

Louisiana Hazardous Substances Emergency Events Surveillance (HSEES) System

2008: A Summary Report

Louisiana Department of Health and Hospitals
Office of Public Health
Section of Environmental Epidemiology & Toxicology



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EXECUTIVE SUMMARY

The Hazardous Substances Emergency Events Surveillance (HSEES) system, maintained by the Agency for Toxic Substances and Disease Registry (ATSDR), actively collects information to describe the public health consequences of acute releases of hazardous substances in participating states. The Louisiana Department of Health and Hospitals, Office of Public Health, Center for Environmental Health Services, Section of Environmental Epidemiology and Toxicology has participated in this surveillance system since 2001. This report summarizes the characteristics of events reported to Louisiana in 2008. Information about acute events involving hazardous substances was collected, including the substance(s) released, number of victims, number and types of injuries, and number of evacuations. The data were computerized using an ATSDR-provided web-based data entry system.

In 2008, 1013 events met the HSEES surveillance definition. In 699 (71.1%) events, only one substance was released. The most commonly reported categories of substances were volatile organic compounds, other inorganic substances, and acids. During this reporting period, 33 events (3.3% of all reported events) resulted in a total of 47 victims. The most frequently reported injuries were trauma and respiratory irritation. Evacuations were ordered for 17 (1.7%) events.

Prevention outreach efforts for 2008 focused on responder injuries related to HSEES events and summarizing HSEES data.

INTRODUCTION

The Centers for Disease Control and Prevention defines surveillance as the

“ongoing, systematic collection, analysis, and interpretation of health data essential to the planning, implementation, and evaluation of public health practice, closely integrated with the timely dissemination of these data to those who need to know. The final link of the surveillance chain is the application of these data to prevention and control. A surveillance system includes a functional capacity for data collection, analysis, and dissemination linked to public health programs”[1].

Since 1990, the Agency for Toxic Substances and Disease Registry (ATSDR) has maintained an active, state-based Hazardous Substances Emergency Events Surveillance (HSEES) system to describe the public health consequences of releases of hazardous substances. The decision to initiate a surveillance system of this type was based on a study published in 1989 about the reporting of hazardous substances releases to three national databases: the National Response Center Database, the Hazardous Material Information System (HMIS), and the Acute Hazardous Events Database [2].

A review of these databases indicated limitations. Many events were missed because of specific reporting requirements (for example, the HMIS did not record events involving intrastate carriers or fixed-facility events). Other important information was not recorded, such as the demographic characteristics of victims, the types of injuries sustained, and the number of persons evacuated.

As a result of this review, ATSDR implemented the HSEES system to more fully describe the public health consequences of releases of hazardous substances.

HSEES has several goals:

- To describe the distribution and characteristics of acute hazardous substances releases;
- To describe morbidity and mortality among employees, responders, and the general public that resulted from hazardous substances releases; and
- To develop strategies that might reduce future morbidity and mortality resulting from the release of hazardous substances.

For a surveillance system to be useful, it must not only be a repository for data, but the data must also be used to protect public health.

In recent years, the last goal of the HSEES system has been emphasized; i.e., to develop strategies to reduce subsequent morbidity and mortality by having each participating state analyze its data and develop appropriate prevention outreach activities. These activities are intended to provide industry, responders, and the general public with information that can help prevent chemical releases and reduce morbidity and mortality if a release occurs.

The Louisiana Department of Health and Hospitals, Office of Public Health, Center for Environmental Health Services, Section of Environmental Epidemiology and Toxicology has participated in this surveillance system since 2001. In 2008, fourteen state health departments participated in HSEES: Colorado, Florida, Iowa, Louisiana, Michigan, Minnesota, New Jersey, New York, North Carolina, Oregon, Texas, Utah, Washington, and Wisconsin.

This report provides an overview of HSEES for 2008 in Louisiana, summarizes the characteristics of acute releases of hazardous substances and their associated public health

consequences, and demonstrates how data from the system are translated into prevention activities to protect public health.

METHODS

In 2005 an updated data-collection form was approved by the Office of Management and Budget. Information was collected about each event, including substance(s) released, victims, injuries (adverse health effects and symptoms), and evacuations.

Various data sources were used to obtain information about these events. These sources included, but were not limited to, the Louisiana Department of Public Safety and Corrections, Office of State Police, the Louisiana Department of Environmental Quality (LDEQ), the U.S. Coast Guard National Response Center, and the U.S. Department of Transportation, Hazardous Materials Information System (HMIS). Census data were used to estimate the number of residents in the vicinity of most of the events. All data were computerized using a web-based data entry system provided by ATSDR.

A HSEES event is defined as an uncontrolled or illegal acute release of any hazardous substance (except petroleum when petroleum is the only substance released), in any amount for substances listed on the HSEES Mandatory Chemical Reporting List, or, if not on the list, in an amount greater than or equal to 10 lbs or 1 gallon. Threatened releases of qualifying amounts will be included if the threat led to an action (e.g., evacuation) to protect the public health. Petroleum-only releases are not included because of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). [Note: The Petroleum Exclusion clause of

CERCLA excludes any form of petroleum that has not been refined to the point of becoming a single-chemical product]. HSEES defines victims as people who experience at least one documented adverse health effect within 24 hours after the event or who die as a consequence of the event. Victims who receive more than one type of injury or symptom are counted once in each applicable injury type or symptom. Events are defined as transportation related if they occur (a) during surface, air, pipeline, or water transport of hazardous substances, or (b) before being unloaded from a vehicle or vessel. All other events are considered fixed-facility events.

For data analyses, the substances released were categorized into 15 groups. The category “mixture” comprises substances from different categories that were mixed or formed from a reaction before the event; the category “other inorganic substances” comprises all inorganic substances except acids, bases, ammonia, and chlorine; and the category “other” comprises substances that could not be grouped into one of the other existing categories.

RESULTS

In 2008, a total of 1013 acute hazardous substances events met the HSEES surveillance definition. A total of 843 (83.2%) events occurred in fixed facilities. The parishes with the most events (Table 1) were East Baton Rouge (220 [21.7%]), Calcasieu (115 [11.4%]), Ascension (115 [11.4%]) and St. Charles (114 [11.3%]).

Table 1.—Number of events meeting the surveillance definition, by parish and type of event—
Louisiana Hazardous Substances Emergency Events Surveillance, 2008

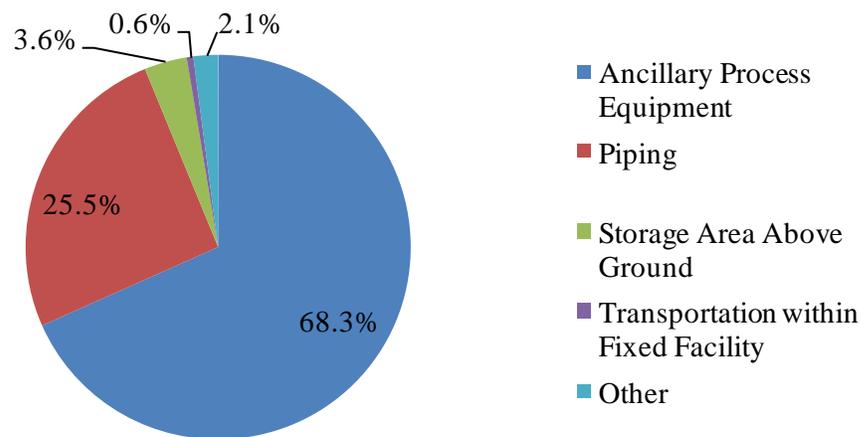
Parish	Type of Event				All Events	
	Fixed Facility		Transportation			
	No. Events	%*	No. Events	%*	No. Events	%*
Acadia	2	66.7	1	33.3	3	0.3
Allen	1	100.0	0	0.0	1	0.1
Ascension	96	83.5	19	16.5	115	11.4
Assumption	2	100.0	0	0.0	2	0.2
Bienville	2	100.0	0	0.0	2	0.2
Bossier	4	44.4	5	55.6	9	0.9
Caddo	16	44.4	20	55.6	36	3.6
Calcasieu	106	92.2	9	7.8	115	11.4
Caldwell	2	100.0	0	0.0	2	0.2
Cameron	5	100.0	0	0.0	5	0.5
Claiborne	0	0.0	1	100.0	1	0.1
De Soto	3	75.0	1	25.0	4	0.4
E. Baton Rouge	200	90.9	20	9.1	220	21.7
Franklin	1	50.0	1	50.0	2	0.2
Iberville	61	92.4	5	7.6	66	6.5
Jefferson	17	58.6	12	41.4	29	2.9
Jefferson Davis	0	0.0	1	100.0	1	0.1
Lafayette	4	44.4	5	55.6	9	0.9
Lafourche	6	75.0	2	25.0	8	0.8
Livingston	2	100.0	0	0.0	2	0.2
Morehouse	0	0.0	1	100.0	1	0.1
Natchitoches	3	50.0	3	50.0	6	0.6
Orleans	9	64.3	5	35.7	14	1.4
Ouachita	12	80.0	3	20.0	15	1.5
Plaquemines	31	93.9	2	6.1	33	3.3
Pointe Coupee	3	17.6	14	82.4	17	1.7
Rapides	7	58.3	5	41.7	12	1.2
Richland	0	0.0	1	100.0	1	0.1
St. Bernard	63	95.5	3	4.5	66	6.5
St. Charles	105	92.1	9	7.9	114	11.3
St. James	37	92.5	3	7.5	40	3.9
St. John the Baptist	20	83.3	4	16.7	24	2.4
St. Landry	1	50.0	1	50.0	2	0.2
St. Martin	0	0.0	2	100.0	2	0.2
St. Mary	0	0.0	1	100.0	1	0.1
St. Tammany	2	40.0	3	60.0	5	0.5
Tangipahoa	1	25.0	3	75.0	4	0.4
Terrebonne	3	75.0	1	25.0	4	0.4
Vermilion	2	66.7	1	33.3	3	0.3
W. Baton Rouge	10	83.3	2	16.7	12	1.2
Washington	1	50.0	1	50.0	2	0.2
Webster	3	100.0	0	0.0	3	0.3
Total ‡	843	83.2	170	16.8	1013	100.4

* Percentage = (number of events by type of event per parish ÷ total number of events in that parish) x 100

‡ Percentages do not total 100% because of rounding.

For each fixed-facility event occurring in mining, manufacturing, or utilities, one or two choices can be selected to describe the type of area where the event occurred or the equipment involved with the event. Only one type of area was reported for 726 (86.1%) events, a combination of two area types were reported for 1 (0.1%) event, and the type of area was unknown for 116 (13.8%) events. Among events with one type of area reported, the main areas were classified as follows: 496 (68.3%) ancillary process equipment, 185 (25.5%) piping, and 26 (3.6%) storage area above ground (Figure 1). The one event with two areas involved ancillary process equipment in combination with a transformer or capacitor.

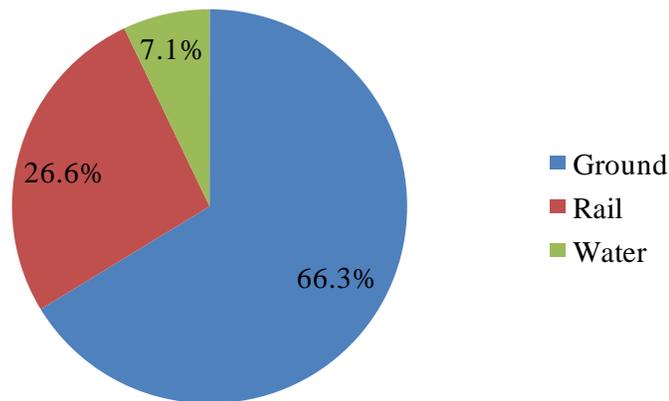
Figure 1.—Primary areas or equipment of fixed facilities involved in mining, manufacturing, or utility events—Louisiana Hazardous Substances Emergency Events Surveillance, 2008



Of the 170 transportation-related events, 112 (66.3%) occurred during ground transport (e.g., truck, van, or tractor) and 45 (26.6%) involved transport by rail (Figure 2). Fewer events involved other transportation modes. The largest proportions of transportation-related events

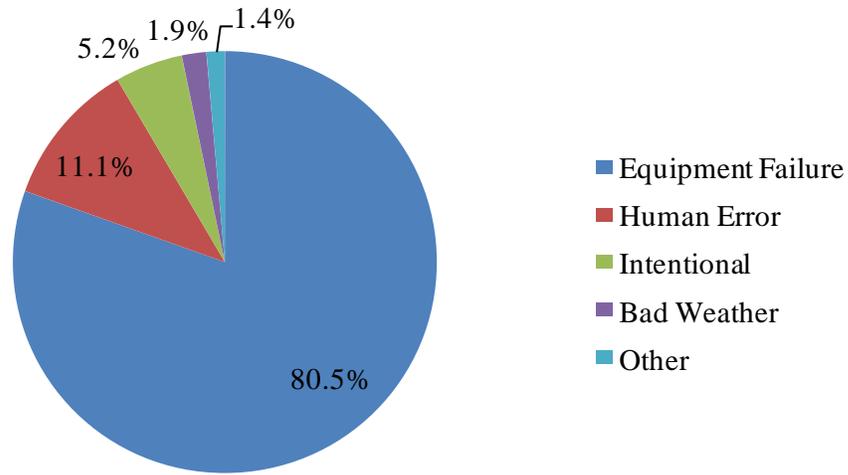
occurred from a moving vehicle or vessel (56 [40.0%]) or from a stationary vehicle or vessel (42 [30.0%]).

Figure 2.—Distribution of transportation-related events, by type of transport—Louisiana Hazardous Substances Emergency Events Surveillance, 2008



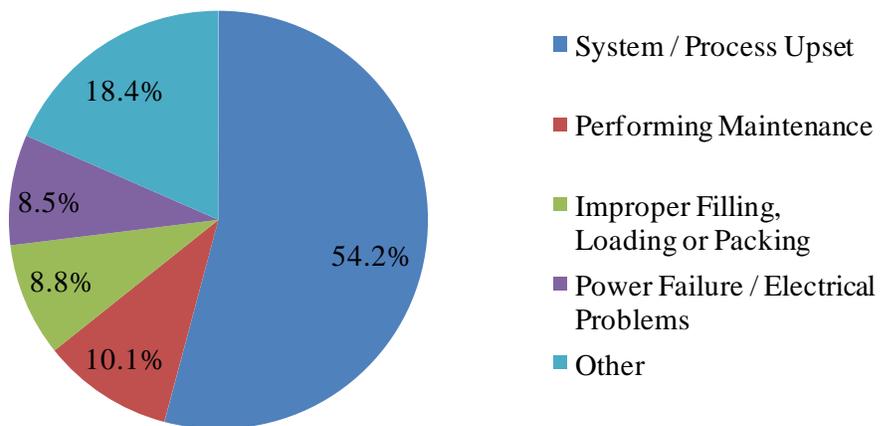
Primary and secondary factors contributing to the events were reported. Primary factors were reported for 1008 (99.5%) events (Figure 3a). Most (85.0%) fixed-facility events reported equipment failure as the primary factor, and most (58.0%) transportation-related events also reported equipment failure as the primary factor. Secondary factors were reported for 445 (43.9%) events (Figure 3b). Of the reported secondary factors, most 216 (60.5%) fixed-facility events involved system/process upset and most 36 (40.9%) transportation-related events involved improper filling, loading, or packing.

Figure 3a.—Primary factors reported as contributing to events—Louisiana Hazardous Substances Emergency Events Surveillance, 2008



*Primary factors were unknown for 5 events.

Figure 3b.—Secondary factors reported as contributing to events—Louisiana Hazardous Substances Emergency Events Surveillance, 2008*.



*568 releases did not have a secondary factor or the secondary factor was unknown.

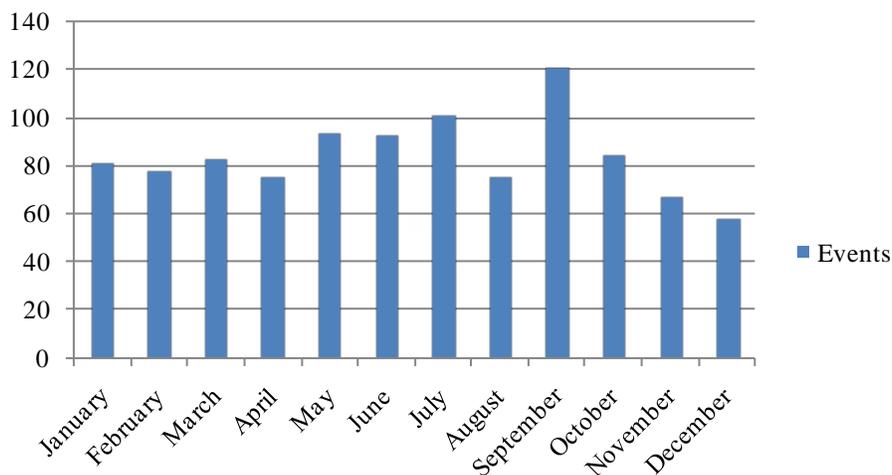
More than 71% of all events involved the release of only one substance. Two substances were released in approximately 12% of the events, and approximately 16% involved the release of more than two substances (Table 2). Fixed-facility events were more likely than transportation events to have two or more substances released in an event (33.5% vs. 5.3%).

Table 2.—Number of substances involved per event, by type of event—Louisiana Hazardous Substances Emergency Events Surveillance, 2008

No. Substances	Type of Event						All Events		
	Fixed Facility			Transportation			No. Events	%	Total Substances
	No. Events	%	Total Substances	No. Events	%	Total Substances			
1	561	66.5	561	161	94.7	161	722	71.3	722
2	119	14.1	238	6	3.5	12	125	12.3	250
3	63	7.5	189	1	0.6	3	64	6.3	192
4	37	4.4	148	1	0.6	4	38	3.8	152
≥ 5	63	7.5	424	1	0.6	5	64	6.3	429
Total	843	100.0	1560	170	100.0	185	1013	100.0	1745

HSEES events were more likely to occur in industrial areas as opposed to commercial, residential or agricultural areas. In addition, HSEES events were more likely to occur in the 6 hours before noon (35.8%) and the 6 hours after and including noon (30.8%), compared with the 6 hours before midnight (18.4%) and the 6 hours after and including midnight (15.0%). Two events did not have a time specified. Additionally, 15-17% of events occurred on each weekday as compared with 11-12% on a weekend day. The highest number of events occurred in September (12 [11.9%]) (Figure 4).

Figure 4.— Monthly breakdown of HSEES events for calendar year 2008—Louisiana Hazardous Substances Emergency Events Surveillance, 2008



Industries

The largest proportions of HSEES events were associated with the manufacturing (745 [73.5%]) and transportation (177 [17.5%]) industries (Table 3). Within manufacturing, petroleum manufacturing (313 [42.0%]) accounted for most of the events. The largest number of events with victims occurred in the manufacturing industry (17 [51.5%]). The total number of victims was greatest in the manufacturing industry (21 [44.7%]) followed by the number of victims in public administration (7 [14.9%]). The subcategory chemical manufacturing (North American Industry Classification System [NAICS] code 3251 and subcategories) accounted for 78.9% of all victims in the manufacturing industry. Although the manufacturing industry resulted in a large proportion of events with victims and a large number of victims, only 2.3% of all 745 events resulted in victims. Conversely, 50.0% of all events in the Administrative and Support and Waste Management and Remediation Services industry (NAICS code 562) resulted in victims, but this industry represents a small proportion (3.0%) of events with victims. The

incident with the largest number of injuries was in the public administration industry (NAICS Code 926120). Seven people were slightly injured when a tanker leaked chloroacetyl chloride.

Table 3.—Industries involved in hazardous substance events and events with victims, by category— Louisiana Hazardous Substances Emergency Events Surveillance, 2008

Industry Category	Total Events		Events with Victims		Percentage of Events with Victims	Total no. Victims # (maximum)*
	No.	%	No.	%		
Accommodation and Food Services	No HSEES Events					
Administrative and Support and Waste Management and Remediation Services	2	0.2	1	3.0	50.0	1 (1)
Agriculture, Forestry, Fishing and Hunting	2	0.2	0	0.0	0.0	0
Arts, Entertainment, and Recreation	No HSEES Events					
Construction	5	0.5	0	0.0	0.0	0
Educational Services	No HSEES Events					
Finance and Insurance	No HSEES Events					
Health Care and Social Assistance	2	0.2	0	0.0	0.0	0
Information	No HSEES Events					
Management of Companies and Enterprises	No HSEES Events					
Manufacturing	745	73.5	17	51.5	2.3	21 (4)
Mining	12	1.2	0	0.0	0.0	0
Not an Industry	8	0.8	2	6.1	25.0	2 (1)
Not Identified	24	2.4	4	12.1	16.7	4 (1)
Other Services (except Public Administration)	1	0.1	1	3.0	100.0	2 (2)
Professional, Scientific, and Technical Services	No HSEES Events					
Public Administration	5	0.5	1	3.0	20.0	7 (7)
Real Estate and Rental and Leasing	No HSEES Events					
Retail Trade	4	0.4	0	0.0	0.0	0
Transportation and Warehousing	177	17.5	3	9.1	1.7	3 (1)
Utilities	12	1.2	2	6.1	16.7	4 (3)
Wholesale Trade	14	1.4	2	6.1	14.3	3 (2)
Total[‡]	1013	100.1	33	100.0	-	47 (7)

*Minimum number of victims per event = 1.

‡ Percentages do not total 100% because of rounding.

Substances

A total of 1745 substances were released in all events, of which 43 (2.5%) substances were reported as threatened to be released. The individual substances most frequently released were sulfur dioxide, hydrogen sulfide, volatile organic compounds, benzene, and ethylene (Appendix). Substances were grouped into 16 categories. The substance categories most commonly released in fixed-facility events were volatile organic compounds (676 [43.3%]), other inorganic substances (447 [28.7%]), and acids (86 [5.5%]) (Table 4). In transportation-related events, the most common substance categories released were acids (49 [26.5%]), volatile organic compounds (33 [17.8%]), and bases (22 [11.9%]).

Two types of releases for each substance (e.g., spill and air) could be reported. Only one substance involved more than one release type. In that event, 1,3-butadiene was both spilled and released into the air.

Table 4.—Number of substances involved, by substance category and type of event—Louisiana Hazardous Substances Emergency Events Surveillance, 2008

Substance Category	Type of Event				All Events	
	Fixed facility		Transportation			
	No. Substances	%	No. Substances	%	No. Substances	%
Acids	86	5.5	49	26.5	135	7.7
Ammonia	60	3.8	8	4.3	68	3.9
Bases	13	0.8	22	11.9	35	2.0
Chlorine	38	2.4	1	0.5	39	2.2
Formulations	0	0.0	0	0.0	0	0.0
Hetero-organics	15	1.0	5	2.7	20	1.1
Hydrocarbons	30	1.9	7	3.8	37	2.1
Mixture Across Chemical Category	10	0.6	0	0.0	10	0.6
Other	53	3.4	9	4.9	62	3.6
Other Inorganic Substances	447	28.7	15	8.1	462	26.5
Oxy-organics	48	3.1	15	8.1	63	3.6
Paints and Dyes	0	0.0	3	1.6	3	0.2
PCB's	0	0.0	0	0.0	0	0.0
Pesticides	50	3.2	7	3.8	57	3.3
Polymers	29	1.9	10	5.4	39	2.2
Unknown	5	0.3	1	0.5	6	0.3
Volatile Organic Compounds	676	43.3	33	17.8	709	40.6
Total[‡]	1560	99.9	185	99.9	1745	99.9

[‡] Percentages do not total 100% because of rounding.

Victims

A total of 47 victims were involved in 33 events (3.3% of all events) (Table 5). Of the 33 events with victims, 27 (81.8%) events involved only one victim, and 3 (9.1%) involved two victims. Of all victims, 38 (80.9%) were injured in fixed-facility events.

Table 5.—Number of victims per event, by type of event—Louisiana Hazardous Substances Emergency Events Surveillance, 2008

No. Victims	Type of Event						All Events		
	Fixed facility			Transportation					
	No. Events	%	Total Victims	No. Events	%	Total Victims	No. Events	%	Total Victims
1	18	75.0	18	9	100.0	9	27	81.8	27
2	3	12.5	6	0	0.0	0	3	9.1	6
3	1	4.2	3	0	0.0	0	1	3.0	3
4	1	4.2	4	0	0.0	0	1	3.0	4
≥5	1	4.2	7	0	0.0	0	1	3.0	7
Total[‡]	24	100.1	38	9	100.0	9	33	99.9	47

[‡] Percentages do not total 100% because of rounding.

To represent the magnitude of the effects of substances involved in injuries, the number of events in a specific substance category was compared with the number of events in the same category that resulted in victims. In events that involved one or more substances from the same substance category, substances were counted once in that category. In events that involved two or more substances from different categories, substances were counted once in the multiple substance category. Substances released most often were not necessarily the most likely to result in victims (Table 6). For example, events categorized as volatile organic compounds constituted 24.2% of all events; however, only 0.8% of these events resulted in injuries. Conversely, events involving hetero-organics accounted for 1.4% of all events respectively, but 14.3% of the 14 events resulted in injuries.

Table 6.—Frequency of substance categories in all events and events with victims—Louisiana Hazardous Substances Emergency Events Surveillance System, 2008

Substance Category	All Events		Events with Victims		
	No.	%	No.	Percentage of all Releases with Victims	Percentage of Events with Victims in Substance Category
Acids	98	9.7	9	27.3	9.2
Ammonia	60	5.9	5	15.2	8.3
Bases	34	3.4	2	6.1	5.9
Chlorine	33	3.3	2	6.1	6.1
Formulations	No HSEES Events				
Hetero-organics	14	1.4	2	6.1	14.3
Hydrocarbons	7	0.7	1	3.0	14.3
Mixture Across Chemical Category [†]	7	0.7	0	0.0	0.0
Multiple Substance Category*	208	20.5	1	3.0	0.5
Other [‡]	30	3.0	3	9.1	20.0
Other Inorganic Substances [§]	194	19.2	3	9.1	1.5
Oxy-organics	28	2.8	3	9.1	10.7
Paints and Dyes	3	0.3	0	0.0	0.0
PCB's	No HSEES Events				
Pesticides	24	2.4	0	0.0	0.0
Polymers	26	2.6	0	0.0	0.0
Unknown	2	0.2	0	0.0	0.0
Volatile Organic Compounds	245	24.2	2	6.1	0.8
Total[¶]	1013	100.3	33	100.2	3.3

*Substances in events that involved multiple substances were counted only once in a substance category when all the substances were associated with the same category. If events involved multiple substances from different substance categories, they were counted only once in the multiple substance category.

[†]Substances from different categories that were mixed or formed from a reaction before the event.

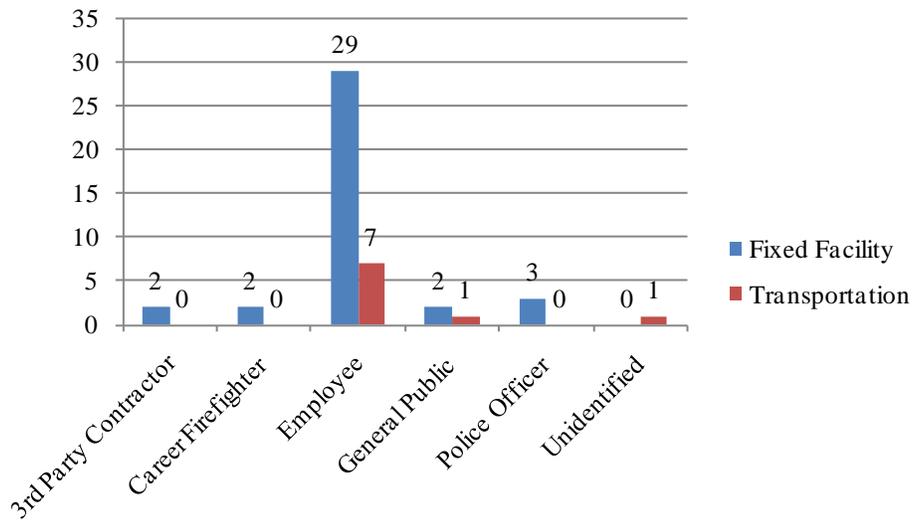
[‡]Not classified.

[§]All inorganic substances except for acids, bases, ammonia, and chlorine.

[¶]Percentages do not total 100% because of rounding.

Employees (36 [76.6%]) constituted the largest proportion of the population groups injured, followed by members of the general public (3 [6.4%]) and police officers (3 [6.4%]) (Figure 5).

Figure 5.—Number of victims, by population group and type of event—Louisiana Hazardous Substances Emergency Events Surveillance, 2008.



Victims were reported to have sustained a total of 51 injuries or symptoms (Table 7). Some victims had more than one injury or symptom. Of all reported injuries/symptoms, the most common in fixed-facility events were trauma (14 [33.3%]) and respiratory irritation (7 [16.7%]). In transportation-related events, trauma (5 [55.6%]) was reported most frequently.

Table 7.—Frequencies of injuries/symptoms, by type of event*—Louisiana Hazardous Substances Emergency Events Surveillance, 2008

Injury/Symptom	Fixed Facility		Transportation		All Events	
	No. injuries	%	No. injuries	%	Total no.	%
Chemical Burns	2	4.8	1	11.1	3	5.9
Dizziness/Central Nervous System Symptoms	1	2.4	0	0.0	1	2.0
Gastrointestinal System Problems	3	7.1	0	0.0	3	5.9
Headache	1	2.4	0	0.0	1	2.0
Other	5	11.9	1	11.1	6	11.8
Respiratory Irritation	7	16.7	0	0.0	7	13.7
Shortness of Breath	6	14.3	0	0.0	6	11.8
Skin Irritation	2	4.8	1	11.1	3	5.9
Thermal Burns	1	2.4	1	11.1	2	3.9
Trauma	14	33.3	5	55.6	19	37.3
Total ‡	42	100.1	9	100.0	51	100.2

*The number of injuries is greater than the number of victims (47) because a victim could have had more than one injury.

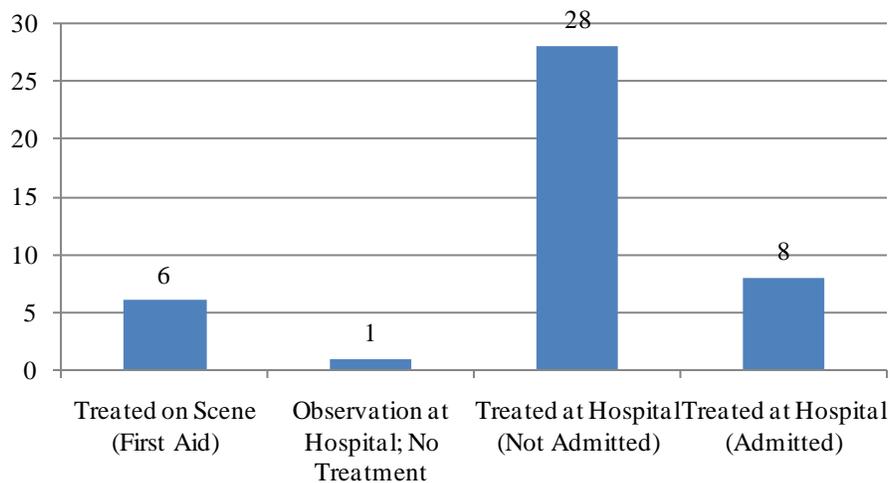
‡ Percentages do not total 100% because of rounding.

For the 2 (4.3%) injured persons for whom an age category was reported, 1 was 15–19 years of age, and 1 was 20–44 years of age. Of the 45 injured persons for whom age was not reported, 41 (91.1%) were presumably adults (because their population group was reported as responders or employees), and 4 (8.9%) could have been adults or children (because their population group was reported as members of the general public or unidentified).

Sex was known for 34 (72.3%) of the victims; of these, 30 (88.2%) were males. Of all employees and responders for whom sex was reported, 90.9% were males.

For the 43 (91.5%) injured persons for whom treatment was reported, 28 (65.1%) were treated at a hospital and not admitted, and 8 (18.6%) were treated at a hospital and admitted (Figure 6).

Figure 6.—Injury disposition—Louisiana Hazardous Substances Emergency Events Surveillance, 2008.



The status of personal protective equipment (PPE) use was reported for 29 (61.7%) victims. All of the victims whose PPE status was known had not worn any form of PPE.

One event resulted in 7 victims. In this event, chloroacetyl chloride leaked from a stationary tanker truck at an industrial facility. The release occurred at approximately 1:17 AM on a Friday. All seven employee-victims reported either respiratory irritation or shortness of breath. No victims were reported as wearing any PPE. The primary contributing factor in this event was human error.

Nearby Populations

The proximity of the event location in relation to selected populations was determined using geographic information systems (GIS), a computer mapping program, or state health department records. Residences were within ¼ mile of 580 (57.3%) events, schools were within ¼ mile of 45

(4.4%) events, hospitals were within ¼ mile of 2 (0.2%) events, nursing homes were within ¼ mile of 5 (0.5%) events, licensed daycares were within ¼ mile of 53 (5.2%) events, industries or other businesses were within ¼ mile of 702 (69.3%) events, and recreational areas were within ¼ mile of 16 (1.6%) events.

The number of events at which persons were at risk of exposure was determined primarily using GIS. There were 721 (79.1%) events with persons living within ¼ mile of the event; 826 (90.8%) events with persons living within ½ mile; and 901 (99.2%) events with persons living within 1 mile. There were 102, 103, and 105 events where the GIS function could not determine the number of persons living within ¼, ½, and 1 mile, respectively.

Evacuations

Evacuations were ordered in 17 (1.7%) events. Of these evacuations, 70.6% were of buildings or affected parts of buildings; 5.9% were of defined circular areas surrounding the event locations; 5.9% were of circular areas surrounding the event and downwind/downstream of the event; and no criteria was defined for 17.6% of events. The number of people evacuated was unknown for most (88.2%) events. One (5.9%) event resulted in the evacuation of 6 people while 1 (5.9%) event estimated that over 1000 people were evacuated. The length of evacuation was reported for 2 (11.8%) events (2.17 hours in one event and 4 hours in the second event). Of all 17 events, 14 (82.4%) had access to the area restricted (normal access availability was altered). Ten (1.0%) events had in-place sheltering ordered by an official.

Decontamination

Of the 42 (89.4%) victims for whom decontamination status was known, 32 (76.2%) were decontaminated at the hospital, 8 (19.0%) were decontaminated at the scene, 1 (2.4%) was decontaminated at the scene and at the hospital, and 1 (2.4%) was not decontaminated.

Response

One thousand six (99.3%) events had information on who responded to the event; 6.1% reported 2 or more categories of personnel who responded, 2.6% reported 3 or more categories, and 0.7% reported 4 or more categories. Company response teams (91.3%) responded most frequently to events, followed by law enforcement agencies (6.2%), fire departments (4.4%), third party clean-up contractors (3.0%), and certified HazMat teams (2.8%) (Table 8). No one responded in 3 (0.3%) events.

Table 8.—Distribution of personnel who responded to the event—Louisiana Hazardous Substances Emergency Events Surveillance, 2008

Responder Category	No.	%
Certified HazMat Team	28	2.5
Department of Works / Utilities / Transportation	1	0.1
Emergency Medical Technicians	4	0.4
Environmental Agency	12	1.1
Fire Department	44	4.0
Law Enforcement Agency	62	5.6
Response Team of Company where Release Occurred	916	83.3
Specialized Multiagency Team	1	0.1
Third Party Clean-up Contractor	30	2.7
Other	2	0.2
Total[‡]	1100	100.0

[‡]The number of responders is greater than the number of events (1013) because an event could have had more than one category of responder.

PREVENTION ACTIVITIES

During 2008, the Louisiana HSEES Program performed (or is in the process of performing) various prevention activities. These activities included:

- Email Notification System
- HSEES Parish Profiles
- Annual Report
- Cumulative Report on HSEES events (2001-2008)

SUMMARY OF RESULTS, 2001–2008

During 2001–2008, the largest proportion of events occurred in fixed facilities (Table 9). The total number of events increased from 2007 to 2008. The total number of events increased from 2007 to 2008. The increase in the number of events may have been due, at least in part, to the lack of follow-up reports provided to Louisiana HSEES by the Louisiana State Police (LSP). In previous years, the follow-up reports were provided to Louisiana HSEES to complete and amend initially reported data. LSP stopped providing follow up reports on December 31, 2008 due to budget constraints. For the last 4 months of 2008, Louisiana HSEES events were completed using initially reported data instead of follow-up data. Starting January 1, 2010, the HSEES grant will be replaced with the National Toxic Substances Incidents Program (NTSIP). In the new NTSIP grant, Louisiana has budgeted for a student worker to be stationed at the LSP to Xerox the follow-up reports. In addition, the state has budgeted for copy paper and Xerox toner. This will ensure that high quality data will be entered in to the NTSIP database.

Table 9.— Cumulative data by year—Louisiana Hazardous Substances Emergency Events Surveillance, 2001-2008*

Year	Type of Event			No. Substances Released	No. Victims	No. Deaths	Events with Victims	
	Fixed Facility	Transportation	Total				No.	% [†]
2001	684	131	815	1163	63	2	20	2.5
2002	630	122	752	1205	30	1	20	2.7
2003	587	87	674	1113	42	1	8	1.2
2004	474	90	564	1053	176	0	25	4.4
2005	704	163	867	1514	95	3	48	5.5
2006	515	145	660	1086	63	4	31	4.7
2007	646	172	818	1459	51	3	30	3.7
2008	843	170	1013	1745	47	0	33	3.3
Total	5083	1080	6163	8593	520	14	182	3.0

* Numbers in the table may differ from those reported in previous years because of adjustments in HSEES qualification requirements for events.

† Percentage of events with victims.

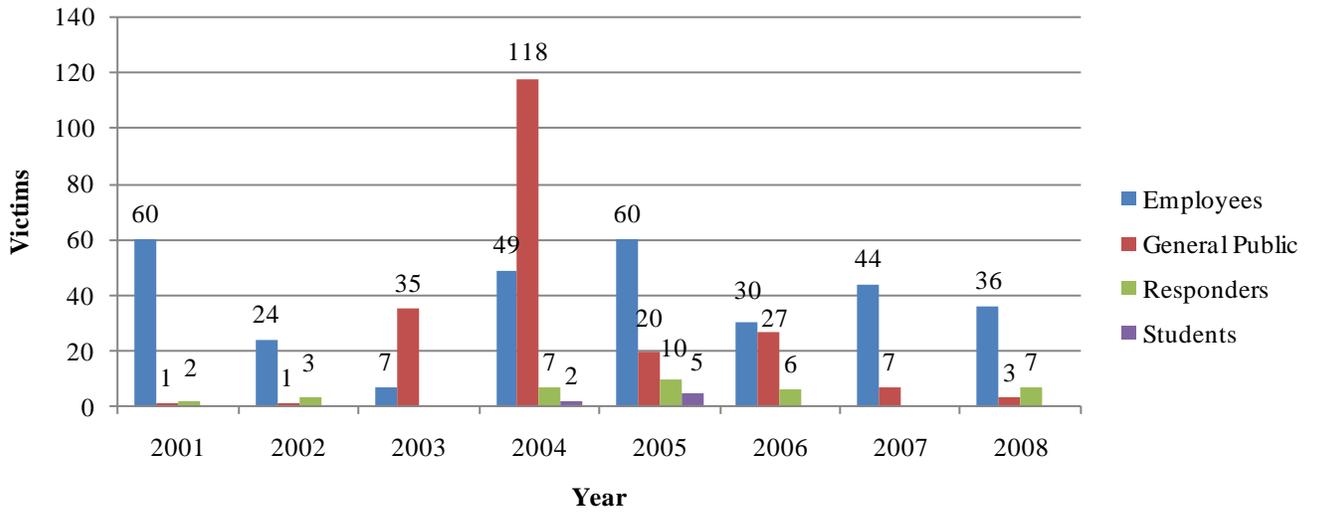
The percentage of events with victims decreased from 2007 to 2008. The percentage of events with victims was highest in 2005 (5.5%) and lowest in 2003 (1.2%). The average percentage of events with victims during 2001–2008 was 3.0%.

Respiratory irritation has consistently been one of the most frequently reported injuries.

Although trauma was the most frequently reported injury in 2008, respiratory irritation was reported as the second most frequent injury and accounted for 13.7% of injuries.

In 2008 employees were the most commonly reported victim type as well as with previous years (Figure 7). As with previous years, most employee-victims and responder-victims had not worn any form of PPE.

Figure 7.—Number of victims, by category and year—Louisiana Hazardous Substances Emergency Events Surveillance, 2001–2008



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1. Centers for Disease Control and Prevention. Comprehensive plan for epidemiologic surveillance. Atlanta: US Department of Health and Human Services; 1986.
2. Binder S. Death, injuries, and evacuations from acute hazardous materials releases. *Am J Public Health* 1989;70:1042–4.

Appendix

The 10 substances most frequently involved in events—Louisiana Hazardous Substances Emergency Events Surveillance, 2008

	Chemical Substance	Number of Releases
1	Sulfur Dioxide	140
2	Hydrogen Sulfide	107
3	Volatile Organic Compounds	107
4	Benzene	97
5	Ethylene	71
6	NO _x	69
7	Ammonia	67
8	Flammable Gas NOS	46
9	Hydrochloric Acid	38
10	Sulfuric Acid	38

Note: NO_x includes Nitrogen Oxide, Nitrogen Oxides, and Nitrogen Oxides
NOS

Glossary

Ancillary Process Equipment – Equipment used in the processing of chemicals, but excluding the process vessel.

Cooperative Agreement - An award similar to a grant, but in which the sponsor's staff may be actively involved in proposal preparation as well as research activities once the award has been made.

Fixed Facility Events - Events involving hazardous materials that occur in a non-moving facility such as an oil refinery or manufacturing plant.

Hazardous Substance Releases - Discharge of any hazardous substance such as, chemical (except petroleum products), biological, radiological, or medical material that may reasonable be anticipated to cause death, disease, behavioral abnormalities, cancer, genetic mutations or malformations.

In-Place Sheltering - Protecting yourself where you are (home, workplace) and remaining there until given further instructions. This includes closing all windows, doors and vents as well as turning off all cooling, heating or ventilating systems.

Petroleum Only - Events in which only a petroleum product (i.e. gasoline, diesel fuel, etc.) is released.

Process Vessel - Chemical reaction chamber where chemicals are processed such as a tank, reactor or distillation column.

Responders - Individuals such as police officers, sheriff deputies, firefighters, and paramedics that respond to the scene of an emergency situation.

Transportation Events – Events involving hazardous materials transported by ground transportation, railroad, aircraft, boats, ships and pipelines outside the boundaries of a fixed facility property.