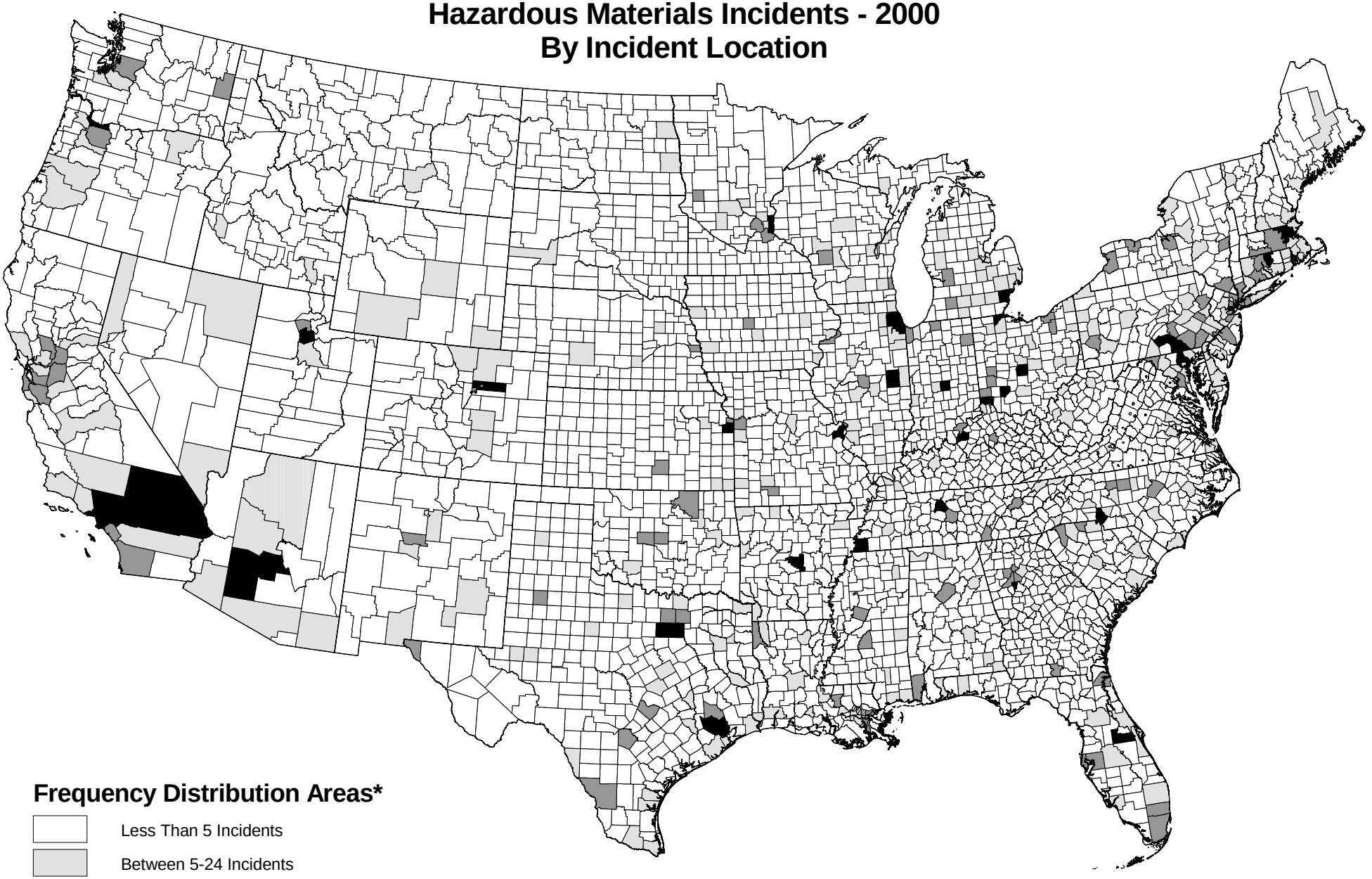
| State | Incidents | Deaths | Injuries | | $ Damages |
|---|---|---|---|---|---|
| | | | Major | Minor | |
| Alabama | 205 | 0 | 0 | 0 | 1,349,172 |
| Alaska | 18 | 0 | 1 | 0 | 127,513 |
| Arizona | 212 | 0 | 0 | 1 | 1,141,567 |
| Arkansas | 181 | 0 | 1 | 3 | 440,089 |
| California | 1,311 | 0 | 1 | 9 | 3,069,713 |
| Colorado | 341 | 1 | 1 | 1 | 1,794,371 |
| Connecticut | 322 | 0 | 0 | 0 | 537,407 |
| Delaware | 28 | 0 | 0 | 0 | 46,478 |
| Dist. of Columbia | 7 | 0 | 0 | 0 | 3,059 |
| Florida | 774 | 0 | 0 | 3 | 2,514,835 |
| Georgia | 450 | 0 | 0 | 1 | 4,058,580 |
| Hawaii | 7 | 0 | 0 | 0 | 970 |
| Idaho | 31 | 0 | 0 | 0 | 323,251 |
| Illinois | 1,405 | 0 | 1 | 6 | 1,759,631 |
| Indiana | 538 | 0 | 0 | 2 | 711,198 |
| Iowa | 175 | 0 | 0 | 2 | 1,663,082 |
| Kansas | 337 | 0 | 0 | 5 | 580,677 |
| Kentucky | 333 | 0 | 0 | 1 | 548,601 |
| Louisiana | 282 | 0 | 0 | 5 | 1,224,487 |
| Maine | 36 | 0 | 0 | 0 | 761,817 |
| Maryland | 348 | 0 | 0 | 0 | 3,823,813 |
| Massachusetts | 292 | 0 | 0 | 7 | 1,171,596 |
| Michigan | 333 | 0 | 1 | 2 | 895,486 |
| Minnesota | 280 | 0 | 0 | 2 | 480,117 |
| Mississippi | 157 | 0 | 1 | 2 | 375,420 |
| Missouri | 366 | 0 | 1 | 5 | 1,328,421 |
| Montana | 24 | 0 | 0 | 0 | 103,560 |
| Nebraska | 96 | 0 | 0 | 4 | 221,359 |
| Nevada | 101 | 0 | 0 | 1 | 62,108 |
| New Hampshire | 22 | 0 | 0 | 0 | 1,957 |
| New Jersey | 391 | 0 | 0 | 2 | 1,383,150 |
| New Mexico | 71 | 0 | 0 | 0 | 413,800 |
| New York | 596 | 0 | 0 | 3 | 4,783,084 |
| North Carolina | 717 | 0 | 0 | 2 | 1,134,929 |
| North Dakota | 27 | 0 | 0 | 0 | 12,976 |
| Ohio | 1,511 | 0 | 0 | 3 | 2,170,275 |
| Oklahoma | 251 | 0 | 0 | 2 | 548,724 |
| Oregon | 242 | 0 | 0 | 1 | 1,226,746 |
| Pennsylvania | 1,006 | 0 | 1 | 6 | 1,235,633 |
| Rhode Island | 19 | 0 | 0 | 0 | 6,831 |
| South Carolina | 163 | 0 | 1 | 0 | 777,254 |
| South Dakota | 18 | 0 | 0 | 0 | 16,178 |
| Tennessee | 1,127 | 0 | 2 | 7 | 1,413,365 |
| Texas | 1,226 | 2 | 5 | 14 | 10,377,244 |
| Utah | 300 | 0 | 0 | 1 | 189,619 |
| Vermont | 13 | 0 | 0 | 1 | 189,403 |
| Virginia | 191 | 0 | 0 | 2 | 380,146 |
| Washington | 182 | 0 | 0 | 1 | 378,464 |
| West Virginia | 77 | 0 | 0 | 1 | 335,547 |
| Wisconsin | 296 | 4 | 0 | 4 | 332,992 |
| Wyoming | 27 | 0 | 1 | 0 | 374,084 |
| Other * | 43 | 0 | 0 | 5 | 740,848 |
| **TOTAL** | **17,506** | **7** | **18** | **117** | **$59,541,627** |

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

Source: Hazardous Materials Information System, U.S. Department of Transportation. Data as of 06/12/2002.

# Exhibit 11.1.1

## Hazardous Materials Incidents - 2000
## By Incident Location



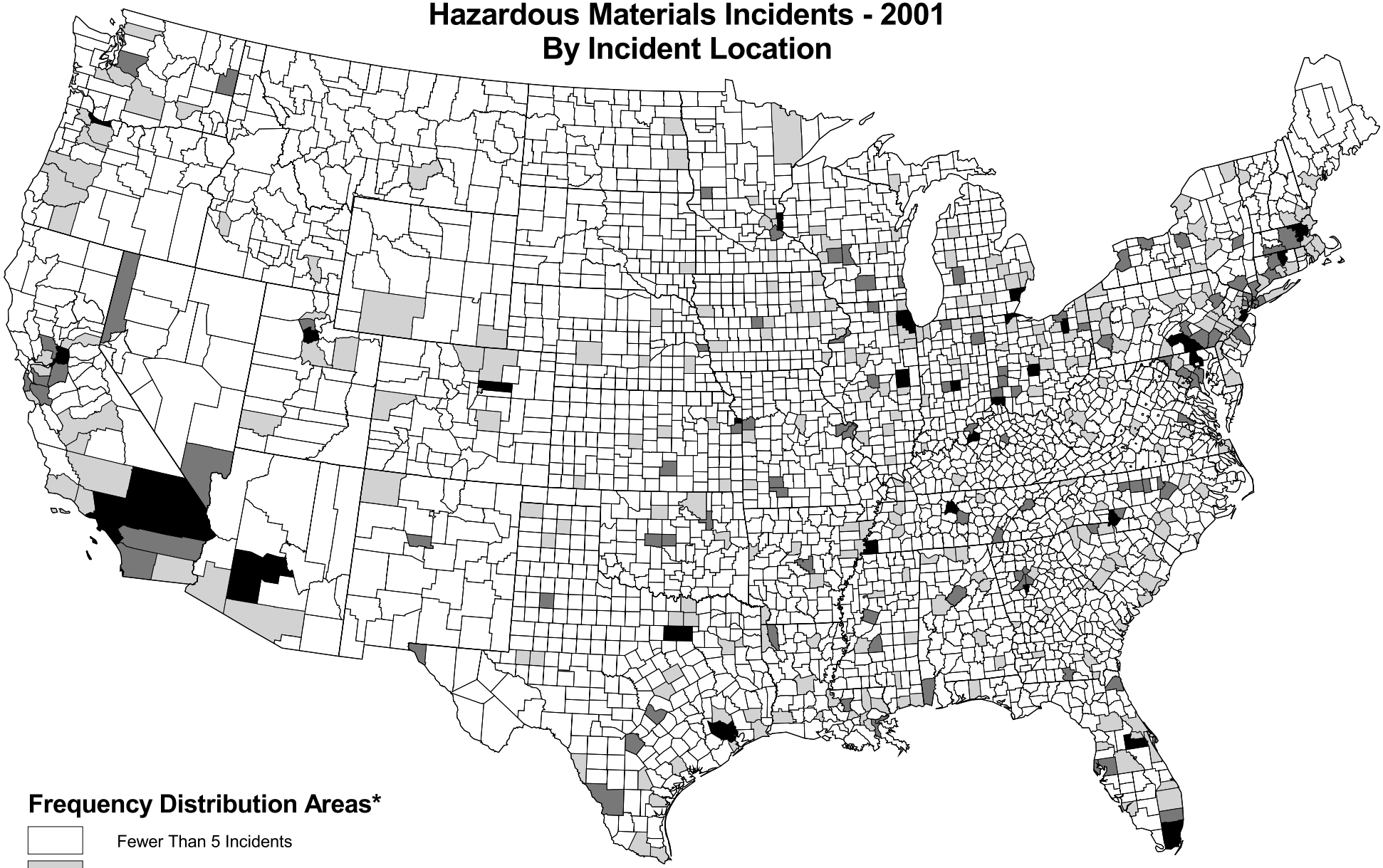
**Frequency Distribution Areas***

- Less Than 5 Incidents
- Between 5-24 Incidents
- Between 25-100 Incidents
- Greater Than 100 Incidents

*Areas shown are U.S. Counties

# Exhibit 11.1.2

## Hazardous Materials Incidents - 2001
## By Incident Location



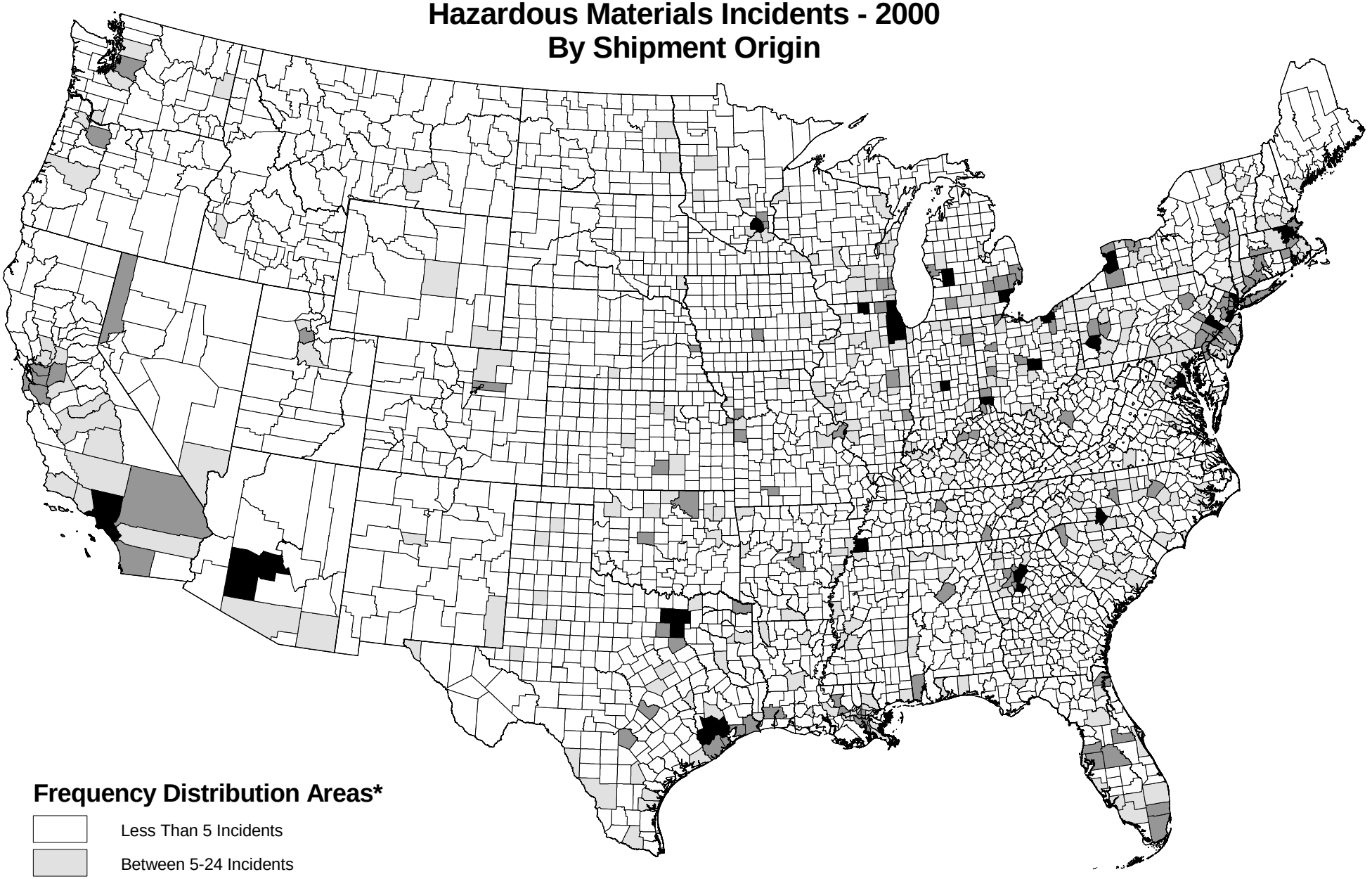
**Frequency Distribution Areas***

- Fewer Than 5 Incidents
- Between 5-24 Incidents
- Between 25-100 Incidents
- Greater Than 100 Incidents

*Areas shown are U.S. Counties

# Exhibit 11.2.1

## Hazardous Materials Incidents - 2000
## By Shipment Origin



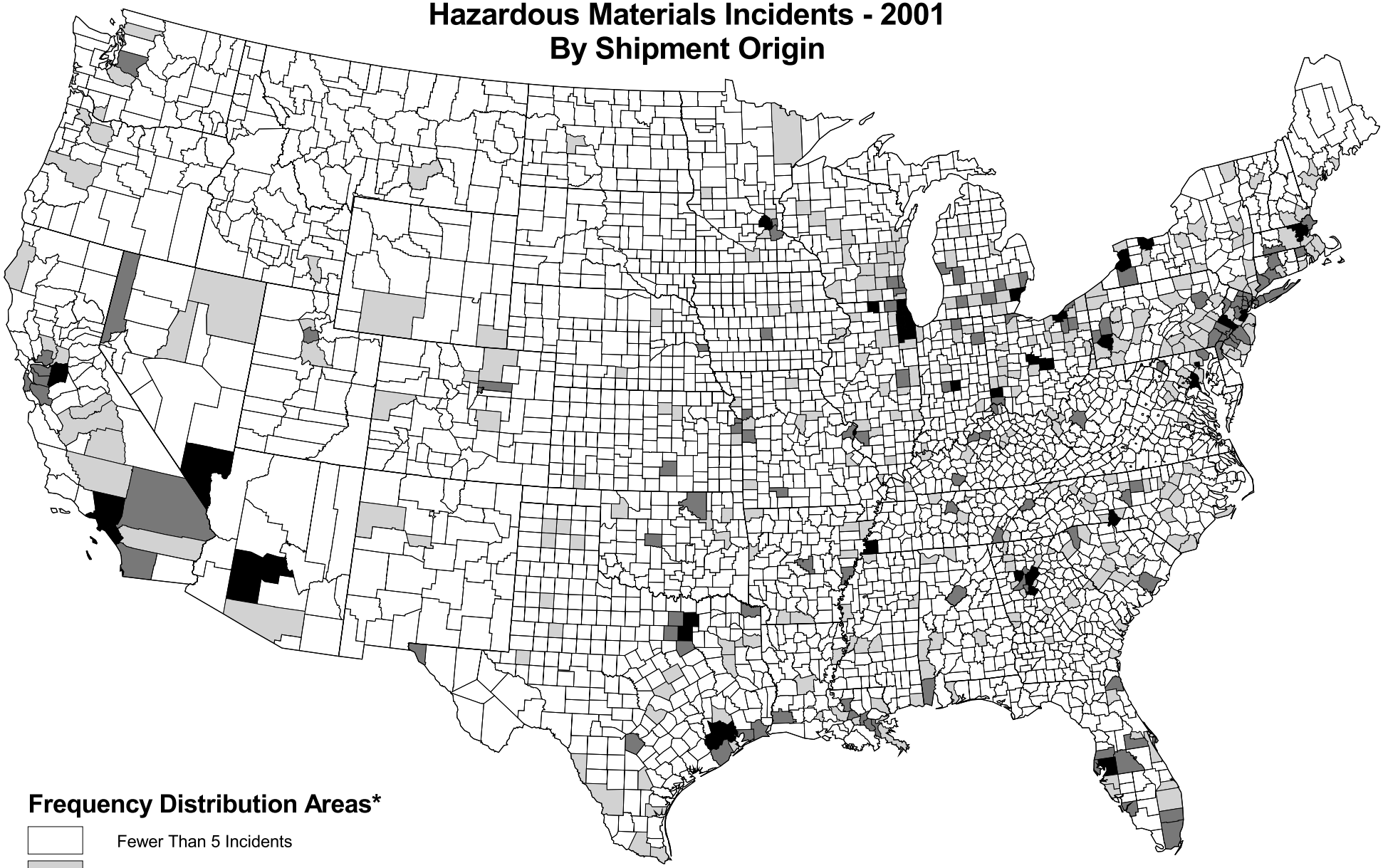
**Frequency Distribution Areas***

- Less Than 5 Incidents
- Between 5-24 Incidents
- Between 25-100 Incidents
- Greater Than 100 Incidents

*Areas shown are U.S. Counties

# Exhibit 11.2.2

## Hazardous Materials Incidents - 2001
## By Shipment Origin



**Frequency Distribution Areas***

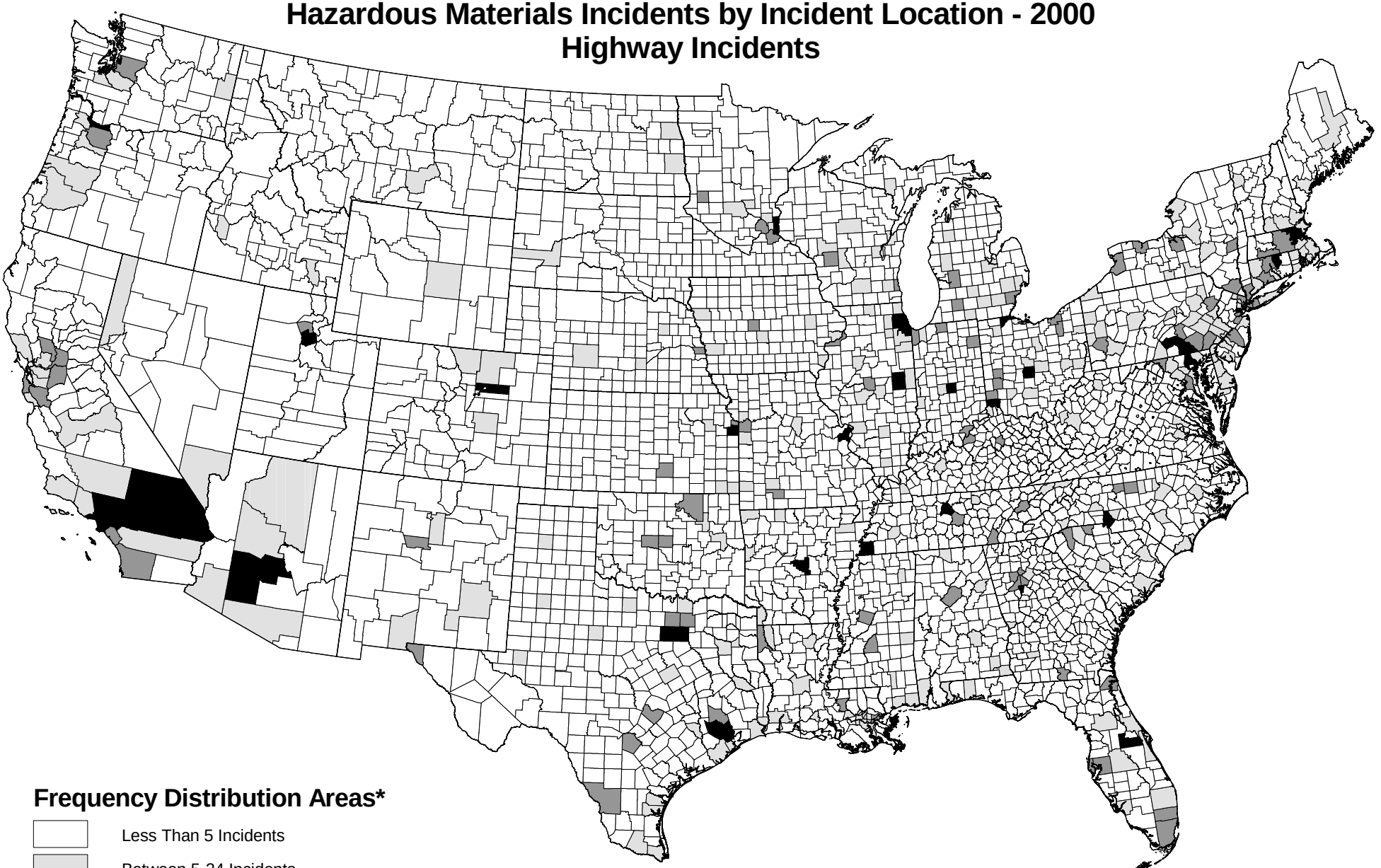
- Fewer Than 5 Incidents
- Between 5-24 Incidents
- Between 25-100 Incidents
- Greater Than 100 Incidents

*Areas shown are U.S. Counties

# Exhibit 11.3.1

## Hazardous Materials Incidents by Incident Location - 2000

## Highway Incidents



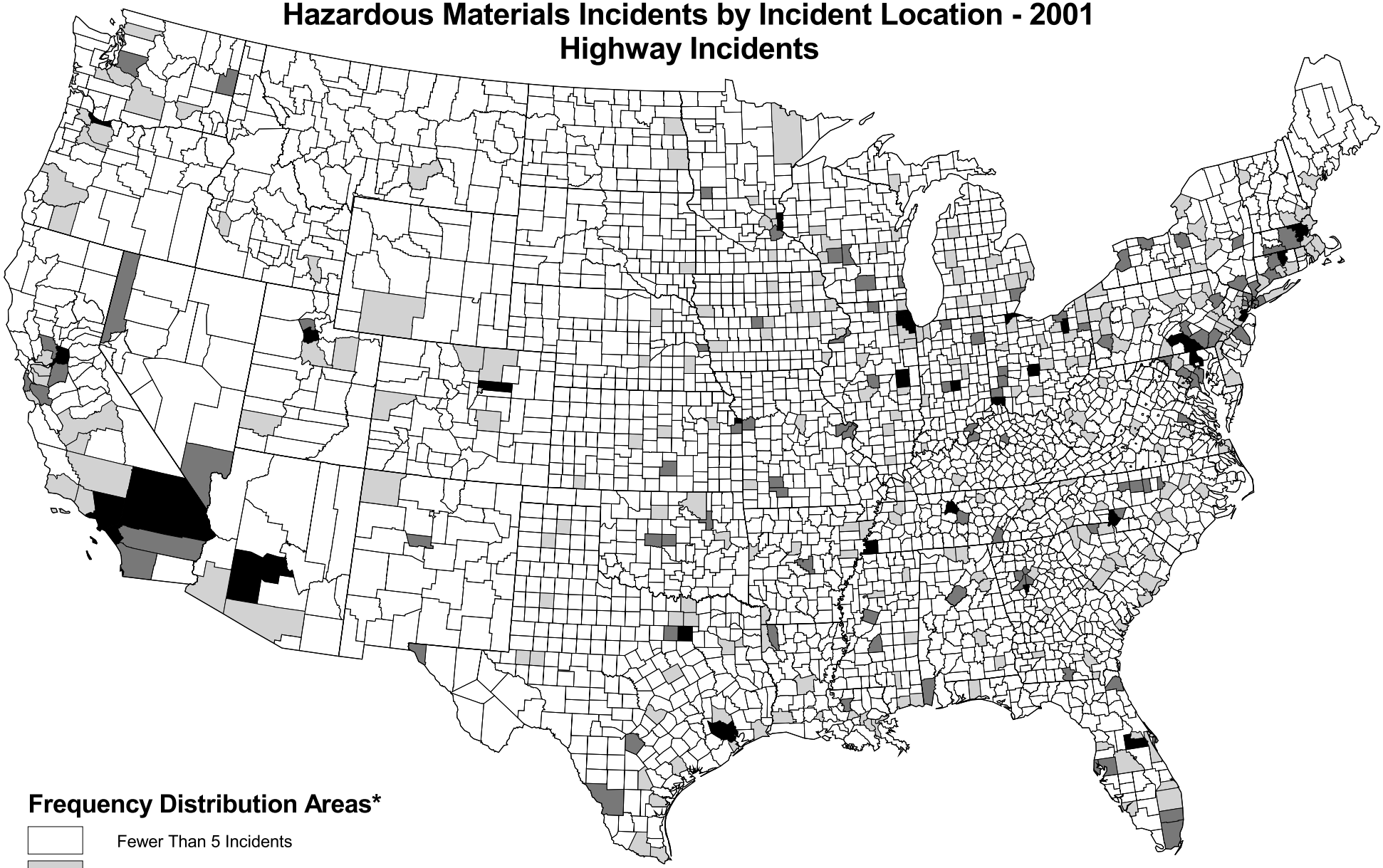
**Frequency Distribution Areas***

- Less Than 5 Incidents
- Between 5-24 Incidents
- Between 25-100 Incidents
- Greater Than 100 Incidents

*Areas shown are U.S. Counties

# Exhibit 11.3.2

## Hazardous Materials Incidents by Incident Location - 2001
## Highway Incidents



**Frequency Distribution Areas***

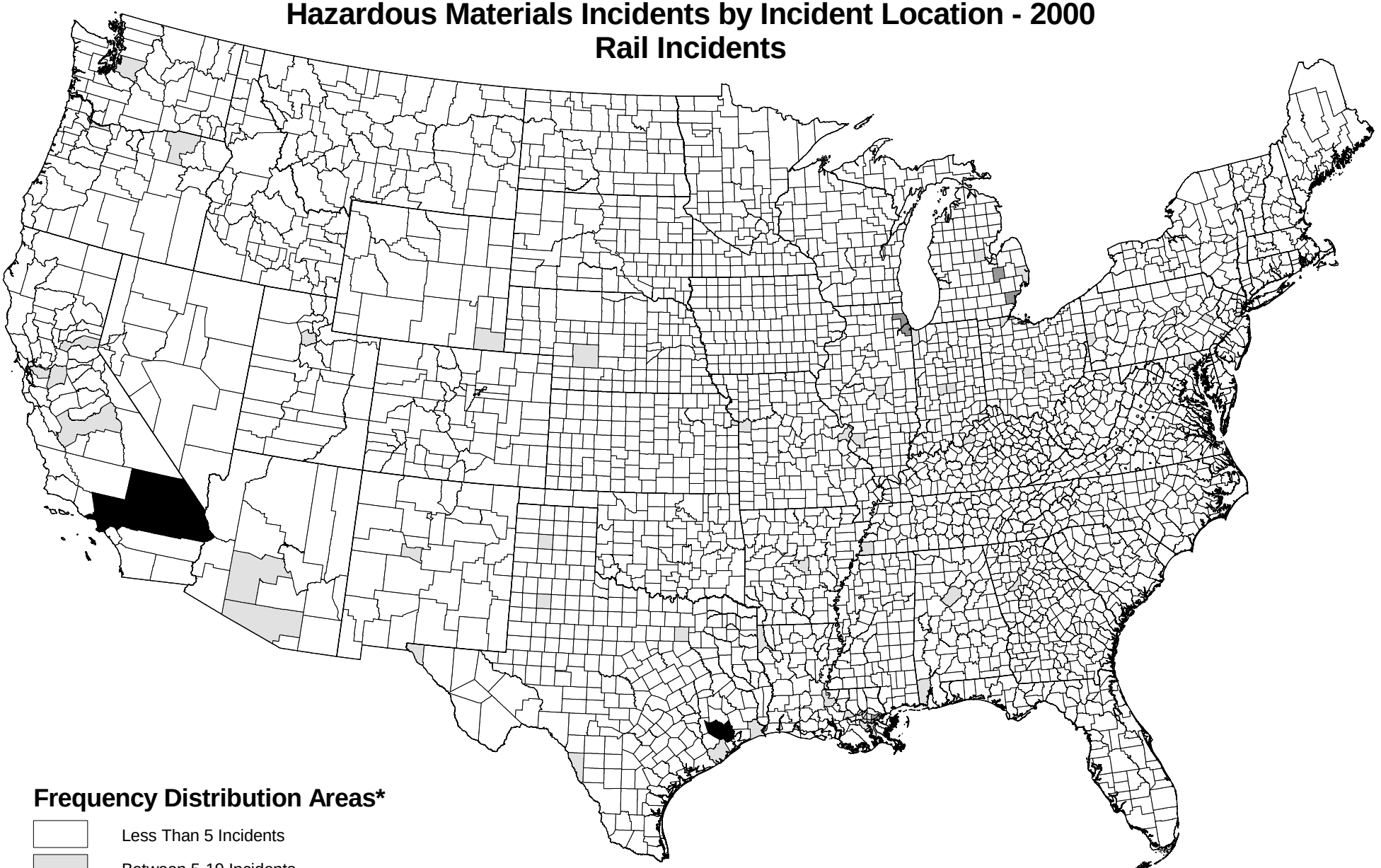
- Fewer Than 5 Incidents
- Between 5-24 Incidents
- Between 25-100 Incidents
- Greater Than 100 Incidents

*Areas shown are U.S. Counties

# Exhibit 11.4.1

## Hazardous Materials Incidents by Incident Location - 2000

## Rail Incidents



**Frequency Distribution Areas***

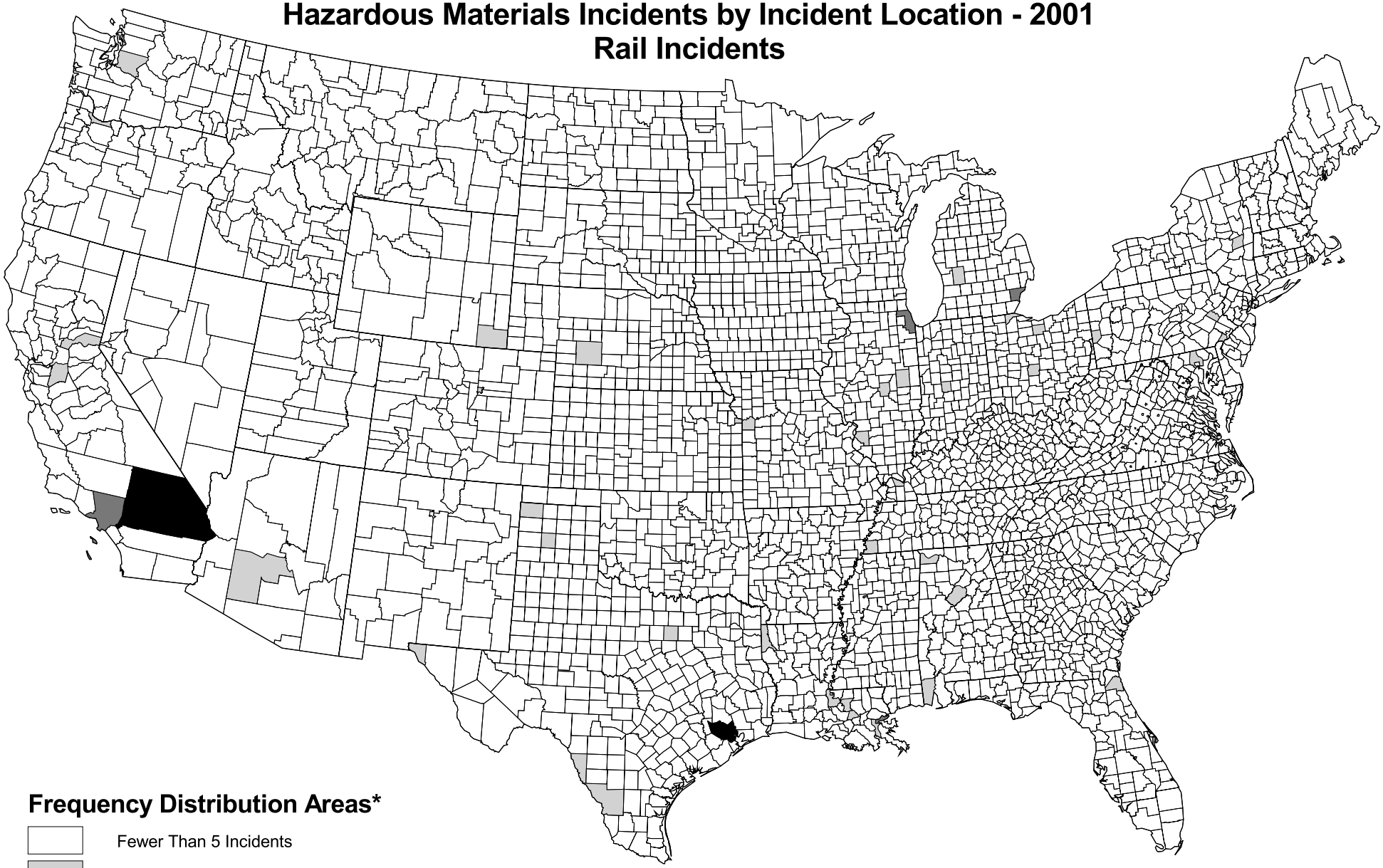
- Less Than 5 Incidents
- Between 5-19 Incidents
- Between 20-30 Incidents
- Greater Than 30 Incidents

*Areas shown are U.S. Counties

# Exhibit 11.4.2

## Hazardous Materials Incidents by Incident Location - 2001

## Rail Incidents



**Frequency Distribution Areas***

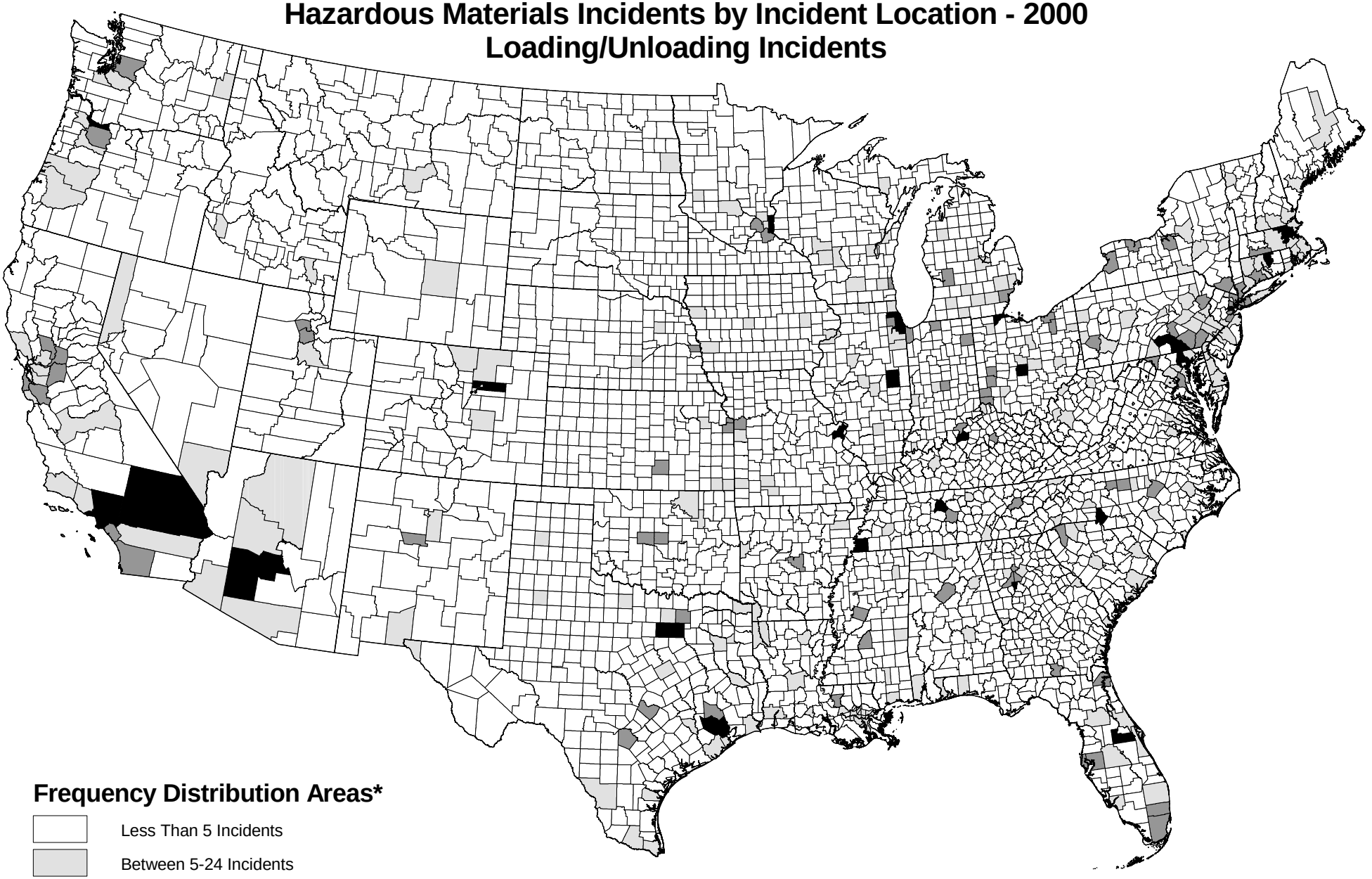
- Fewer Than 5 Incidents
- Between 5-19 Incidents
- Between 20-30 Incidents
- Greater Than 30 Incidents

*Areas shown are U.S. Counties

# Exhibit 11.5.1

## Hazardous Materials Incidents by Incident Location - 2000

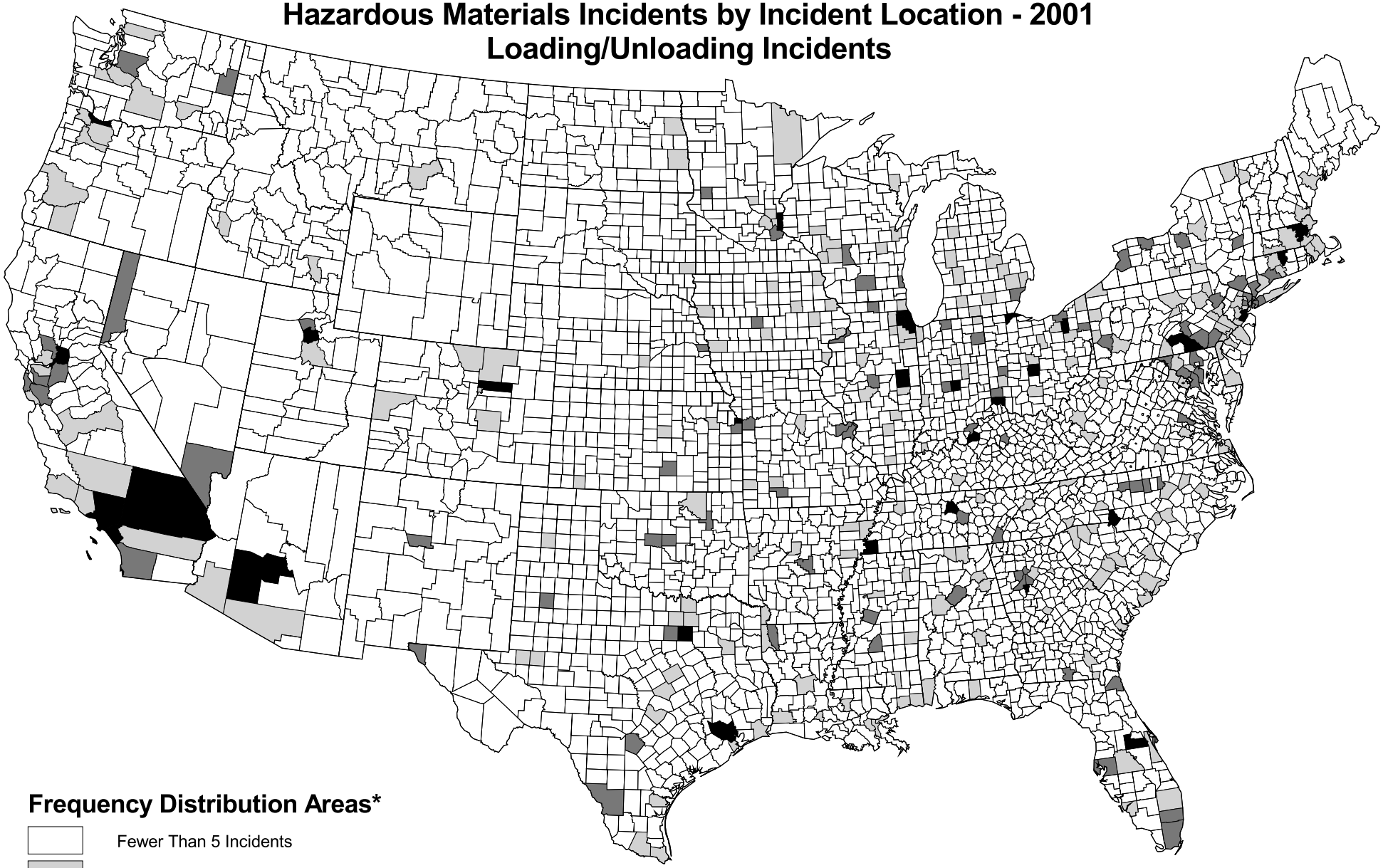
## Loading/Unloading Incidents




*Areas shown are U.S. Counties

# Exhibit 11.5.2

## Hazardous Materials Incidents by Incident Location - 2001
## Loading/Unloading Incidents

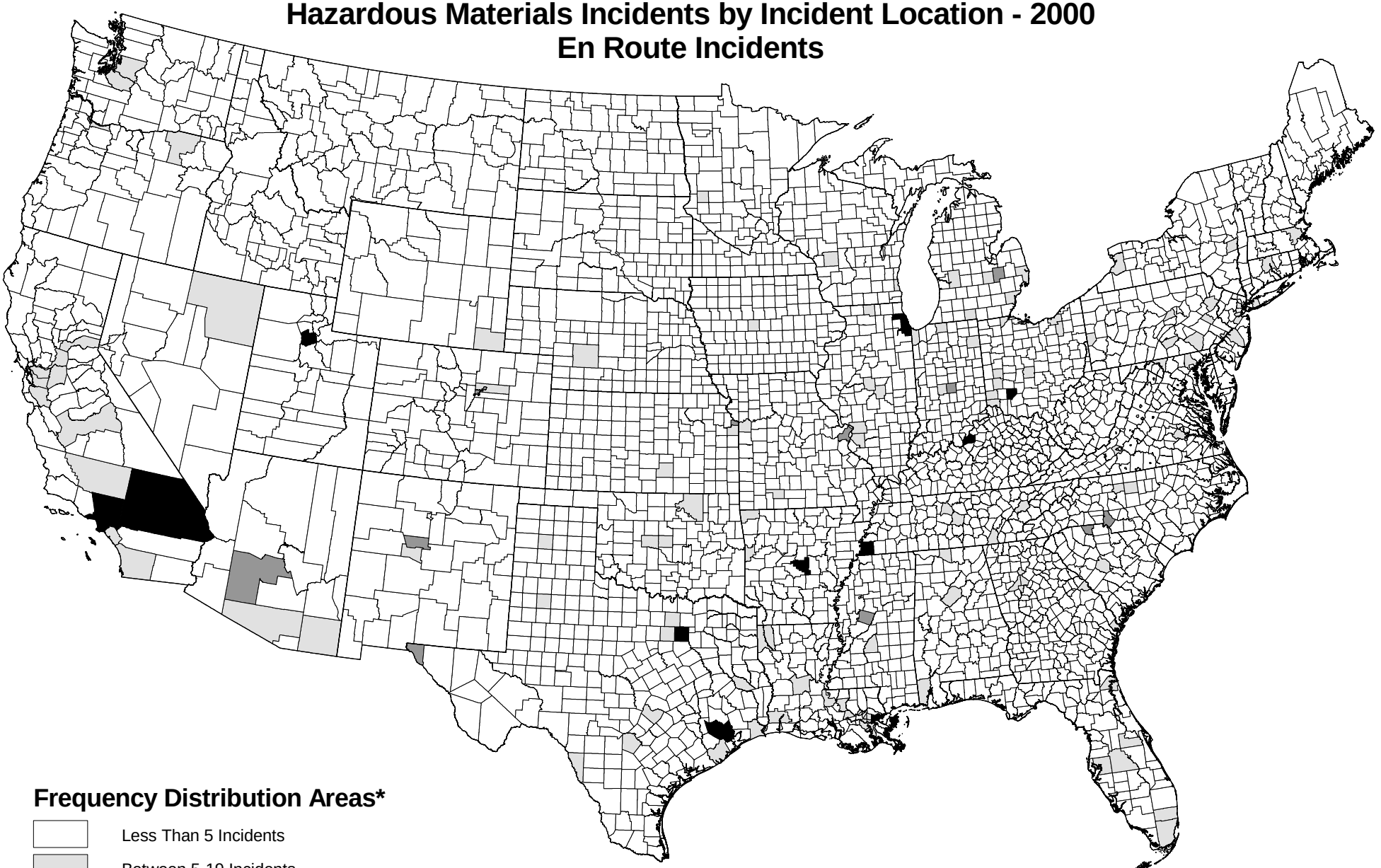



*Areas shown are U.S. Counties

# Exhibit 11.6.1

## Hazardous Materials Incidents by Incident Location - 2000

## En Route Incidents



**Frequency Distribution Areas***

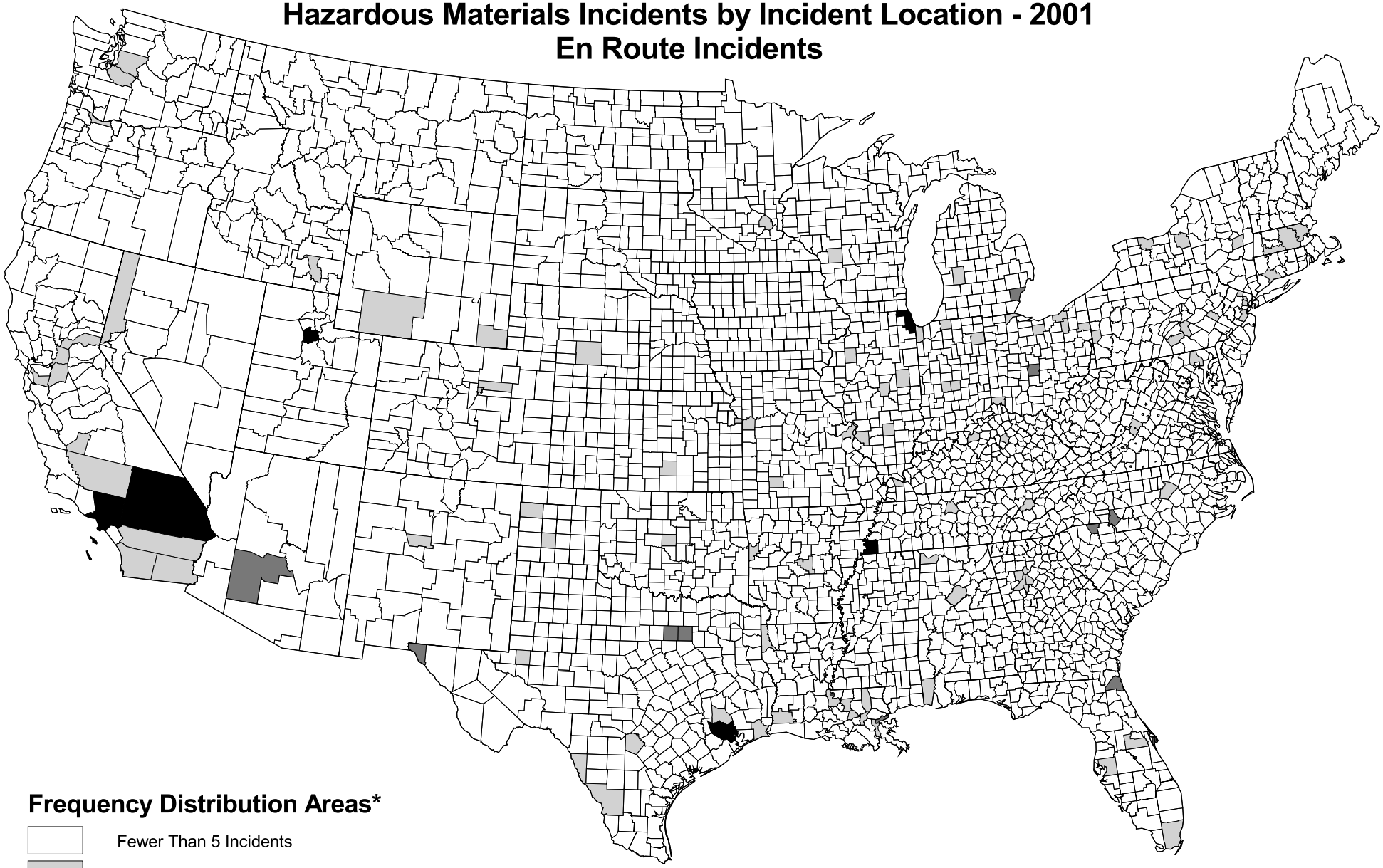
- Less Than 5 Incidents
- Between 5-19 Incidents
- Between 20-30 Incidents
- Greater Than 30 Incidents

*Areas shown are U.S. Counties

# Exhibit 11.6.2

## Hazardous Materials Incidents by Incident Location - 2001

## En Route Incidents

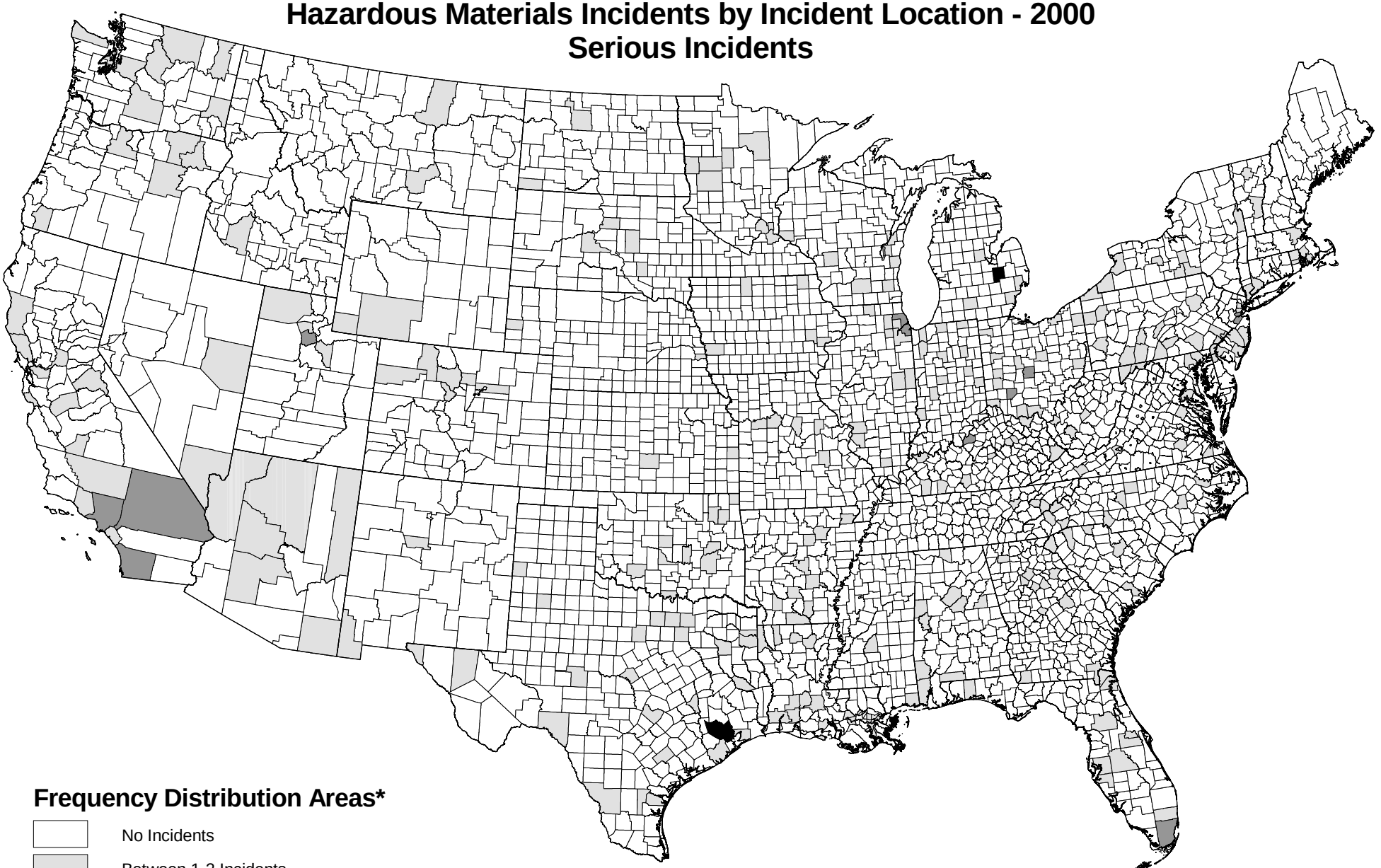



*Areas shown are U.S. Counties

# Exhibit 11.7.1

## Hazardous Materials Incidents by Incident Location - 2000

## Serious Incidents



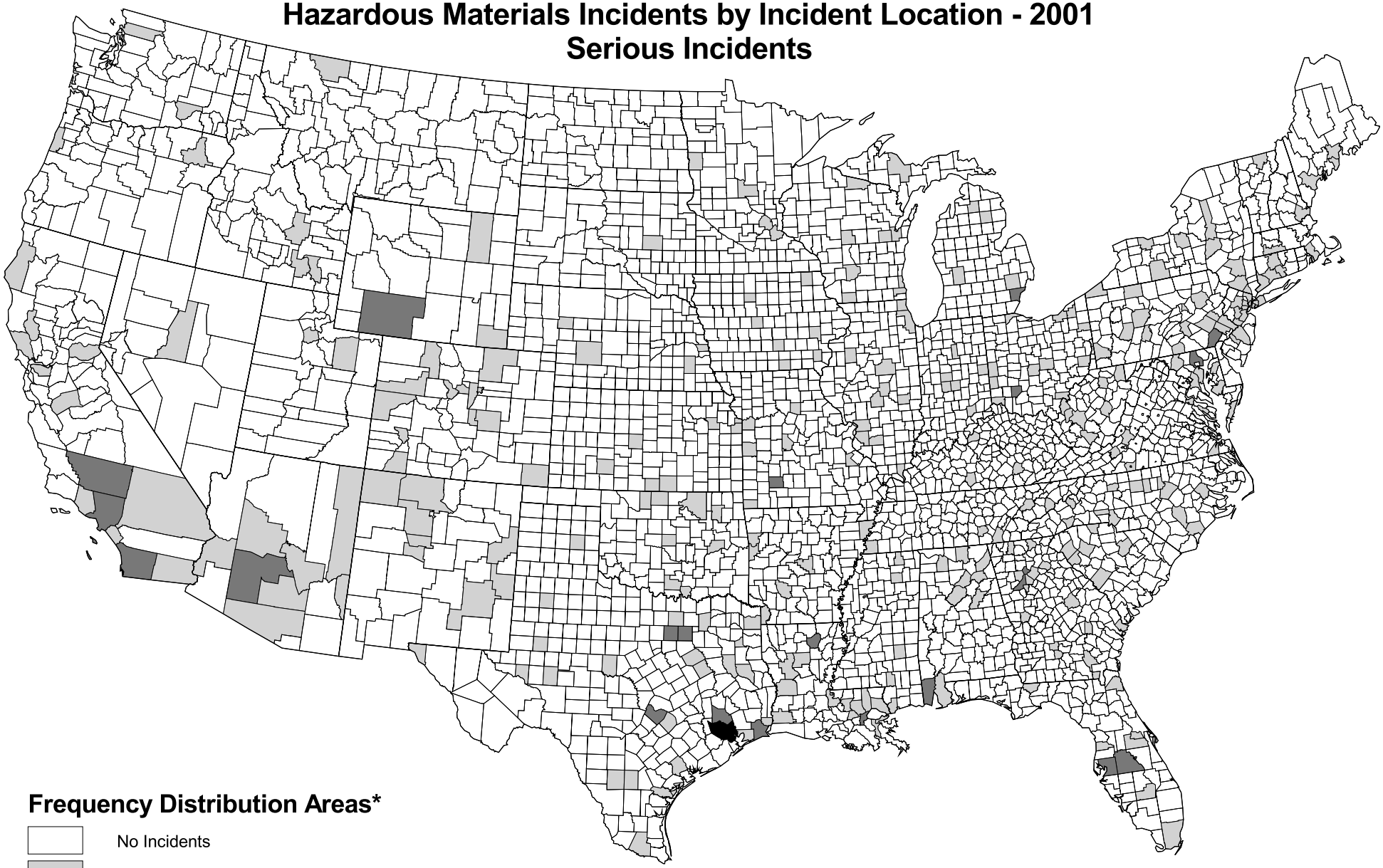
**Frequency Distribution Areas***

- No Incidents
- Between 1-2 Incidents
- Between 3-7 Incidents
- Greater Than 7 Incidents

*Areas shown are U.S. Counties

# Exhibit 11.7.2

## Hazardous Materials Incidents by Incident Location - 2001
## Serious Incidents



**Frequency Distribution Areas***

- No Incidents
- Between 1-2 Incidents
- Between 3-7 Incidents
- Greater Than 7 Incidents

*Areas shown are U.S. Counties