

Louisiana Toxic Substance Incidents Program (LaTSIP)

2011: A Summary Report

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



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Contents

	Page
List of Tables	iv
List of Figures	v
Executive Summary	vi
Introduction	1
Methods	3
Results	4
Industries	11
Substances	13
Victims	14
Nearby populations	20
Evacuations	20
Decontamination	21
Response	21
Summary of Results, 2011	22
References	24
Appendix	25
Glossary	26

List of Tables

Table 1	Number of events meeting the surveillance definition, by parish and type of event - Louisiana Toxic Substance Incidents Program, 2011
Table 2	Number of substances involved per event, by type of event - Louisiana Toxic Substance Incidents Program, 2011
Table 3	Industries involved in toxic substance events, by category - Louisiana Toxic Substance Incidents Program, 2011
Table 4	Number of substances involved, by substance category and type of event - Louisiana Toxic Substance Incidents Program, 2011
Table 5	Number of victims per event, by type of event - Louisiana Toxic Substance Incidents Program, 2011
Table 6	Frequency of substance categories in all events and events with victims - Louisiana Toxic Substance Incidents Program, 2011
Table 7	Frequencies of injuries/symptoms, by type of event - Louisiana Toxic Substance Incidents Program, 2011
Table 8	Distribution of personnel who responded to the event - Louisiana Toxic Substance Incidents Program, 2011
Table 9	Cumulative data by year - Louisiana Toxic Substance Incidents Program, 2011

List of Figures

- Figure 1 Primary areas or equipment of fixed facilities involved in mining, manufacturing, or utility events - Louisiana Toxic Substance Incidents Program, 2011
- Figure 2 Distribution of transportation-related events, by type of transport - Louisiana Toxic Substance Incidents Program, 2011
- Figure 3a Primary factors reported as contributing to events - Louisiana Toxic Substance Incidents Program, 2011
- Figure 3b Secondary factors reported as contributing to events - Louisiana Toxic Substance Incidents Program, 2011
- Figure 4 Monthly breakdown of LATSIP events for calendar year 2011 - Louisiana Toxic Substance Incidents Program, 2011
- Figure 5 Number of victims, by population group and type of event - Louisiana Toxic Substance Incidents Program, 2011
- Figure 6 Injury disposition - Louisiana Toxic Substance Incidents Program, 2011
- Figure 7 Number of victims, by category and year - Louisiana Toxic Substance Incidents Program, 2011

EXECUTIVE SUMMARY

The National Toxic Substance Incidents Program (NTSIP) system, funded by the Agency for Toxic Substances and Disease Registry (ATSDR), actively collects information to describe the public health consequences of acute releases of toxic 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 its creation in 2011 and with this program's predecessor since 2001. This report summarizes the characteristics of events reported in Louisiana during 2011. Information about acute events involving toxic 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 2011, 795 events met the LaTSIP surveillance definition. In 719 (90.4%) events, only one substance was released. The most commonly reported categories of substances were volatile organic compounds, acids, and other (not belonging to one of the existing categories). During this reporting period, 47 events (6.0%) resulted in a total of 71 victims. The most frequently reported injuries were respiratory irritation and chemical burns. Evacuations were ordered for 58 (7.3%) events.

INTRODUCTION

The National Toxic Substance Incidents Program (NTSIP) is designed to protect people from harm caused by spills and leaks of toxic substances. The program is funded by the Centers for Disease Control and Prevention (CDC) / Agency for Toxic Substances and Disease Registry (ATSDR) and modeled partially after the Hazardous Substance Emergency Events Surveillance Program (HSEES, 1990-2009), the program that NTSIP was designed to replace. The Louisiana Department of Health and Hospitals, Office of Public Health, Center for Environmental Health Services, Section of Environmental Epidemiology and Toxicology participated in HSEES from 2001-2009 and in NTSIP since its creation in 2010. The Louisiana Toxic Substance Incidents Program (LaTSIP) collects information about chemical spills and maintains it in a centralized database. Trends in data can then be analyzed to develop approaches to minimize risk to public health.

From 1990 - 2009, the Agency for Toxic Substances and Disease Registry (ATSDR) maintained an active, state-based 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 Database¹.

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. In 2010, NTSIP was formed to replace HSEES as a more comprehensive program by incorporating stakeholder suggestions. NTSIP has three components: National Database, State Partners, and Response Teams. In 2011, seven state health departments collected data for NTSIP: Louisiana, New York, North Carolina, Oregon, Tennessee, Utah, and Wisconsin.

LaTSIP has three goals: to describe toxic substance releases and the public health impact associated with such releases, to identify vulnerabilities in industry, transportation, and communities as they relate to toxic releases, and to promote the use of inherently safer technologies that could prevent exposures to toxic releases and subsequent health effects. These goals 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.

This report provides an overview of LaTSIP for 2011, summarizes the characteristics of acute releases of toxic substances and their associated public health consequences, and demonstrates how data from the system are translated into prevention activities to protect public health.

METHODS

Detailed information was collected about each toxic substance incident, 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 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 NTSIP event is defined as **an uncontrolled or illegal acute release of any toxic substance**, in any amount for substances listed on the NTSIP Mandatory Chemical Reporting List, or, if not on the list, in an amount greater than or equal to 10 lbs or 1 gallon. Petroleum only incidents, as well as stack or flare incidents are included only when there is a public health action or an injury caused by the chemical. NTSIP 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 totally 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 2011, a total of 795 acute toxic substances events met the LaTSIP surveillance definition; 528 (66.5%) events occurred in fixed facilities. The parishes with the most events (Table 1) were East Baton Rouge (126 [15.8%]), Calcasieu (81 [10.2%]), Ascension (77 [9.7%]) and Caddo (76 [9.6%]). The parishes with 0 events were generally small in population and have agricultural based economies.

Table 1: Number of events meeting the surveillance definition, by parish and type of event - Louisiana Toxic Substances Emergency Events Surveillance, 2011

Parish	Type of Event				All Events	
	Fixed Facility		Transportation			
	No. Events	%*	No. Events	%*	No. Events	%*
Acadia	4	0.8	3	1.1	7	0.9
Allen	2	0.4	2	0.7	4	0.5
Ascension	64	12.1	13	4.9	77	9.7
Assumption	2	0.4	0	0.0	2	0.3
Avoyelles	No NTSIP Events					
Beauregard	7	1.3	2	0.7	9	1.1
Bienville	1	0.2	0	0.0	1	0.1
Bossier	7	1.3	7	2.6	14	1.8
Caddo	20	3.8	56	21.0	76	9.6
Calcasieu	62	11.7	19	7.1	81	10.2
Caldwell	0	0.0	1	0.4	1	0.1
Cameron	3	0.6	0	0.0	3	0.4
Catahoula	No NTSIP Events					
Claiborne	1	0.2	0	0.0	1	0.1
Concordia	No NTSIP Events					
De Soto	7	1.3	4	1.5	11	1.4
E. Baton Rouge	106	20.1	20	7.5	126	15.8
E. Carroll	No NTSIP Events					

Parish	Type of Event				All Events	
	Fixed Facility		Transportation			
	No. Events	%*	No. Events	%*	No. Events	%*
E. Feliciana	No NTSIP Events					
Evangeline	6	1.1	1	0.4	7	0.9
Franklin	1	0.2	1	0.4	2	0.3
Grant	No NTSIP Events					
Iberia	4	0.8	2	0.7	6	0.8
Iberville	52	9.8	11	4.1	63	7.9
Jackson	1	0.2	1	0.4	2	0.3
Jefferson	18	3.4	11	4.1	29	3.6
Jefferson Davis	0	0.0	3	1.1	3	0.4
Lafayette	15	2.8	9	3.4	24	3.0
LaFourche	5	0.9	1	0.4	6	0.8
La Salle	No NTSIP Events					
Lincoln	0	0.0	1	0.4	1	0.1
Livingston	5	0.9	1	0.4	6	0.8
Madison	0	0.0	1	0.4	1	0.1
Morehouse	3	0.6	0	0.0	3	0.4
Natchitoches	5	0.9	1	0.4	6	0.8
Orleans	8	1.5	20	7.5	28	3.5
Ouachita	10	1.9	9	3.4	19	2.4
Plaquemines	6	1.1	3	1.1	9	1.1
Pointe Coupee	3	0.6	6	2.2	9	1.1
Rapides	8	1.5	12	4.5	20	2.5
Red River	3	0.6	2	0.7	5	0.6
Richland	1	0.2	1	0.4	2	0.3
Sabine	No NTSIP Events					
St. Bernard	14	2.7	7	2.6	21	2.6
St. Charles	25	4.7	11	4.1	36	4.5
St. Helena	2	0.4	0	0.0	2	0.3
St. James	13	2.5	3	1.1	16	2.0
St. John	8	1.5	6	2.2	14	1.8
St. Landry	1	0.2	1	0.4	2	0.3
St. Martin	1	0.2	2	0.7	3	0.4
St. Mary	2	0.4	1	0.4	3	0.4
St. Tammany	2	0.4	1	0.4	3	0.4
Tangipahoa	1	0.2	3	1.1	4	0.5
Tensas	No NTSIP Events					

Parish	Type of Event				All Events	
	Fixed Facility		Transportation			
	No. Events	%*	No. Events	%*	No. Events	%*
Terrebonne	4	0.8	0	0.0	4	0.5
Union	1	0.2	0	0.0	1	0.1
Vermilion	3	0.6	1	0.4	4	0.5
Vernon	No NTSIP Events					
Washington	1	0.2	0	0.0	1	0.1
Webster	0	0.0	3	1.1	3	0.4
W. Baton Rouge	10	1.9	4	1.5	14	1.8
W. Carroll	No NTSIP Events					
W. Feliciana	No NTSIP Events					
Winn	No NTSIP Events					
Total	528	100.0	267	99.9	795	100.3

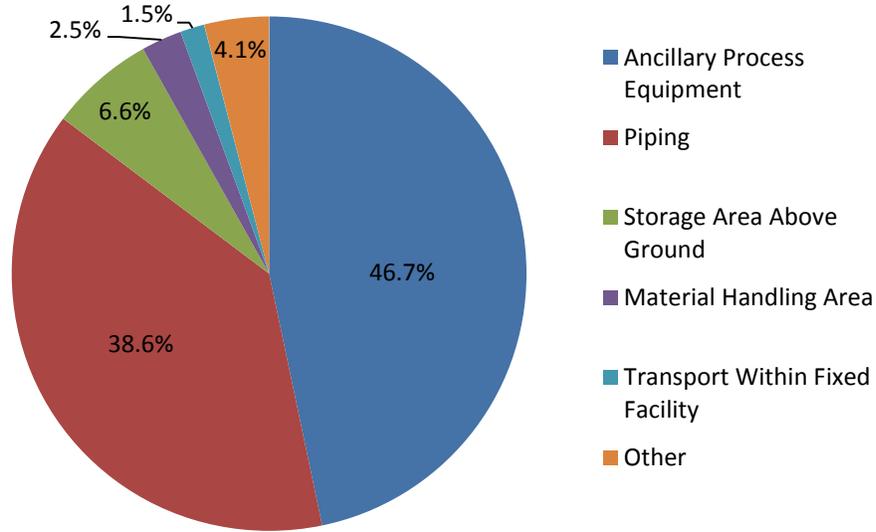
* Percentage = (number of events by type of event per parish ÷ total number of events) x 100

† Percentages do not total 100% because of rounding.

§ Parish was unknown for 1 fixed facility event.

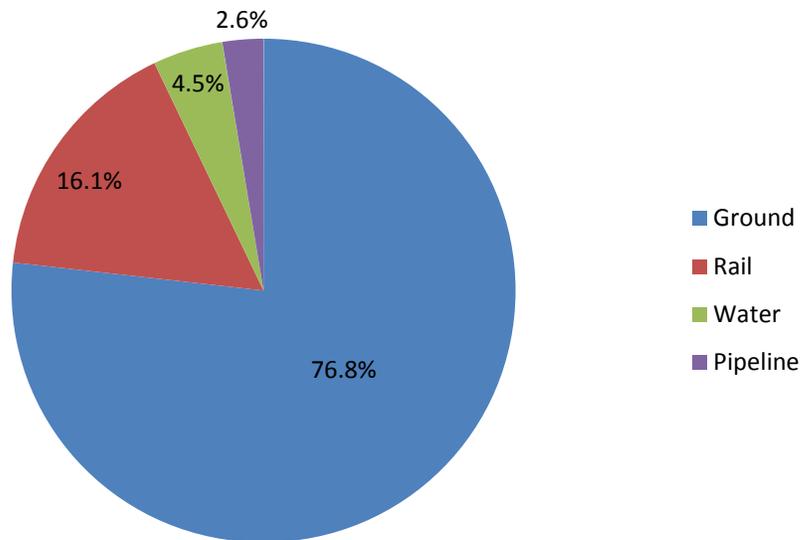
For each of the 330 fixed-facility event occurring in mining, manufacturing, or utilities, one or two choices can be selected to describe the type of area where the event occurred or the equipment involved with the event. Only one type of area was reported for 197 (59.7%) fixed facility events, a combination of two area types were reported for 132 (40.0%), and the type of area was unknown for 1 (0.3%) event. Among events with one type of area reported, the main areas were classified as follows: 92 (46.7%) ancillary process equipment, 76 (38.6%) piping, and 13 (6.6%) storage area above ground (Figure 1).

Figure 1: Primary areas or equipment of fixed facilities involved in mining, manufacturing, or utility events where only one type of area was reported - Louisiana Toxic Substance Incidents Program, 2011



Of the 267 transportation-related events, most (205 [76.8%]) occurred during ground transport (e.g., truck, van, or tractor (Figure 2)). The largest proportions of transportation-related events occurred during unloading of a stationary vehicle or vessel (72 [27.0%]) or from a moving vehicle or vessel (71 [26.6%]).

Figure 2: Distribution of transportation-related events, by type of transport - Louisiana Toxic Substance Incidents Program, 2011



Primary and secondary factors contributing to the events were reported for all events (Figure 3). Most (68.4%) fixed-facility events reported equipment failure as the primary factor, and most (61.8%) transportation-related events reported human error as the primary factor. Secondary factors were reported for 73 (9.2%) events (Figure 3b). Of the reported secondary factors, most (89.3%) fixed-facility events involved equipment failure and most (97.4%) transportation-related events involved equipment failure.

Figure 3a: Primary factors reported as contributing to events - Louisiana Toxic Substance Incidents Program, 2011

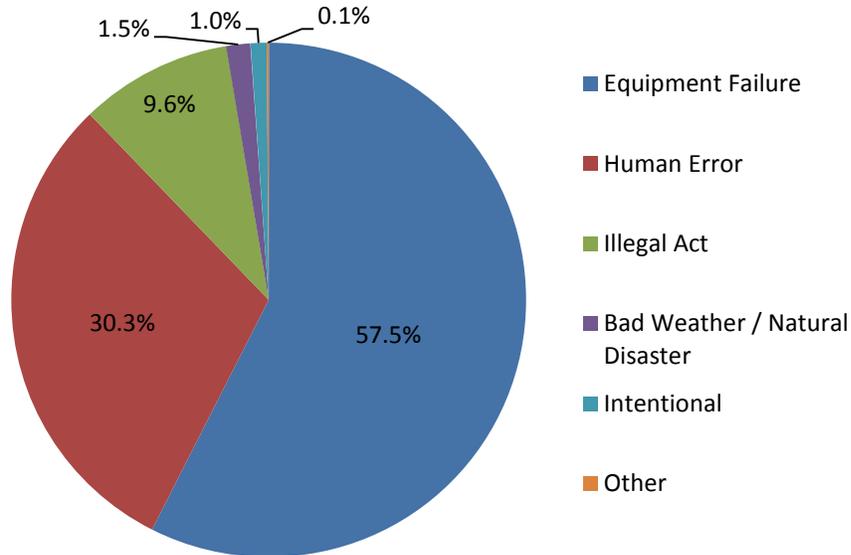
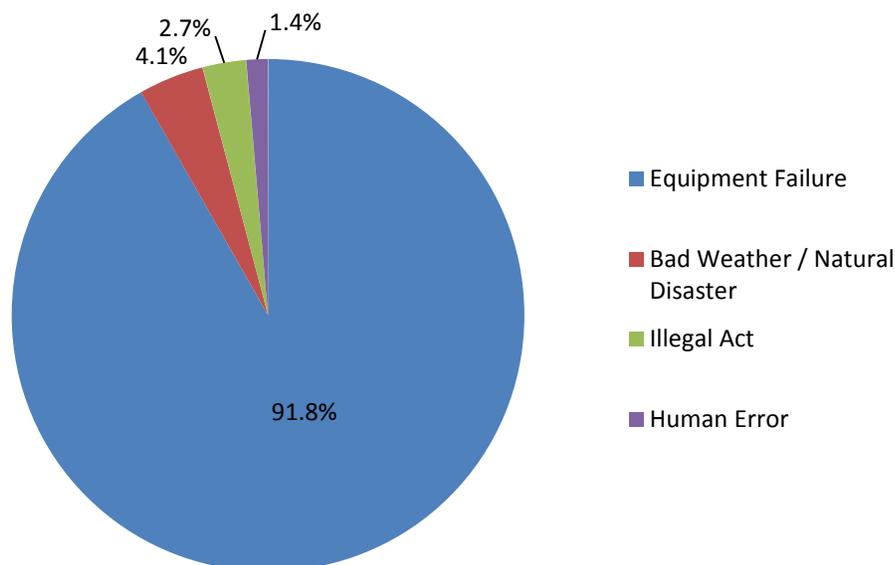


Figure 3b: Secondary factors reported as contributing to events - Louisiana Toxic Substance Incidents Program, 2011



Over 90% of all events involved the release of only one substance. Two substances were released in 5.4% of the events, and 4.2% 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 (12.9% vs. 3.0%).

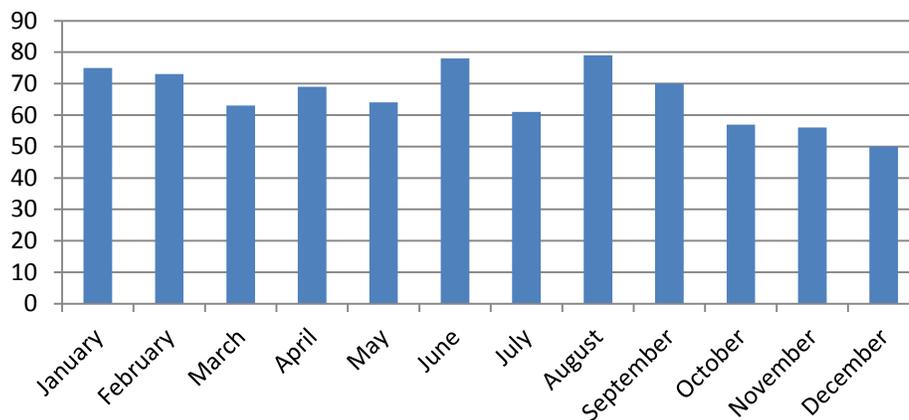
Table 2: Number of substances involved per event, by type of event - Louisiana Toxic Substance Incidents Program, 2011

No. Substances	Type of Event						All Events		
	Fixed Facility			Transportation			No. Events	%	Total Substances
	No. Events	%	Total Substances	No. Events	%	Total Substances			
1	460	87.1	460	259	97.0	259	719	90.4	719
2	36	6.8	72	7	2.6	14	43	5.4	86
3	13	2.5	39	1	0.4	3	14	1.8	42
4	5	0.9	20	0	0.0	0	5	0.6	20
≥ 5	14	2.7	104	0	0.0	0	14	1.8	104
Total	528	100.0	695	267	100.0	276	795	100.0	971

LaTSIP events were more likely to occur in industrial areas as opposed to commercial, residential or agricultural areas. In addition, LaTSIP events were more likely to occur in the 6 hours before noon (36.4%) and the 6 hours after and including noon (31.1%), compared with the 6 hours before midnight (17.0%) and the 6 hours after and including midnight (15.6%).

Additionally, 11-20% of events occurred on each weekday as compared with 6-10% on a weekend day. The highest number of events occurred in August (79 [9.9%]) (Figure 4).

Figure 4: Monthly breakdown of LaTSIP events for calendar year 2011 - Louisiana Toxic Substance Incidents Program, 2011



Industries

The largest proportions of LaTSIP events were associated with the manufacturing 324 [40.8%]) and transportation / warehousing (221 [27.8%]) industries (Table 3). Within manufacturing, chemical manufacturing (214 [66.0%]) and petroleum manufacturing (91 [28.1%]) accounted for most of the events. The industry with largest number of events with victims was the manufacturing industry (12 [25.5%]). Additionally, there were 14 (29.8%) events with victims where an industry was not involved (ex. methamphetamine manufacturing) or the industry was not identified.

The total number of victims was greatest in the not identified/unknown category (18 [25.4%]) followed by the number of victims in the manufacturing industries (16 [22.5%]). Of the events where the industry was identified, the manufacturing (Paper, Printing, Chemicals, Petroleum, Leather, Lumber, Stone) industry resulted in a large proportion of events with victims and a large number of victims; however, only 3.8% of all 313 events in that category resulted in victims. Conversely, 75 percent of events in the “*Health Care and Social Assistance*” industry resulted in victims, but this industry represents a small proportion (6.4%) of events with victims. The incident with the largest number of injuries was in the transportation industry. Six employees were exposed to sodium hydroxide from a leaking cargo tank.

Table 3: Industries involved in toxic substance events and events with victims, by category - Louisiana Toxic Substance Incidents Program, 2011

Industry Category	Total Events		Events with Victims		Percentage of Events with Victims	Total Number of Victims (Maximum)*
	Number	Percent	Number	Percent		
Accommodation and Food Services	1	0.1	0	0.0	0.0	0
Administrative and Support and Waste Management and Remediation Services	11	1.4	0	0.0	0.0	0
Agriculture, Forestry, Fishing and Hunting	3	0.4	0	0.0	0.0	0
Arts, Entertainment, and Recreation	No LaTSIP Events					
Construction	14	1.8	3	6.4	21.4	6 (2)
Educational Services	1	0.1	0	0.0	0.0	0
Finance and Insurance	No LaTSIP Events					
Health Care and Social Assistance	4	0.5	3	6.4	75.0	7 (4)
Information	No LaTSIP Events					
Management of Companies and Enterprises	No LaTSIP Events					
Manufacturing (Food, Textile, Apparel)	4	0.5	0	0.0	0.0	0
Manufacturing (Metal, Electrical, Transport, Professional)	7	0.9	0	0.0	0.0	0
Manufacturing (Paper, Printing, Chemicals, Petroleum, Leather, Lumber, Stone)	313	39.4	12	25.5	3.8	16 (3)
Mining	19	2.4	2	4.3	10.5	3 (2)
Not an Industry / Not Identified / Unknown	92	11.6	14	29.8	15.2	18 (2)
Other Services (except Public Administration)	No LaTSIP Events					
Professional, Scientific, and Technical Services	6	0.8	1	2.1	16.7	1 (1)
Public Administration	5	0.6	0	0.0	0.0	0
Real Estate and Rental and Leasing	NO LaTSIP Events					
Retail Trade I	2	0.3	1	2.1	50.0	1 (1)
Retail Trade II	3	0.4	0	0.0	0.0	0
Transportation and Warehousing I	207	26.0	7	14.9	3.4	13 (6)
Transportation and Warehousing II	14	1.8	2	4.3	14.3	2 (1)
Utilities	18	2.3	1	2.1	5.6	3 (3)
Wholesale Trade	71	8.9	1	2.1	1.4	1 (1)
Total‡	795	100.2	47	100.0	-	71(6)

*Minimum number of victims per event = 1.

‡ Percentages do not total 100% because of rounding.

Substances

A total of 971 substances were released in all events. The individual substances most frequently released were Methamphetamine Chemicals NOS, Hydrochloric Acid, Sulfur Dioxide, and Ethylene (Appendix). Substances were grouped into 15 categories. The substance categories most commonly released in fixed-facility events were volatile organic compounds (255 [36.7%]), and other (108 [15.5%]) (Table 4). In transportation-related events, the most common substance categories released were volatile organic compounds (71 [25.7%]) and acids (70 [25.4%]).

Two types of releases for each substance (e.g., spill and air) could be reported. One hundred (10.3%) substances involved more than one release type. Of the substances with more than one release type, 71% involved the release as a liquid and a gas.

Table 4: Number of substances involved, by substance category and type of event - Louisiana Toxic Substance Incidents Program, 2011

Substance Category	Type of Event				All Events	
	Fixed facility		Transportation		No. Substances	%
	No. Substances	%	No. Substances	%		
Acids	55	7.9	70	25.4	125	12.9
Agricultural Chemicals and Pesticides	24	3.5	11	4	35	3.6
Ammonia	22	3.2	1	0.4	23	2.4
Bases	20	2.9	39	14.1	59	6.1
Chlorine	34	4.9	1	0.4	35	3.6
Formulations	1	0.1	0	0	1	0.1
Hetero-organics	16	2.3	9	3.3	25	2.6
Hydrocarbons	10	1.4	0	0	10	1.0
Mixture Across Chemical Category *	11	1.6	7	2.5	18	1.9
Other †	108	15.5	21	7.6	129	13.3
Other Inorganic Substances ‡	91	13.1	21	7.6	112	11.5
Oxy-organics	17	2.4	10	3.6	27	2.8
Paints and Dyes	0	0.0	3	1.1	3	0.3
PCB's	1	0.1	0	0	1	0.1
Polymers	26	3.7	9	3.3	35	3.6
Category not assigned	4	0.6	3	1.1	7	0.7
Volatile Organic Compounds	255	36.7	71	25.7	326	33.6
Total§	695	99.9	276	100.1	971	100.1

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

†Not belonging to one of the existing categories.

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

§ Total percentage doesn't equal 100 due to rounding

Victims

A total of 71 victims were involved in 47 events (5.9% of all events) (Table 5). Of the 47 events with victims, 32 (68.7%) events involved only one victim, and 10 (21.3%) involved two victims. Of all victims, 50 (70.4%) were injured in fixed-facility events.

Table 5.—Number of victims per event, by type of event—Louisiana Toxic Substance Incidents Program, 2011

No. Victims	Type of Event						All Events		
	Fixed facility			Transportation					
	No. Events	%	Total Victims	No. Events	%	Total Victims	No. Events	%	Total Victims
1	23	67.6	23	9	75.0	9	32	68.1	32
2	7	20.6	14	3	18.8	6	10	21.3	20
3	3	8.8	9	0	0.0	0	3	6.4	9
4	1	2.9	4	0	0.0	0	1	2.1	4
≥5	0	0.0	0	1	6.3	6	1	2.1	6
Total[†]	34	99.9	50	13	100.1	21	47	100.0	71

[†] 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 25.4% of all events; however, only 1.5% of these events resulted in injuries. Conversely, events involving chlorine accounted for 4.2% of all events respectively, but 12.1% of these events resulted in injuries. Employees (50 [70.4%]) constituted the largest proportion of the population groups injured, followed by members of the general public (16 [22.5%]) (Figure 5).

Table 6: Frequency of substance categories in all events and events with victims - Louisiana Toxic Substance Incidents Program, 2011

Substance Category	All Events		Events with Victims		
	No.	%	No.	Percentage of all Releases with Victims	Percentage of Events with Victims in Substance Category
Acids	107	13.5	7	14.9	6.5
Agricultural Chemicals and Pesticides	27	3.4	1	2.1	3.7
Ammonia	20	2.5	0	0.0	0.0
Bases	58	7.3	4	8.5	6.9
Chlorine	33	4.2	4	8.5	12.1
Formulations	1	0.1	0	0.0	0.0
Hetero-organics	20	2.5	2	4.3	10.0
Hydrocarbons	3	0.4	0	0.0	0.0
Mixture Across Chemical Category [†]	15	1.9	1	2.1	6.7
Multiple Substance Category*	50	6.3	1	2.1	2.0
Other [‡]	119	15.0	18	38.3	15.1
Other Inorganic Substances [§]	84	10.6	3	6.4	3.6
Oxy-organics	23	2.9	2	4.3	8.7
Paints and Dyes	3	0.4	0	0.0	0.0
PCB's	1	0.1	0	0.0	0.0
Polymers	22	2.8	1	2.1	4.5
Indeterminate/Unknown	7	0.9	0	0.0	0.0
Volatile Organic Compounds	202	25.4	3	6.4	1.5
Total[¶]	795	100.2	47	100.0	5.9

*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.

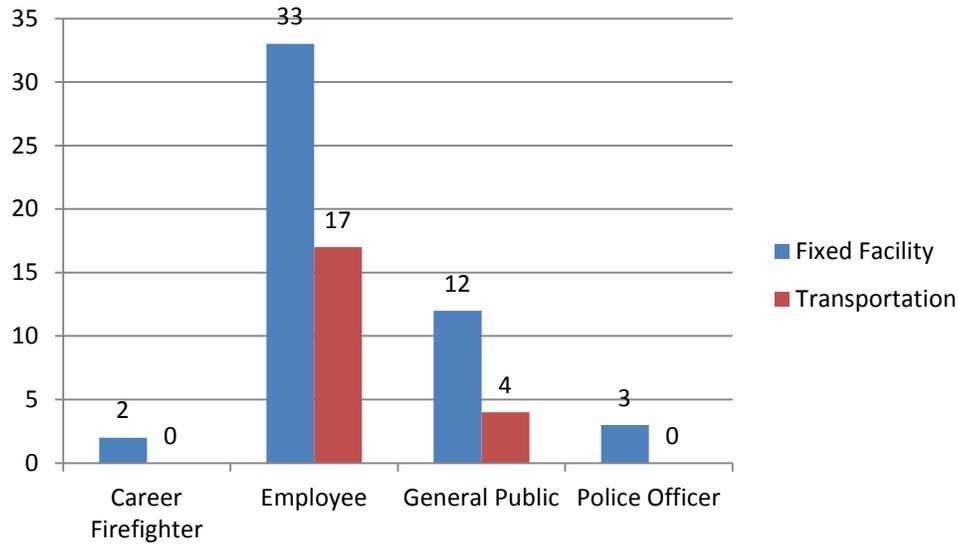
[†]Substances from different categories that were mixed or formed from a reaction before the event.

[‡]Not classified.

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

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

Figure 5: Number of victims, by population group and type of event - Louisiana Toxic Substance Incidents Program, 2011



Victims were reported to have sustained a total of 89 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 respiratory irritation (16 [25.8%]) and chemical burns (13 [21.0%]). In transportation-related events, respiratory irritation (7 [25.9%]) and other/unknown (6 [22.2%]) were reported most frequently.

Table 7: Frequencies of injuries/symptoms, by type of event* - Louisiana Toxic Substance Incidents Program, 2011

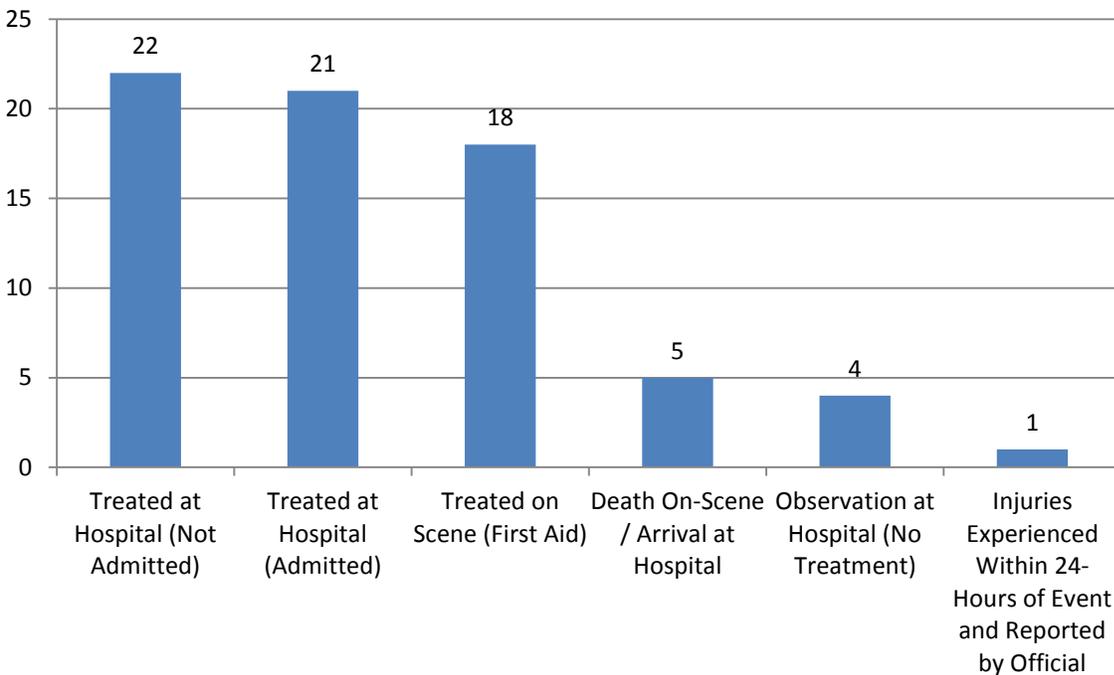
Injury/Symptom	Fixed Facility		Transportation		All Events	
	Number	%	Number	%	Total Number	%
Burns (Chemical)	13	21.0	5	18.5	18	20.2
Dizziness/Central Nervous System Symptoms	0	0.0	3	11.1	3	3.4
Eye Irritation	6	9.7	0	0.0	6	6.7
Gastrointestinal System Problems	2	3.2	0	0.0	2	2.2
Headache	1	1.6	1	3.7	2	2.2
Other/Unknown	5	8.1	6	22.2	11	12.4
Respiratory Irritation	16	25.8	7	25.9	23	25.8
Shortness of Breath	4	6.5	0	0.0	4	4.5
Skin Irritation	7	11.3	1	3.7	8	9.0
Trauma (Chemical-Related)	3	4.8	0	0.0	3	3.4
Trauma (Not Chemical-Related)	5	8.1	4	14.8	9	10.1
Total ‡	62	100.1	27	99.9	89	99.9

*The number of injuries is greater than the number of victims (79) because a victim could have had more than one injury.

‡ Percentages do not total 100% because of rounding.

The age category was reported for all 71 injured persons; of these 70 (98.6%) were reported as adults (18 years of age or older). Sex was also known for all 71 victims; of these, 64 (90.1%) were males. Of all employees and responders for whom sex was reported, 50 (90.9%) were males. For the 71 (100%) injured persons for whom treatment was reported, 22 (31.0%) were treated at a hospital but not admitted, and 21 (29.6%) were admitted to a hospital (Figure 6).

Figure 6: Injury disposition - Louisiana Toxic Substance Incidents Program, 2011



Personal protective equipment (PPE) use was reported for all employee-victims and responder-victims. Most (80.0%) had not worn any form of PPE. Seven (12.7%) employee-victims wore Level “A” PPE and four (7.3%) employee-victims wore Level “B” PPE. Level “A” is the most protective form of PPE and used when the greatest level of skin, respiratory, and eye protection is necessary. Level “B” is used when the highest level of respiratory protection is necessary, but a lesser level of skin protection.

One event resulted in 6 victims. Six employees experienced respiratory irritation after a cargo tank leaked residual sodium hydroxide. All victims were treated on scene. The release occurred at approximately 1:00 PM on a Tuesday. 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 625 (78.6%) events, schools were within ¼ mile of 35 (4.4%) events, hospitals were within ¼ mile of 2 (0.3%) events, nursing homes were within ¼ mile of 14 (1.8%) events, licensed daycares were within ¼ mile of 51 (6.4%) events, industries or other businesses were within ¼ mile of 493 (62.0%) events, and recreational areas were within ¼ mile of 15 (1.9%) events.

The number of events at which persons were at risk of exposure was determined primarily using GIS. There were 624 (78.5%) events with persons living within ¼ mile of the event; 702 (88.3%) events with persons living within ½ mile; and 767 (96.5%) events with persons living within 1 mile.

Evacuations

Evacuations were ordered in 58 (7.3%) events. Of these evacuations, 81.0% were of buildings or affected parts of buildings; 6.9% were of downwind / downstream; 5.2 % were of defined circular areas surrounding the event locations; 3.4 were of downwind/downstream and circle radius surrounding event; and 3.4% used no criteria. The estimated number of people evacuated was reported for all 58 events and ranged from under 5 to over 1,000 people. The median length of evacuation was 1.5 hours (range: less than one hour to 9 hours). Of all 58 events, 53 (91.4%) also had access to the area restricted (normal access availability was altered). An additional 14 (24.1%) events had in-place sheltering ordered by an official.

Decontamination

A total of 64 people were decontaminated in 47 events. Of the 64 people who were decontaminated, 45 (70.3%) were decontaminated at the hospital and 18 (28.1%) were decontaminated at the scene, and 1 (1.6%) person was decontaminated both on scene and at the hospital.

Response

Of the 795 events, 19.4% reported 2 or more categories of personnel who responded, 7.5% reported 3 or more categories, and 3.0% reported 4 or more categories. Company response teams (58.7%) responded most frequently to events, followed by law enforcement agencies (17.6%), fire department (7.7%), and third party clean-up contractors (7.6%) (Table 8).

Table 8: Distribution of personnel who responded to the event - Louisiana Toxic Substance Incidents Program, 2011

Responder Category	No.	%
Certified HazMat Team	56	5.4
Company's Response Team	608	58.7
EMT	10	1.0
Environmental Agency	11	1.1
Fire Department	80	7.7
Law Enforcement Agency	181	17.6
Other	10	1.0
Third Party Clean-Up Contractor	79	7.6
Total[‡]	10375	100.1

[‡]The number of responders is greater than the number of events (796) because an event could have had more than one category of responder

SUMMARY OF RESULTS, 2011

The numbers of toxic substance events, number of substances released, events with victims, and deaths for the year 2011 in Louisiana are shown in Table 9. In the year 2011, 795 events qualified for LaTSIP surveillance. Among them, 528 were fixed facility events and 267 were associated with transportation. There were 971 substances released, and the most frequent releases involved Methamphetamine Chemicals NOS (75 releases or 7.7%) and Hydrochloric Acid (53 releases or 5.5%).

There were a total of 71 victims resulting from 47 events; these victims included 5 (7.0%) fatalities. Respiratory irritation was the most frequently reported injury and accounted for 25.8% of injuries. Employees were the most commonly reported victim type. Of employee and responder victims, most (80.0%) had not worn any form of PPE.

Table 9: Cumulative data for 2010 through 2011 - Louisiana Toxic Substance Incidents Program, 2011

Year	Type of Event			No. Substances Released	No. Victims	No. Deaths	Events with Victims	
	Fixed Facility	Transportation	Total				No.	% [†]
2010	531	209	740	937	91	1	62	8.4
2011	528	267	795	971	71	5	47	5.9
Total	1059	476	1535	1908	162	6	109	7.1

[†] Percentage of events with victims.

REFERENCES

1. 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 Toxic Substance Incidents Program, 2011

	Chemical Substance	Number of Releases
1	Methamphetamine Chemicals NOS	75
2	Hydrochloric Acid	53
3	Sulfur Dioxide	36
4	Ethylene	35
5	Sodium Hydroxide	35
6	Benzene	34
7	Chlorine	32
8	Natural Gas	26
9	Sulfuric Acid	25
10	MIXTURE	24

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 toxic materials that occur in a non-moving facility such as an oil refinery or manufacturing plant.

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.

Toxic Substance Releases - Discharge of any toxic substance such as, chemical, biological, radiological, or medical material that may reasonable be anticipated to cause death, disease, behavioral abnormalities, cancer, genetic mutations or malformations.

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