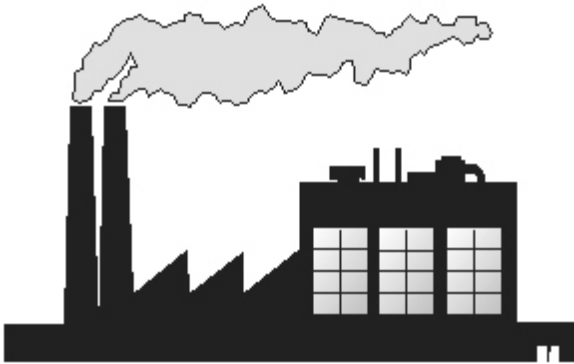


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Texas Hazardous Substances Emergency Events Surveillance (HSEES)

1993 - 2000 Report on Coastal Industrial Counties



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**TEXAS HAZARDOUS SUBSTANCES
EMERGENCY EVENTS SURVEILLANCE (HSEES)¹
REPORT ON COASTAL INDUSTRIAL COUNTIES
1993 - 2000**

Executive Summary

Since January 1, 1993, the Texas Department of Health has participated in the Hazardous Substances Emergency Events Surveillance (HSEES) System. This surveillance system is currently funded in sixteen states² by the Agency for Toxic Substances and Disease Registry (ATSDR) and collects data about emergency releases of non-petroleum hazardous substances. The goal of HSEES is to reduce morbidity (illness) and mortality (death) resulting from hazardous substances emergency events by identifying risk factors and developing risk reduction strategies.

From January 1, 1993, through December 31, 2000, project staff identified 17,854 events in Texas that met the HSEES case definition. The coastal industrial counties accounted for 69% (n=12,395) of these events. These counties include Brazoria, Calhoun, Chambers, Galveston, Harris, Jefferson, Matagorda, Nueces, and Orange. This region of Texas shares some common traits including similar coastal weather patterns that impact release occurrences and a large volume of industrial fixed-facility releases. Many of these counties are also some of the most populated counties in Texas.

Events were investigated through telephone, fax, and written inquiries to appropriate sources including local, county, and state emergency response personnel such as firefighters and HAZMAT staff; county health departments; industrial health and safety personnel; plant managers and employees; and private citizens.

Project staff collected data using a data collection form developed by ATSDR. In the coastal industrial counties, 94% of the HSEES events (n=11,691) occurred at fixed facilities and the remaining 6% (n=704) occurred during transport. For Texas as a whole, 90% (n=15,998) of the events occurred in fixed facilities and 10% (n=1,856) were transportation-related. A variety of types of transportation were involved in the events in the coastal industrial counties: 53% involved a motor vehicle (truck, van, tractor or automobile), 24% rail, and 17% water transportation; the remaining 6% involved air, pipeline, other, or were unknown.

In most events, only one hazardous substance was involved (n=11,985, 97%). Events involving two or three separate hazardous chemicals numbered 320 (3%). The remaining events involved 4 to 44 separate hazardous chemicals. A total of 13,216 substances were released during this time period. Evacuations were ordered in 291 events involving more than 29,261 people.

The ten chemicals most frequently released in this region of Texas were: mixtures, sulfur dioxide, benzene, butadiene, ethylene, nitric oxide, sulfuric acid, carbon monoxide, sodium hydroxide, and ammonia. The chemicals most frequently associated with events with victims were mixtures, chlorine, sulfuric acid, ammonia, hydrochloric acid, and sodium hydroxide. The chemicals most frequently associated with ordered evacuations were mixtures, ammonia, chlorine, benzene, hydrochloric acid, butadiene, hydrogen cyanide, and sulfuric acid.

A total of 2,129 persons were injured in 231 events. Injured persons included employees (n=1,173, 55%), members of the general public (n=871, 41%), and responders (n=78, 4%). The most common injuries were respiratory irritation, eye irritation, and nausea or vomiting. Most injured persons were treated at a hospital and released (n=1,216, 57%). Twenty-four fatalities (1%) were reported; 18 of these were associated with trauma injuries. Four victims died from trauma injuries in transportation-related accidents, and 14 victims died from trauma injuries associated with explosions in fixed facilities.

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²Other states currently participating in the study are Alabama, Colorado, Iowa, Louisiana, Minnesota, Mississippi, Missouri, New Jersey, New York, North Carolina, Oregon, Rhode Island, Utah, Washington, and Wisconsin.

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Introduction

Hazardous Substances Emergency Events Surveillance (HSEES) is an on-going, state-based project funded by the Agency for Toxic Substances and Disease Registry (ATSDR) to describe and evaluate the public health consequences of spills involving non-petroleum hazardous substances. In October 1992, the Texas Department of Health was awarded the cooperative agreement and joined the project which currently includes 16 states.

The goal of this project is to reduce morbidity (illness) and mortality (death) resulting from hazardous substances emergency events by identifying trends in the data and offering suggestions to reduce morbidity and mortality such as improved employee training, better equipment maintenance, or a process change. The objectives of the surveillance system are to:

- describe the distribution and characteristics of hazardous substances emergencies,
- describe the morbidity and mortality experienced by employees, responders and the general public that result from hazardous substances emergency events,
- identify risk factors associated with morbidity and mortality from the release of hazardous substances, and
- identify or develop prevention strategies that might reduce future morbidity and mortality associated with hazardous substances releases.

This report summarizes all data collected in the Texas coastal industrial counties from January 1, 1993, through December 31, 2000. These counties include Brazoria, Calhoun, Chambers, Galveston, Harris, Jefferson, Matagorda, Nueces, and Orange.

Methods

Definition of a Reportable Event

For the HSEES system, a reportable event is defined as an uncontrolled, illegal or threatened release of a hazardous substance (excluding petroleum products) that needs to be removed, cleaned up or neutralized according to federal, state or local law. A threatened release which leads to a public health action, such as an evacuation or traffic re-routing, also qualifies for inclusion in the system. If a release includes petroleum products with other hazardous substances which meet event criteria, the release is a reportable event. Due to the large volume of events that occur in Texas, the Texas HSEES project also adds the criteria that the release quantity must be greater than 10 pounds or 1 gallon (unless the CERCLA reportable quantity is 1 pound).

Definition of Fixed-facility and Transportation Events

Fixed-facility events were events which occurred inside buildings or outdoors on the premises of a facility or site. Some examples of fixed facilities are industrial sites, manufacturing plants, businesses, farms, schools, hospitals and private residences. Transportation events involved ground, rail, water, air or pipeline transport and occurred outside the boundaries of a fixed facility.

Data Collection Methods

Data are collected on a data collection form developed and provided by ATSDR. The categories of information collected during an investigation include the following:

- chemical name and quantity released;
- time, date, and location of spill;
- type of release (e.g. spill, explosion, air emission, etc.) and factors contributing to the release (e.g. equipment failure, operator error, improper mixing, etc.);
- weather information;
- injury information including victim category (employee, responder, or general public), injury type and treatment sought;
- use of personal protective equipment and number of persons decontaminated (employee, responder, or member of the general public);
- estimated size of the potentially exposed residential and workforce populations near the event;
- evacuation and in-place sheltering activities; and
- control actions and type of emergency response (emergency preparedness plan).

Each spill is given a unique record identification code for tracking purposes. In Texas, spills are identified through three main sources: the Environmental Protection Agency's National Response Center (NRC), the Texas Natural Resource Conservation Commission (TNRCC), and the U.S. Department of Transportation's Hazardous Materials Information Systems (HMIS). Additional spill identification is obtained from local fire department's hazardous materials units, industry, medical providers, and news media.

Each spill is investigated by telephone, fax, or email inquiries to appropriate sources including local, county and state emergency response personnel such as industrial health and safety or environmental personnel; plant managers and employees; firefighters and Hazardous Materials (HAZMAT) teams; county health departments; hospital staff; and private citizens.

Results

During the eight-year period of 1993-2000, project staff investigated 17,854 reported actual or threatened releases meeting the case criteria. The coastal industrial counties of Brazoria, Calhoun, Chambers, Galveston, Harris, Jefferson, Matagorda, Nueces, and Orange accounted for 69% (n=12,395) of these events. Threatened releases accounted for 32 of the 12,395 events, and situations involving substances both actually released and threatened to be released occurred in 33 events.

Geographic Distribution

The five counties with the highest spill incidence from 1993 to 2000 occurred within the coastal industrial counties of Harris, Jefferson, Galveston, Nueces, and Brazoria (Figure 1).

Distribution by Type of Event in Texas Coastal and Industrial Counties

Table 1 shows the total number of events, number of events with victims, and number of

victims for the coastal industrial counties compared to Texas as a whole. Table 2 shows the distribution of events for each coastal industrial county. Within this region of Texas, approximately 94% of events are fixed-facility and 6% are transportation-related. These areas, which correspond to the more populated and industrialized areas of Texas, accounted for 73% of the fixed-facility events, 38% of the transportation events, and 69% of the total reported events in Texas.

Transportation Events

Transportation Events in Texas Coastal Industrial Counties

Table 3 shows the total number of events, number of events with victims, and number of victims for transportation-related events in the coastal industrial counties compared to Texas as a whole.

The majority of the 704 transportation-related events involved motor vehicles (n=377, 53%). One hundred seventy-four events (24%) involved transport by rail and 122 events (17%) involved water transportation. The remaining transportation-related events involved pipeline, air, or other types of transport.

Fixed-facility Events

Comparison of Fixed-facility Events in Texas Coastal Industrial Counties

Table 4 shows the total number of events, number of events with victims, and number of victims for fixed-facility events in the coastal industrial counties compared to Texas as a whole.

Location Within Fixed Facility in Texas Coastal Industrial Counties

There were 12,553 locations reported in 11,691 events at fixed facilities. Up to two locations could be reported for each event. The process vessel was the most frequently reported location associated with fixed-facility events (n=6,212, 50%) (Figure 2). The process vessel, storage above ground, and piping were also the most common locations associated with events with victims and injuries.

Table 5 shows the most frequent locations in fixed-facility events involving victims, number of victims, and number of fatalities associated with these locations.

Factors Associated with Fixed-facility Events in Texas Coastal Industrial Counties

Data on factors associated with events were not collected until mid-1995. Equipment failure (n=6,272, 63%) was the most frequently identified factor, followed by human error (n=848, 9%) (Figure 3). Equipment failure and human error were also the most common factors associated with events with victims.

Types of Releases in Texas Coastal Industrial Counties

There were 13,216 chemicals released in the 12,395 events in this region of Texas. Most releases were air emissions (n = 9,257, 67%). The second most frequent release type involved spills (n = 4,182, 30%).

Temporal Distributions of Events

An analysis of events by quarter showed a tendency for there to be a larger number of events from April through September (second and third quarters), compared to the first and fourth quarters of the calendar year. Specifically May and August have the largest number of events. This may be due to weather patterns including extreme heat and increased frequency of tropical storms. These conditions may lead to flare and power outages that can result in an increased frequency of air release events.

Substance Categories in Texas Coastal Industrial Counties

HSEES substances are grouped into 11 categories. In most events (n=11,985, 97%) only one hazardous substance was involved. Table 6 shows the distribution of these substances by substance category and type of event in Texas. For fixed facilities, the largest substance category was volatile organic compounds, followed by other inorganic substances. In transportation-related events, the largest substance category was "Other substances," followed by volatile organic compounds.

Table 7 shows the number of substances released in all events, the number of events involving victims and the percentage of releases with victims. Releases involving chlorine (15%) and pesticides (8%) were more likely to result in victims. These substances were not among the top ten most frequently spilled chemicals.

The ten chemicals most frequently released in this region of Texas were: mixtures (n=3,911), sulfur dioxide (n=1,189), benzene (n=604), butadiene (n=582), ethylene (n=332), nitric oxide (n=291), sulfuric acid (n=235), carbon monoxide (n=216), sodium hydroxide (n=211), and ammonia (n=190).

Chemical Substances Associated with Victims in Texas Coastal Industrial Counties

Table 8 lists the 8 chemicals that were involved in at least 6 events that had victims. In events involving victims, chemical mixtures occurred the most frequently (n=52) followed by chlorine (n=17) and sulfuric acid (n=13).

However, these chemicals are different from the chemicals associated with the largest number of victims in a single event. These chemicals in single events included ammonia (583 people), mixtures (2 events injuring 164 people and 141 people, respectively), cumene (92 people), an explosion involving 12 different substances (90 people), nitrogen dioxide (68 people), and diketene (a volatile organic compound) (58 people). These seven events accounted for 56% of the victims.

Chemicals Associated with Evacuations in Texas Coastal Industrial Counties

The substances most frequently associated with the 291 ordered evacuations were mixtures (n=54, 13%), ammonia (n=30, 7%), chlorine (n=15, 4%), benzene (n=14, 3%), hydrochloric acid (n=12, 3%), butadiene (n=9, 2%), hydrogen cyanide (n=8, 2%), and sulfuric acid (n=8, 2%).

Victim Information in Texas Coastal Industrial Counties

A total of 231 events (2%) involved injury or death; 189 (82%) occurred at fixed facilities and 42 (18%) were transportation-related. Of the 2,129 victims, 1,968 people were injured in fixed-facility events and 161 people were injured in transportation events. The majority of people injured in both fixed facilities (n=1,134) and during transportation (n=39)

were employees. For members of the general public, 755 were injured in fixed-facility events and 116 injured in transportation events. For responders, 72 were injured in fixed facilities and 6 were injured in transportation events. The victim category was unknown for the other 7 victims.

For members of the general public there was a large spike in 1994 due to an ammonia release from a fixed facility involving 583 victims, including 580 members of the general public (Figure 4). In 1995, there was a transportation event involving a cumene release associated with 92 victims, including 90 members of the general public.

For employee victims, a nitrogen dioxide release at a fixed facility in 1994 injured 68 employees. In 1997 equipment failure in a fixed-facility event injured 164 employees. In 1999, two events involving equipment failure injured 141 and 54 employees, respectively. In 2000, an explosion and fire in a fixed-facility released 12 different substances and injured 90 people, including 80 employees, 6 employee-responders, and 4 members of the general public.

Of the 78 injured responders, the responder type was unknown for 67. In mid 1995 responder type began to be collected. Since mid 1995, eight professional fire fighters, two police officers, and one emergency medical technician have been injured.

The majority of persons injured at fixed facilities reported respiratory irritation (n=1,269, 36%) (Table 9). The second most common health effect reported was eye irritation (n=589, 17%). For transportation events, the most commonly reported injuries were respiratory irritation (n=89, 31%) and nausea or vomiting (n=60, 21%). Trauma injuries, especially those involving fatalities, were frequently related to explosions within fixed facilities or vehicular accidents in transportation situations. Trauma injuries in transportation events were related to the vehicular accident and not to the release of hazardous substances. Most injured persons (n=1,216, 57%) were treated at the hospital and released or received first aid (n=444, 21%) (Table 10).

Of the 24 victims who died, all four who died in transportation-related events sustained traumatic injuries due to vehicular accidents. This included two employees and two members of the general public. Fourteen of the 20 persons (70%) who died in fixed-facility events sustained traumatic injuries, and most of these were due to explosions. Nineteen employees and one member of the general public died in fixed-facility events. There were no responder fatalities.

Evacuations and In-place Sheltering in Texas Coastal Industrial Counties

Of the 12,395 reported events from 1993 through 2000, an official evacuation order was given in 291 (2%) events; 254 (87%) involved fixed facilities and 37 (13%) involved transportation events. More than half the evacuations involved 25 or fewer people (Table 11).

Approximately 47% of the evacuations were of a building or affected part of a building, 23% were of a circular radius from the release, and 21% were downwind or downstream from a release. The remaining 4% were of a circular radius and downwind from the release or used no criteria. In-place sheltering was ordered in 94 events, and instructions regarding precautions to take during in-place sheltering were provided in 58 events.

Industries in Texas Coastal Industrial Counties

The majority of events (53%) were described as involving industrial and miscellaneous chemicals industries (Table 12). In fixed-facility events, the most frequent industries were industrial and miscellaneous chemicals (n = 6,476, 55%), petroleum refining (n=2,332, 20%), and plastics, synthetics, and resins (n=1,378, 12%). In transportation-related events, the most frequent industries were trucking services (n=391, 43%) and railroads (n=159, 23%).

The most frequent industries in events involving victims are industrial and miscellaneous

chemicals (n=84, 37%), trucking services (n=29, 13%), and plastics, synthetics, and resins (n=11, 5%) (Table 13).

Summary

Figure 5 shows the cumulative data for the distribution of total numbers of victims, events, events with victims, and substances for each year from 1993 to 2000 for Texas as a whole. Figure 6 shows the cumulative data for the distribution of total numbers of victims, events, events with victims, and substances for each year from 1993 to 2000 for the Texas coastal industrial counties.

Contact Information

To obtain additional copies of this report or other materials, please contact the Texas HSEES program, Environmental Epidemiology Division (T-702), Bureau of Epidemiology, Texas Department of Health, 1100 West 49th Street, Austin, Texas 78756-3199, (512) 458-7269.

Table 1. Summary statistics for the Texas coastal industrial counties and Texas statewide, Texas HSEES, 1993 - 2000

	Texas Events	Coastal Industrial Counties Events (%)
Total number of events	17,854	12,395 (69.4)
Total number of events with victims	486	231 (47.5)
Total number of victims	3,447	2,129 (61.8)

Table 2. Distribution of type of event for Texas coastal industrial counties, Texas HSEES, 1993 - 2000

County	Fixed Facility No. of Events (%)	Transportation No. of Events (%)	Total No. of Events
Brazoria	970 (96.1)	39 (3.9)	1,009
Calhoun	504 (98.8)	6 (1.2)	510
Chambers	78 (92.9)	6 (7.1)	84
Galveston	1,521 (97.8)	34 (2.2)	1,521
Harris	5,279 (90.9)	525 (9.1)	5,804
Jefferson	1,952 (97.6)	48 (2.4)	2,000
Matagorda	130 (99.2)	1 (0.8)	131
Nueces	1,002 (96.9)	32 (3.1)	1,034
Orange	255 (95.1)	13 (4.9)	268
Total of coastal counties	11,691 (94.3)	704 (5.6)	12,395
All counties	15,998 (89.6)	1,856 (10.4)	17,854

Table 3. Summary statistics for transportation events in Texas coastal industrial counties and Texas statewide, Texas HSEES, 1993 - 2000

	Texas Events	Coastal Industrial Counties Events (%)
Total number of transportation events	1,856	704 (37.9)
Total number of transportation events with victims	161	42 (26.1)
Total number of victims in transportation events	504	161 (31.9)

Table 4. Comparison of fixed-facility events in Texas coastal industrial counties to Texas statewide, Texas HSEES, 1993 - 2000

	Texas Events	Coastal Industrial Counties Events (%)
Total number of fixed-facility events	15,998	11,691 (73.1)
Total number of fixed-facility events with victims	325	189 (58.2)
Total number of victims in fixed-facility events	2,943	1,968 (66.9)

Table 5. Distribution of locations* in fixed-facility events involving victims, Texas HSEES, 1993 - 2000

Location	No. of Locations (%)	No. of Victims (%)	No. of Fatalities (%)
Processing vessel	52 (24.9)	1,129 (48.3)	3 (13.6)
Piping	35 (16.7)	331 (14.2)	2 (9.1)
Storage above ground	35 (16.7)	177 (7.6)	6 (27.3)
Material handling	34 (16.3)	137 (5.9)	2 (9.1)
All other	32 (15.3)	405 (17.3)	0 (0.0)
Ancillary process equipment	21 (10.0)	160 (6.8)	9 (40.9)
Total**	209 (99.9)	2,339 (100.1)	22 (100.0)

* Number of locations exceeds number of events because events may involve one or two locations. Victims and fatalities were counted more than once if the event associated with the victim or fatality involved more than one location.

** Percentages may not add to 100% due to rounding

Table 6. Distribution of substances released by substance category and type of event in Texas coastal industrial counties, Texas HSEES, 1993 - 2000*

Substance Category	Type of Event				All Events	
	Fixed Facility		Transportation			
	No. of Substances	(%)	No. of Substances	(%)	No. of Substances	(%)
Acids	504	(4.0)	115	(15.0)	619	(4.7)
Ammonia	194	(1.6)	7	(0.9)	201	(1.5)
Bases	231	(1.9)	44	(5.7)	275	(2.1)
Chlorine	110	(0.9)	4	(0.5)	114	(0.9)
Mixtures†	1,970	(15.8)	54	(7.1)	2,024	(15.3)
Other inorganic substances	3,387	(27.2)	79	(10.3)	3,466	(26.2)
Other substances	1,804	(14.5)	240	(31.3)	2,044	(15.5)
Paints and dyes	32	(0.3)	26	(3.4)	58	(0.4)
Pesticides	130	(1.0)	19	(2.5)	149	(1.1)
Polychlorinated biphenyls	52	(0.4)	2	(0.3)	54	(0.4)
Volatile organic compounds	4,034	(32.4)	176	(23.0)	4,210	(31.9)
Total**	12,448	(100.0)	766	(100.0)	13,214	(100.0)

* Missing information on two records.

† Mixtures of substances from different categories.

** Total exceeds total number of events (12,395) because more than one substance was released.

Table 7. Number of substances released* in all events and events with victims, by substance category, in Texas coastal industrial counties, Texas HSEES, 1993 - 2000

Substance Category	No. of Releases (%)	No. of Releases with Victims (%)	% of Releases with Victims
Acids	619 (4.7)	43 (13.1)	6.9
Ammonia	201 (1.5)	13 (4.0)	6.5
Bases	275 (2.1)	11 (3.3)	4.0
Chlorine	114 (0.9)	17 (5.2)	14.9
Mixtures	2,024 (15.3)	37 (11.2)	1.8
Other inorganic substances	3,466 (26.2)	40 (12.2)	1.2
Other substances	2,044 (15.5)	103 (31.3)	5.0
Paints and dyes	58 (0.4)	2 (0.6)	3.4
Pesticides	149 (1.1)	12 (3.6)	8.1
Polychlorinated biphenyls	54 (0.4)	0 (0.0)	0.0
Volatile organic compounds	4,210 (31.9)	50 (15.2)	1.2
Total	13,214 (100.0)	328 (100.0)	2.5

* Total exceeds total number of events (12,395) because more than one substance was released.

Table 8. Distribution of most frequent substances associated with most frequent number of events involving victims in Texas coastal industrial counties, Texas HSEES, 1993-2000

Substance	No. of Events	No. of Victims
Mixture	52	710
Chlorine	17	80
Sulfuric acid	13	67
Ammonia	12	723
Hydrochloric acid	12	33
Sodium hydroxide	8	25
Sulfur dioxide	7	20
Benzene	6	69
Total	127	1,727

Table 9. Distribution of type of injury* by type of event in Texas coastal industrial counties, Texas HSEES, 1993 - 2000

Type of Injury	Type of Event				All Events	
	Fixed Facility		Transportation			
	No. of Injuries	(%)	No. of Injuries	(%)	No. of Injuries	(%)
Respiratory irritation	1,269	(36.0)	89	(30.8)	1,358	(35.6)
Eye irritation	589	(16.7)	39	(13.5)	628	(16.5)
Nausea or vomiting	424	(12.0)	60	(20.8)	484	(12.7)
Headache	318	(9.0)	29	(10.1)	347	(9.1)
Skin irritation	298	(8.5)	7	(2.4)	305	(8.0)
Dizziness or other CNS† symptoms	209	(5.9)	25	(8.7)	234	(6.1)
Trauma	130	(3.7)	28	(9.7)	158	(4.1)
Other	108	(3.1)	2	(0.7)	110	(2.9)
Heart problems	70	(2.0)	5	(1.7)	75	(2.0)
Chemical burns	52	(1.5)	5	(1.8)	57	(1.5)
Thermal burns	37	(1.1)	0	(0.0)	37	(1.0)
Shortness of breath	13	(0.4)	0	(0.0)	13	(0.3)
Heat stress	5	(0.1)	0	(0.0)	5	(0.1)
Total**	3,522	(100.0)	289	(100.2)	3,811	(99.9)

* A total of 2,129 persons were injured (1,968 in fixed-facility events and 161 in transportation-related events). Some persons sustained more than one type of injury.

† CNS = Central Nervous System

** Percentages may not add to 100% due to rounding.

Table 10. Type of medical treatment needed by injured persons in Texas coastal industrial counties, Texas HSEES, 1993 - 2000

Medical Treatment	Fixed Facility (%)	Transportation (%)	Total (%)
Injuries reported by official within 24 hours	7 (0.4)	0 (0.0)	7 (0.3)
Seen by private MD within 24 hours	138 (7.0)	8 (5.0)	146 (6.9)
First aid	436 (22.2)	8 (5.0)	444 (20.9)
Observed at hospital	159 (8.1)	10 (6.2)	169 (7.9)
Treated at hospital and released	1,095 (55.6)	121 (75.2)	1,216 (57.1)
Admitted to hospital	113 (5.7)	10 (6.2)	123 (5.8)
Fatality	20 (1.0)	4 (2.5)	24 (1.1)
Total*	1,968 (100.0)	161 (100.1)	2,129 (100.0)

* Percentages may not add to 100% due to rounding.

Table 11. Evacuated populations* in coastal industrial counties, Texas HSEES, 1993-2000

No. of Persons Evacuated	No. of Events (%)	Total No. of Persons (%)
≤25	129 (58.4)	1,423 (4.9)
26 - 50	27 (12.2)	1,091 (3.7)
51 - 100	28 (12.7)	2,351 (8.0)
101 - 500	26 (11.8)	5,702 (19.5)
501 - 1000	5 (2.3)	3,540 (12.1)
> 1000	6 (2.7)	15,154 (51.8)
Total**	221 (100.1)	29,261 (100.0)

* Number of people evacuated is missing or unknown for 70 evacuations.

** Percentages may not add to 100% due to rounding.

Table 12. Industries involved in events in Texas coastal industrial counties, Texas HSEES, 1993-2000*

Industry	No. of Events (%)	No. of Events with Victims (%)
Chemicals and allied products†	7,983 (64.4)	102 (1.3)
Petroleum refining and coal products	2,392 (19.3)	8 (0.3)
Transportation‡	1,046 (8.4)	50 (4.8)
Utilities and sanitary services§	240 (1.9)	10 (4.2)
Mining (oil and gas extraction)	63 (0.5)	1 (1.6)
All other industries	670 (5.4)	59 (8.8)
Total**	12,394 (99.9)	230 (1.9)

* Industry information missing for 1 event.

† Includes industrial and miscellaneous chemicals, plastics, synthetics, and resins, agricultural chemicals, paints varnishes, and related products, drugs, soaps, and cosmetics.

‡ Includes trucking services, water transportation, railroads, warehousing/storage, pipelines, except natural gas, air transportation, services incidental to transportation, bus service and urban transit, and U.S. Postal Service.

§ Includes electric light and power, sanitary services, not specified utilities, water supply and irrigation, electric and gas, gas and steam.

** Percentages may not add to 100% due to rounding.