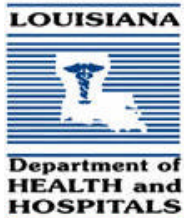


# **Louisiana Hazardous Substances Emergency Events Surveillance (HSEES) System**

## **2004: A Summary Report**

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



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This public document was published at a total cost of \$ . Thirty copies of this public document were published in this first printing at a cost of \$ . The total cost of all printing of this document including reprint is \$ . This document was published by the Department of Health and Hospitals, Office of Public Health, Section of Environmental Epidemiology and Toxicology to report the 2003 Hazardous Substances and Emergency Events Surveillance (HSEES) Program results under the authority of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This material was printed according to standards for printing by state agencies established pursuant to R.S. 43:31.

This document was supported by funds from the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) trust fund provided to the Louisiana Hazardous Substances Emergency Events Surveillance (HSEES) program under Cooperative Agreement U61/ATU674149-01 from the Agency for Toxic Substances and Disease Registry, Public Health Service, U.S. Department of Health and Human Services.

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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. This report summarizes the characteristics of events reported to Louisiana in 2004. 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.

A total of 564 events were reported. In 371 (65.8%) 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, 25 events (4.4% of all reported events) resulted in a total of 176 victims. Three of the 25 events with victims in 2004 involved the majority of victims, i.e. 67.0% of the 176 victims were injured during 3 events. The most frequently reported injuries were respiratory irritation, gastrointestinal system problems, and headache. Evacuations were ordered for 15 (2.7%) events.

The findings regarding the percentage of events with victims have been increasing in recent years partially due to expanding data sources. Prevention outreach efforts for 2004 focused on transportation related events and program awareness.

1 **INTRODUCTION**

2 The Centers for Disease Control and Prevention defines surveillance as the

3

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

10

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

18

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

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

3 HSEES has several goals:

4 ? To describe the distribution and characteristics of acute hazardous substances  
5 releases;

6 ? To describe morbidity and mortality among employees, responders, and the general  
7 public that resulted from hazardous substances releases; and

8 ? To develop strategies that might reduce future morbidity and mortality resulting  
9 from the release of hazardous substances.

10

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

13

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

19

20 This report provides an overview of HSEES for 2004 in Louisiana, summarizes the  
21 characteristics of acute releases of hazardous substances and their associated public health  
22 consequences, and demonstrates how data from the system are translated into prevention  
23 activities to protect public health.



1 **METHODS**

2 In 2004, thirteen state health departments participated in HSEES: Colorado, Iowa, Louisiana,  
3 Minnesota, Missouri, New Jersey, New York, North Carolina, Oregon, Texas, Utah,  
4 Washington, and Wisconsin.

5  
6 Beginning in 2002, a newly updated data-collection form, approved by the Office of  
7 Management and Budget, went into effect. Information was collected about each event,  
8 including substance(s) released, victims, injuries (adverse health effects and symptoms), and  
9 evacuations.

10  
11 Various data sources were used to obtain information about these events. These sources  
12 included, but were not limited to, Louisiana Department of Public Safety and Corrections, Office  
13 of State Police, Louisiana Department of Environmental Quality (LDEQ), U.S. Coast Guard  
14 National Response Center, and the U.S. Department of Transportation, Hazardous Materials  
15 Information System (HMIS). Census data were used to estimate the number of residents in the  
16 vicinity of most of the events. All data were computerized using a Web-based data entry system  
17 provided by ATSDR.

18  
19 HSEES defines hazardous substances emergency events as acute uncontrolled or illegal releases  
20 or threatened releases of hazardous substances. Events involving releases of only petroleum are  
21 excluded. Events are included if (a) the amount of substance released (or that might have been  
22 released) needed (or would have needed) to be removed, cleaned up, or neutralized according to  
23 federal, state, or local law or (b) the release of a substance was threatened, but the threat led to an

1 action (for example, evacuation) that could have affected the health of employees, emergency  
2 responders, or members of the general public. HSEES defines victims as people who experience  
3 at least one documented adverse health effect within 24 hours after the event or who die as a  
4 consequence of the event. Victims who receive more than one type of injury or symptom are  
5 counted once in each applicable injury type or symptom. Events are defined as transportation-  
6 related if they occur (a) during surface, air, pipeline, or water transport of hazardous substances,  
7 or (b) before being unloaded from a vehicle or vessel. All other events are considered fixed-  
8 facility events.

9

10 For data analyses, the substances released were categorized into 16 groups. The category  
11 “mixture” comprises substances from different categories that were mixed or formed from a  
12 reaction before the event; the category “other inorganic substances” comprises all inorganic  
13 substances except acids, bases, ammonia, and chlorine; and the category “other” comprises  
14 substances that could not grouped into one of the other existing categories.

15

## 16 **RESULTS**

17 For 2004, a total of 564 acute hazardous substances events were captured by Louisiana HSEES:  
18 4 (0.7%) of these events were threatened releases. Three (0.5%) were events in which substances  
19 were both threatened to be released and actually released. A total of 474 (84.0%) events occurred  
20 in fixed facilities. The parishes with the most frequent number of events were St. Charles (71,  
21 [12.6%]) and East Baton Rouge (69 [12.2%]) (Table 1).

22

23

1 **Table 1.- Number of events meeting the surveillance definition, by parish and type of**  
 2 **event— Louisiana Hazardous Substances Emergency Events Surveillance, 2004**

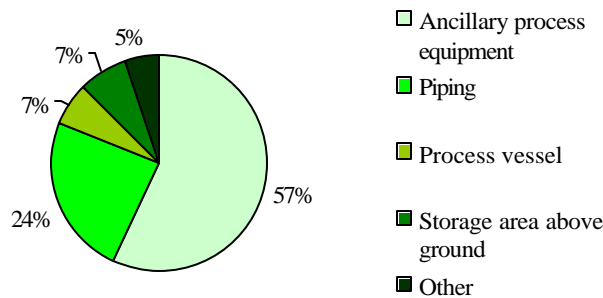
Parish	Type of event				All events	
	Fixed facility		Transportation		No. events	%
	No. events	%*	No. events	%*		
Allen	1	100.0	0	0.0	1	0.2
Ascension	31	81.6	7	18.4	38	6.7
Bienville	0	0.0	1	100.0	1	0.2
Bossier	2	33.3	4	66.7	6	1.1
Caddo	8	40.0	12	60.0	20	3.5
Calcasieu	66	97.1	2	2.9	68	12.1
Cameron	1	100.0	0	0.0	1	0.2
Catahoula	1	100.0	0	0.0	1	0.2
Concordia	0	0.0	2	100.0	2	0.4
DeSoto	2	100.0	0	0.0	2	0.4
East Baton Rouge	60	87.0	9	13.0	69	12.2
East Feliciana	1	100.0	0	0.0	1	0.2
Iberia	0	0.0	1	100.0	1	0.2
Iberville	42	97.7	1	2.3	43	7.6
Jefferson	25	73.5	9	26.5	34	6.0
Jefferson Davis	0	0.0	1	100.0	1	0.2
Lafayette	6	85.7	1	14.3	7	1.2
Lafourche	2	100.0	0	0.0	2	0.4
Livingston	1	50.0	1	50.0	2	0.4
Madison	0	0.0	1	100.0	1	0.2
Natchitoches	1	100.0	0	0.0	1	0.2
Orleans	4	30.8	9	69.2	13	2.3
Ouachita	35	97.2	1	2.8	36	6.4
Plaquemines	14	73.7	5	26.3	19	3.4
Pointe Coupee	0	0.0	3	100.0	3	0.5
Rapides	2	40.0	3	60.0	5	0.9
Richland	0	0.0	2	100.0	2	0.4
Sabine	0	0.0	1	100.0	1	0.2
St. Bernard	60	100.0	0	0.0	60	10.6
St. Charles	68	95.8	3	4.2	71	12.6
St. James	12	85.7	2	14.3	14	2.5
St. John the Baptist	9	90.0	1	10.0	10	1.8
St. Landry	3	75.0	1	25.0	4	0.7
St. Martin	0	0.0	1	100.0	1	0.2
St. Mary	1	100.0	0	0.0	1	0.2
St. Tammany	2	100.0	0	0.0	2	0.4
Tangipahoa	0	0.0	1	100.0	1	0.2
Terrebonne	1	50.0	1	50.0	2	0.4
Vernon	1	100.0	0	0.0	1	0.2
W. Baton Rouge	9	75.0	3	25.0	12	2.1
Webster	2	100.0	0	0.0	2	0.4
Winn	1	50.0	1	50.0	2	0.4
	<b>474</b>	<b>84.0</b>	<b>90</b>	<b>16.0</b>	<b>564</b>	<b>100.6</b>

3 \* Percentage = (number of events by type of event per parish ÷ total number of events in that parish) x 100  
 4  
 5

1 For each fixed-facility event, one or two types of area or equipment involved in the fixed facility  
2 where the event occurred could be selected . Of all 474 fixed-facility events , 452 (95.4%)  
3 reported one type of area and 22 (4.6%) reported a combination of two area types . Among  
4 events with one type of area reported, the main areas were classified as follows: ancillary process  
5 equipment (256 [56.6%]), piping (110 [24.3%]), and storage area above ground (32 [7.1%])  
6 (Figure 1). Of the events with two areas, 17 (77.3%) involved piping in combination with other  
7 types of areas .

8

9 **Figure 1.- Areas of fixed facilities involved in events—Louisiana Hazardous Substances**  
10 **Emergency Events Surveillance, 2004**

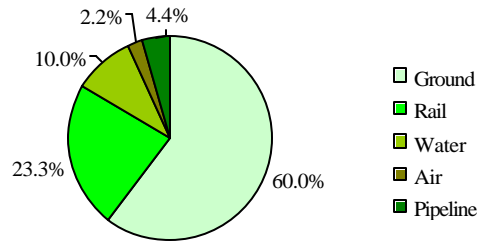


11

12 Of the 90 transportation -related events, 54 (60.0%) occurred during ground transport and 21  
13 (23.3%) involved transport by rail (Figure 2). Fewer events involved water, air, and pipeline  
14 transportation modes. All ground transportation events involved trucks. The largest proportions  
15 of transportation-related events occurred from a moving vehicle or vessel (32 [35.6%]) and  
16 during unloading of a stationary vehicle or vessel (29 [32.2%]). Of the 90 transportation-related  
17 events, 27 (30.0%) involved a release en route that was later discovered at a fixed facility.

18

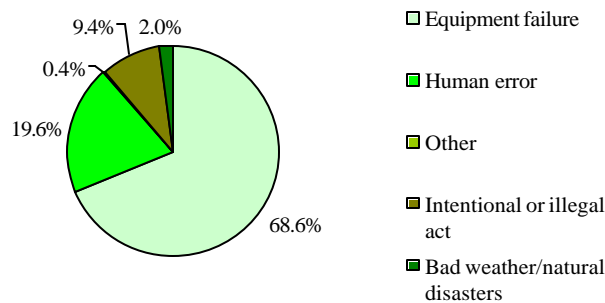
1 **Figure 2.- Distribution of transportation -related events, by type of transport—Louisiana**  
 2 **Hazardous Substances Emergency Events Surveillance, 2004**



3  
 4 Factors contributing to the events consisted of primary and secondary entries. Primary factors  
 5 were reported for 561 (99.5%) events (Figure 3a). Of the reported primary factors, most (75.0%)  
 6 fixed-facility events involved equipment failure, and most (61.8%) transportation-related events  
 7 involved human error. Secondary factors were reported for 275 (48.7%) events (Figure 3b). Of  
 8 the reported secondary factors, most (22.8%) fixed-facility events involved system startup and  
 9 shutdown, and most (48.9%) transportation-related events involved improper filling, loading, or  
 10 packing.

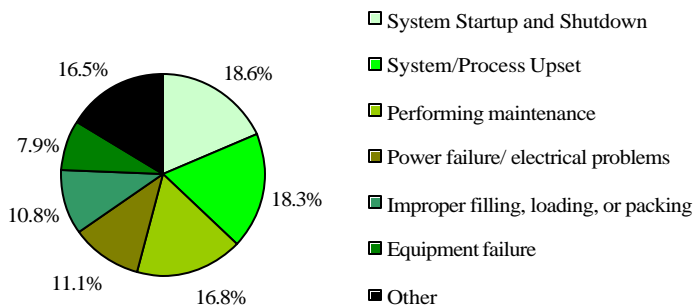
11

12 **Figure 3a. - Primary factors reported as contributing to events—Louisiana Hazardous**  
 13 **Substances Emergency Events Surveillance, 2004**



14

1 **Figure 3b. -Secondary factors reported as contributing to events—Louisiana Hazardous**  
 2 **Substances Emergency Events Surveillance, 2004**



3  
 4 More than 65% of all events involved the release of only one substance. Two substances were  
 5 released in 16.8% of the events, and 17.4% involved the release of more than two substances  
 6 (Table 2). Fixed-facility events were more likely than transportation events to have two or more  
 7 substances released in an event (39.7% vs. 5.6%).

9 **Table 2.- Number of substances involved per event, by type of event—Louisiana**  
 10 **Hazardous Substances Emergency Events Surveillance, 2004**

No. substances	Type of event						All events		
	Fixed facility			Transportation					
	No. events	%	Total substances	No. events	%	Total substances	No. events	%	Total substances
1	286	60.3	286	85	94.4	85	371	65.8	371
2	92	19.4	184	3	3.3	6	95	16.8	190
3	32	6.8	96	1	1.1	3	33	5.9	99
4	20	4.2	80	0	0.0	0	20	3.5	80
= 5	44	9.3	306	1	1.1	7	45	8.0	313
<b>Total</b>	<b>474</b>	<b>100.0</b>	<b>952</b>	<b>90</b>	<b>99.9</b>	<b>101</b>	<b>564</b>	<b>100.0</b>	<b>1053</b>

11  
 12 The number of events by month ranged from 37 (6.6%) in January to 58 (10.3%) in May, with  
 13 the largest proportions occurring from April through July. The proportion of events ranged from  
 14 14.0% to 16.8% during weekdays, and from 10.8 to 12.1% during weekend days. Approximately

1 34% of the events occurred from 6:00 AM to 11:59 AM, 30.0% from 12:00 PM to 5:59 PM, 18.4%  
2 from 6:00 PM to 11:59 PM, and the remainder during the early hours of the day.

3

#### 4 ***Industries***

5 The largest proportions of HSEES events were associated with the manufacturing (412 [73.0%])  
6 and transportation (83 [14.7%]) industries (Table 3). Within manufacturing, chemicals and allied  
7 products manufacturing (245 [59.3%]) and petroleum refining (158 [38.3%]) accounted for most  
8 of the events. The largest number of events with victims occurred from the transportation  
9 industry (9 [36.0%]). The total number of victims was greatest in the transportation industry (103  
10 [58.5%]) followed by the number of victims in manufacturing (34 [19.3%]) and professional  
11 services (25 [14.2%]).

12

#### 13 ***Substances***

14 A total of 1053 substances were released in all events, of which 4 (0.4%) substances were  
15 reported as threatened to be released and 6 (0.6%) substances were both threatened and actually  
16 released. The individual substances most frequently released were sulfur dioxide, nitrogen  
17 oxides, benzene, and nitric oxide (Appendix). Substances were grouped into 16 categories. The  
18 substance categories most commonly released in fixed-facility events were Volatile Organic  
19 Compounds (394 [41.4%]), Other Inorganic Substances (367 [38.6%]), and Oxy-Organics (34  
20 [3.6%]) (Table 4). In transportation-related events, the most common substance categories  
21 released were Acids (15 [14.9%]), Volatile Organic Compounds (15 [14.9%]), Other Inorganic  
22 Substances (14 [13.9%]), and Paints and Dyes (14 [13.9%]).

23

1 **Table 3.- Industries involved in hazardous substance events, by category— Louisiana**  
 2 **Hazardous Substances Emergency Events Surveillance, 2004**  
 3 **Substances**

Industry category	Total events		Events with victims		Percentage of events with victims	Total no. victims # (maximum)*
	No.	%	No.	%		
Abandoned †	2	0.4	1	4.0	50.0	1 (1)
Agriculture	3	0.5	1	4.0	33.3	1 (1)
Business and repair services	3	0.5	0	0.0	0.0	0
Communication	0	0.0	0	0.0	0.0	0
Construction	0	0.0	0	0.0	0.0	0
Entertainment	0	0.0	0	0.0	0.0	0
Finance and Real estate	0	0.0	0	0.0	0.0	0
Illegal activity (illicit drug related)	2	0.4	1	4.0	50.0	2 (2)
Illegal activity (non-illicit drug related)	1	0.2	1	4.0	100.0	5 (5)
Manufacturing	412	73.0	8	32.0	1.9	34 (7)
Mining	29	5.1	1	4.0	3.4	1 (1)
Personal services	2	0.4	1	4.0	50.0	3 (3)
Private vehicle or property	0	0.0	0	0.0	0.0	0
Professional services	1	0.2	1	4.0	100.0	25 (25)
Public administration	2	0.4	0	0.0	0.0	0
Retail trade	2	0.4	0	0.0	0.0	0
Transportation	83	14.7	9	36.0	10.8	103 (50)
Utilities	4	0.7	0	0.0	0.0	0
Wholesale trade	18	3.2	1	4.0	5.6	1 (1)
<b>Total ‡</b>	<b>564</b>	<b>100.1</b>	<b>25</b>	<b>100.0</b>	<b>4.4</b>	<b>176 (50)</b>

4 \*Minimum number of victims per event = 1.  
 5 †Includes chemical dumped on highway or other property.  
 6 ‡ Percentages do not total 100% because of rounding.

7  
 8 Two types of releases for each substance (e.g., spill and air) could be reported . Only one type of  
 9 release was associated with the following: air releases (874 [84.4%]), spills (142 [13.7%]), fire  
 10 (13 [1.3%]), and threatened release (7 [0.7%]). Of events with two types of releases, the  
 11 following combinations were reported: spills and air releases (16 [91.4%]), and fire and air  
 12 release (1 [1.6%]).

13  
 14



1 **Table 4.- Number of substances involved, by substance category and type of event—**  
 2 **Louisiana Hazardous Substances Emergency Events Surveillance, 2004**

Substance category	Type of event				All events	
	Fixed facility		Transportation			
	No. substances	%	No. substances	%	No. substances	%
Acids	27	2.8	15	14.9	42	4.0
Ammonia	23	2.4	2	2.0	25	2.4
Bases	6	0.6	7	6.9	13	1.2
Chlorine	17	1.8	2	2.0	19	1.8
Formulations	0	0.0	0	0.0	0	0.0
Hetero-organics	6	0.6	2	2.0	8	0.8
Hydrocarbons	26	2.7	1	1.0	27	2.6
Mixture*	5	0.5	3	3.0	8	0.8
Other †	10	1.1	8	7.9	18	1.7
Other inorganic substances ‡	367	38.6	14	13.9	381	36.2
Oxy-organics	34	3.6	6	5.9	40	3.8
Paints and dyes	5	0.5	14	13.9	19	1.8
Pesticides	16	1.7	7	6.9	23	2.2
Polychlorinated biphenyls	0	0.0	0	0.0	0	0.0
Polymers	16	1.7	5	5.0	21	2.0
Volatile organic compounds	394	41.4	15	14.9	409	38.8
<b>Total</b>	<b>952</b>	<b>100.0</b>	<b>101</b>	<b>100.2</b>	<b>1053</b>	<b>100.1</b>

3 \* Substances from different categories that were mixed or formed from a reaction before the event.

4 † Not belonging to one of the existing categories.

5 ‡ All inorganic substances except for acids, bases, ammonia, and chlorine.

6

7 **Victims**

8 A total of 176 victims were involved in 25 events (4.4% of all events) (Table 5). Of the 25 events  
 9 with victims, 11 (44.0%) events involved only one victim, and 2 (8.0%) involved two victims. Of  
 10 all victims, 63 (35.8%) were injured in fixed-facility events. Additionally, 92 persons in 15  
 11 events (2.7% of all events) were observed at a hospital or medical facility but did not have  
 12 symptoms resulting from the event and, therefore, were not counted as victims.

13

1 **Table 5.- Number of victims per event, by type of event—Louisiana Hazardous Substances**  
 2 **Emergency Events Surveillance, 2004**

No. victims	Type of event						All events		
	Fixed facility			Transportation			No. events	%	Total victims
	No. events	%	Total victims	No. events	%	Total victims			
1	5	38.5	5	6	50.0	6	11	44.0	11
2	0	0.0	0	2	16.7	4	2	8.0	4
3	2	15.4	6	1	8.3	3	3	12.0	9
4	1	7.7	4	0	0.0	0	1	4.0	4
5	2	15.4	10	0	0.0	0	2	8.0	10
=6	3	23.1	38	3	25.0	100	6	24.0	138
<b>Total</b>	<b>13</b>	<b>100.1</b>	<b>63</b>	<b>12</b>	<b>100.0</b>	<b>113</b>	<b>25</b>	<b>100.0</b>	<b>176</b>

3  
4

5 To represent the magnitude of the effects of substances involved in injuries, the number of events  
 6 in a specific substance category was compared with the number of events in the same category  
 7 that resulted in victims. In events that involved one or more substances from the same substance  
 8 category, substances were counted once in that category. In events that involved two or more  
 9 substances from different categories, substances were counted once in the multiple substance  
 10 category. Substances released most often were not necessarily the most likely to result in victims  
 11 (Table 6). For example, events categorized as other inorganic substances constituted 31.5% of all  
 12 events; however, only 2.2% of these events resulted in injuries. Conversely, events involving  
 13 acids accounted for 5.1% of all events, but 24.1% of these events resulted in injuries.

14

15 Members of the general public (118 [67.0%]) constituted the largest proportion of the population  
 16 groups injured, followed by employees (49 [27.8%]) (Figure 4). In fixed-facility events, 6  
 17 emergency response personnel were injured. Of those, 4 (66.7%) were police officers and 2  
 18 (33.3%) were firefighters. One police officer was injured in transportation-related events.

19

1 **Table 6.- Frequency of substance categories in all events and events with victims —**  
 2 **Louisiana Hazardous Substances Emergency Events Surveillance System, 2004\***

Substance category	All events		Events with victims		
	No.	%	No.	Percentage of all releases with victims	Percentage of events with victims in substance category
Acids	29	5.1	7	28.0	24.1
Ammonia	23	4.1	2	8.0	8.7
Bases	11	2.0	1	4.0	9.1
Chlorine	16	2.8	1	4.0	6.3
Formulations	0	0.0	0	0.0	0.0
Hetero-organics	4	0.7	0	0.0	0.0
Hydrocarbons	3	0.5	0	0.0	0.0
Mixture <sup>†</sup>	8	1.4	1	4.0	12.5
Multiple substance category	129	22.9	2	8.0	1.6
Other <sup>‡</sup>	14	2.5	2	8.0	14.3
Other inorganic substances <sup>§</sup>	181	32.1	4	16.0	2.2
Oxy-organics	10	1.8	2	8.0	20.0
Paints and dyes	19	3.4	0	0.0	0.0
Pesticides	14	2.5	0	0.0	0.0
Polychlorinated biphenyls	0	0.0	0	0.0	0.0
Polymers	13	2.3	1	4.0	7.7
Volatile organic compounds	90	16.0	2	8.0	2.2
<b>Total<sup>¶</sup></b>	<b>564</b>	<b>100.1</b>	<b>25</b>	<b>100.0</b>	<b>4.4</b>

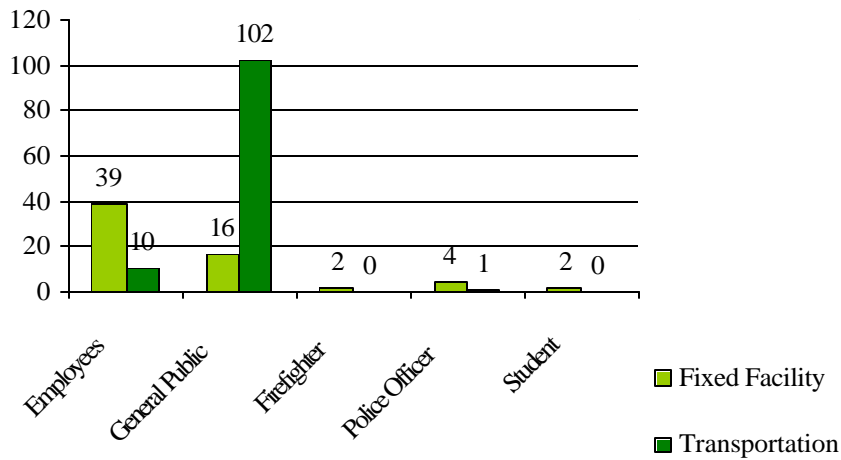
3 \*Substances in events that involved multiple substances were counted only once in a substance category when all  
 4 the substances were associated with the same category. If events involved multiple substances from different  
 5 substance categories, they were counted only once in the multiple substance category.  
 6 †Substances from different categories that were mixed or formed from a reaction before the event.  
 7 ‡Not classified.  
 8 §All inorganic substances except for acids, bases, ammonia, and chlorine.  
 9 ¶Percentages do not total 100% because of rounding.

10  
 11 Victims were reported to sustain a total of 278 injuries or symptoms (Table 7). Some victims had  
 12 more than one injury or symptom. Of all reported injuries/symptoms, the most common  
 13 injuries/symptoms in fixed-facility events were respiratory irritation (51 [49.5%]), eye irritation  
 14 (20 [19.4%]), and headache (15 [14.6%]). In transportation-related events, gastrointestinal  
 15 system problems (42 [24.0%]), headache (36 [20.6%]), and eye irritation (28 [16.0%]) were  
 16 reported most frequently. All of the trauma injuries in transportation-related events were not

1 substance-related; these injuries resulted from a chain of events, such as a motor vehicle accident  
 2 leading to the release of a hazardous substance, and not from exposure to the substance itself.

3

4 **Figure 4.- Number of victims, by population group and type of event—Louisiana**  
 5 **Hazardous Substances Emergency Events Surveillance, 2004**



6

7

8

9 The median age of the 127 (72.2%) victims for whom exact age was reported was 24 years  
 10 (range: <1- 77 years). For the 131 (74.4%) injured persons for whom an age category was  
 11 reported, 14 (10.7%) were < 5 years of age, 34 (26.0%) were 5–14 years of age, 5 (3.8%) were  
 12 15–19 years of age, 56 (42.7%) were 20–44 years of age, 19 (14.5%) were 45–64 years of age,  
 13 and 3 (2.3%) were ≥65 years of age. Of the 45 injured persons for whom age was not reported,  
 14 40 (88.9%) were presumably adults (because their population group was reported as responders  
 15 or employees), and 5 (11.1%) could have been adults or children (because their population group  
 16 was reported as members of the general public). Sex was known for 164 (93.2%) of the victims;  
 17 of these, 99 (60.4%) were males. All injured police officers were males.

18

1 **Table 7.- Frequencies of injuries/symptoms, by type of event\*—Louisiana Hazardous**  
 2 **Substances Emergency Events Surveillance, 2004**

Injury/symptom	Fixed facility		Transportation		All events	
	No. injuries	%	No. injuries	%	Total no.	%
Chemical burns	2	1.9	3	1.7	5	1.8
Dizziness/central nervous system symptoms	0	0.0	27	15.4	27	9.7
Eye irritation	20	19.4	28	16.0	48	17.3
Gastrointestinal system problems	9	8.7	42	24.0	51	18.3
Headache	15	14.6	36	20.6	51	18.3
Heart problems	0	0.0	5	2.9	5	1.8
Heat stress	0	0.0	0	0.0	0	0.0
Other	0	0.0	1	0.6	1	0.4
Respiratory irritation	51	49.5	24	13.7	75	27.0
Shortness of breath	3	2.9	4	2.3	7	2.5
Skin irritation	3	2.9	1	0.6	4	1.4
Thermal burns	0	0.0	0	0.0	0	0.0
Trauma <sup>†</sup>	0	0.0	4	2.3	4	1.4
<b>Total<sup>‡</sup></b>	<b>103</b>	<b>99.9</b>	<b>175</b>	<b>100.1</b>	<b>278</b>	<b>99.9</b>

3 \*The number of injuries is greater than the number of victims (176) because a victim could have had more than one  
 4 injury.

5 † All trauma injuries were not chemical-related.

6 ‡ Percentages do not total 100% because of rounding.

7

8 Of the 176 victims, 109 (63.0%) were treated at hospital (not admitted) and 30 (17.3%) were  
 9 observed at hospital (Figure 5). Severity was unknown for 3 (1.7%) victims.

10

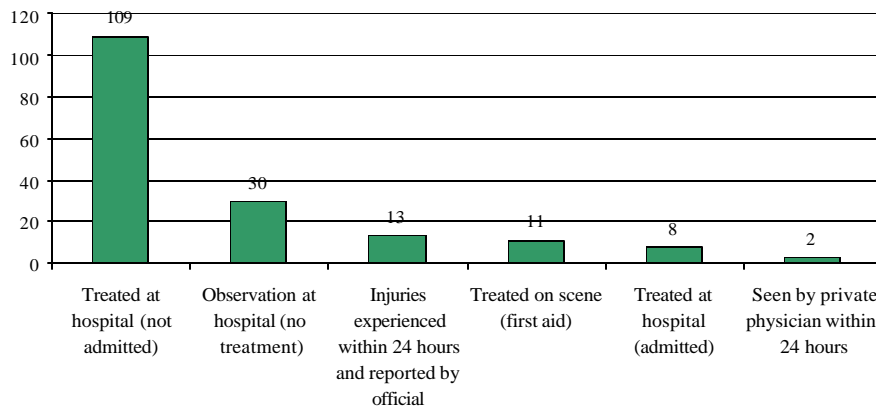
11 The status of personal protective equipment (PPE) use was reported for 37 (75.5%) employee-  
 12 victims and for 3 (42.9%) responder-victims. Most of the employee-victims (91.9%) and all of  
 13 the responder-victims had not worn any form of PPE. Three (8.1%) employee-victims who wore  
 14 PPE used level b.

15

16

17

1 **Figure 5.- Injury disposition—Louisiana Hazardous Substances Emergency Events**  
 2 **Surveillance, 2004**



3  
4

5 One transportation event involved 50 victims. The event involved an illegally parked tanker  
 6 truck that overturned when the landing gear collapsed. Two gallons of monoethanolamine were  
 7 released and 3,600 gallons were threatened to be released. Three hundred fifty residents within a  
 8 one block radius were evacuated. Forty-nine members of the general public and one police  
 9 officer reported to local hospitals. The most common injuries/symptoms reported were eye  
 10 irritation (26 [33.8%]), headache (17 [22.1%]), and respiratory irritation (14 [18.2%]). Most  
 11 (98.0%) of the victims were treated at hospital and not admitted.

12

13 ***Nearby populations***

14 The proximity of the event location in relation to selected populations was determined using  
 15 geographic information systems (GIS) or health department records. Residences were within ¼  
 16 mile of 372 (66.0%) events, schools within ¼ mile of 57 (10.1%) events, hospitals within ¼ mile  
 17 of 1 (0.2%) event, nursing homes within ¼ mile of 11 (2.0%) events, licensed daycares within ¼

1 mile of 45 (8.0%) events, industries or other businesses within ¼ mile of 349 (61.9%) events and  
2 recreational areas within ¼ mile of 45 (8.0%) events.

3

4 The number of events at which persons were at risk of exposure was determined primarily using  
5 GIS. There were 452 (80.4%) events with persons living within ¼ mile of the event; 498 (88.6%)  
6 events with persons living within ½ mile; and 529 (94.1%) events with persons living within 1  
7 mile. Information on the number of people living within ¼, ½, and 1 mile of the event was  
8 missing for 2 events.

9

### 10 ***Evacuations***

11 Evacuations were ordered in 15 (2.7%) events. Of these evacuations, 40.0 % used no defined  
12 criteria; 33.3% were of buildings or affected parts of buildings; 20.0% were of defined circular  
13 areas surrounding the event locations; and 6.7% were of areas downwind or downstream of the  
14 event. The number of people evacuated was known for 10 (66.7%) events and ranged from 7 to  
15 1500 people, with a median of 40 people. The median length of evacuation was 4 hours (range:  
16 18 minutes to 10 hours). Evacuation length was missing for 1 (6.7%) event. Of all 573 events,  
17 24 (4.3%) had access to the area restricted. Sixteen (2.8%) events had in-place sheltering  
18 ordered by an official.

19

### 20 ***Decontamination***

21 Of the 171 (97.2%) victims for whom decontamination status was known, 154 (90.1%) were not  
22 decontaminated, 9 (5.3%) were decontaminated at a medical facility, and 8 (4.7%) were  
23 decontaminated at the scene.

24

1 Uninjured persons were decontaminated in 2 events. The first event involved one uninjured  
2 employee decontaminated at the scene. The second event involved decontamination of 2  
3 uninjured employees at the scene.

4

5 **Response**

6 Information was collected about who responded to the events; 10.1% reported 2 or more  
7 categories of personnel who responded, 5.5% reported 3 or more categories, and 2.8% reported 4  
8 or more categories. Company response teams (93.4%) responded most frequently to events,  
9 followed by law enforcement agencies (8.8%), fire departments (8.2%), and certified HazMat  
10 teams (5.2%) (Table 8).

11

12 **Table 8.- Distribution of personnel who responded to the event—Louisiana Hazardous**  
13 **Substances Emergency Events Surveillance, 2004**

<b>Responder category</b>	<b>No.</b>	<b>%</b>
Certified HazMat team	26	5.2
Emergency medical technicians	5	1.0
Environmental agency	20	4.0
Fire department	41	8.2
Health department/ health agency	2	0.4
Hospital personnel	1	0.2
Law enforcement agency	44	8.8
Other	2	0.4
Response team of company where release occurred	469	93.4

14

15

16 **PREVENTION ACTIVITIES**

17 During 2004, the Louisiana HSEES Program performed various prevention activities. These  
18 activities included:

19



1 ? Article titled Hazardous Substance Emergency Events Surveillance Related Injuries, Fatalities,  
2 and Evacuations in the State of Louisiana, 2002 published in the November/December 2004  
3 issue of *Louisiana Morbidity Report*.

4 Publishing in the Louisiana Morbidity Report allowed Louisiana's HSEES 2002 data to be  
5 viewed by Louisiana state public health employees, health care providers, responders,  
6 industry groups, and the general public, thus introducing the program and resultant data to  
7 a large target group

8  
9 • Louisiana Hazardous Substances Emergency Events Surveillance Presentations.

10 One presentation was given in Baton Rouge, Louisiana to the Louisiana HSEES  
11 Stakeholders. The presentation summarized 2001 and 2002 data results and was given to  
12 update stakeholders about the program. A second presentation was given via video  
13 conference to the Louisiana Department of Health and Hospitals (LDHH), Office of Public  
14 Health (OPH), Center for Preventive Health which is comprised of Regional Medical  
15 Directors and Regional Administrators. The presentation summarized 2001 and 2002 data  
16 by OPH region.

17

18 ? Informational Brochure on Transportation-Related Events in Louisiana

19 Previous data indicated an increase in transportation-related events as well as injuries.  
20 Many of these transportation-related events were attributed to human error or equipment  
21 failure. The Louisiana HSEES staff developed an informational brochure focusing on  
22 transportation related events from 2001 and 2002. The brochure included summary data  
23 from 2001 and 2002 as well as preventive measures. Through collaboration with Louisiana  
24 HSEES stakeholders, a transportation information sheet was also designed as a quick

reference guide to be carried in vehicles carrying hazardous substances. Both the brochures and information sheets were distributed to HazMat certified drivers by the Department of Motor Vehicles.

**SUMMARY OF RESULTS, 2001–2004**

During 2001–2004, the largest proportion of events occurred in fixed facilities (Table 9). However, the number of victims resulting from transportation-related events increased in 2004. Victims in transportation events are more likely associated with trauma and not the chemical release. The increase is partially due to the addition of Poison Control data as well as collaboration with a regional epidemiologist to assist with victim data collection. Though the number of reporting sources used over time have increased, the total number of reported events has decreased since Louisiana began collection of HSEES data in 2001.

**Table 9.- Cumulative data by year—Louisiana Hazardous Substances Emergency Events Surveillance, 1993-2004\***

Year	Type of event		Total	No. substances released	No. victims	No. deaths	Events with victims	
	Fixed facility	Transportation					No.	% <sup>†</sup>
2001	684	131	815	1163	63	2	20	27.4
2002	630	122	752	1205	30	1	20	27.4
2003	587	87	674	1113	42	1	8	11.0
2004	474	90	564	1053	176	0	25	34.2
<b>Total</b>	<b>2375</b>	<b>430</b>	<b>2805</b>	<b>4534</b>	<b>311</b>	<b>4</b>	<b>73</b>	<b>100.0</b>

\* 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.

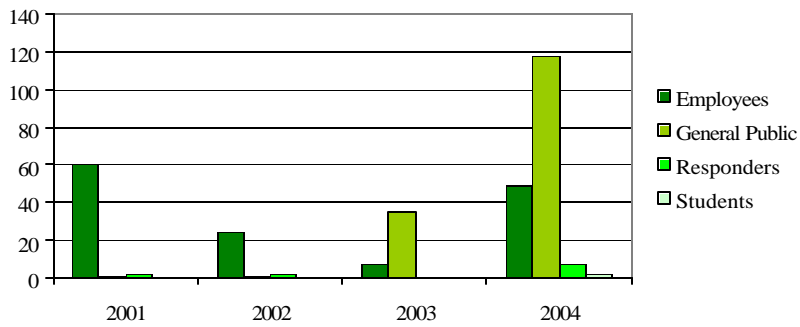
1 The average number of substances released per event has increased. The percentage of events  
2 with victims was highest in 2004 (4.4%) and lowest in 2003 (1.2%). The average percentage of  
3 events with victims during 2001–2004 was 2.7%.

4

5 Respiratory irritation was the most frequently reported injury. Members of the general public  
6 were the most commonly reported victims of acute chemical releases. However, employees  
7 constitute a large proportion of the victims as well (Figure 6). The number of injured responders  
8 has increased recently.

9

10 **Figure 6.- Number of victims, by category and year—Louisiana Hazardous Substances**  
11 **Emergency Events Surveillance, 2001–2004**  
12



13  
14

1

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Appendix

The 10 substances most frequently involved in events—Louisiana Hazardous Substances  
Emergency Events Surveillance, 2004 \*

	<b>Chemical Substance</b>	<b>Number of Releases</b>
1.	Sulfur Dioxide	120
2.	Nitrogen Oxides	89
3.	Benzene	65
4.	Nitric Oxide	65
5.	Volatile Organic Compounds	44
6.	Ethylene	33
7.	Propane	33
8.	Carbon Monoxide	31
9.	Hydrogen Sulfide	31
10.	Butadiene	30

? Note chemical substance may include related chemical substances such as substances not  
otherwise specified (NOS).