

Louisiana Toxic Substance Incidents Program (LaTSIP)

2013: 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 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 2010 and with this program's predecessor since 2001. This report summarizes the characteristics of events reported in Louisiana during 2013. 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 2013, 501 met the NTSIP surveillance definition in Louisiana. In 442 (88.2%) 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, 41 events (8.2%) resulted in a total of 113 victims. The most frequently reported injuries were respiratory system problems and thermal burns. Evacuations were ordered for 53 (10.6%) 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 2013, eight state health departments collected data for NTSIP: Louisiana, California, Missouri, New York, North Carolina, 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 2013, 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 2013, a total of 501 acute toxic substances events met the LaTSIP surveillance definition; 366 (73.1%) events occurred in fixed facilities. The parishes with the most events (Table 1) were East Baton Rouge (78 [15.6%]), Ascension (70 [14.0%]), and Calcasieu (65 [13.0%]).

Table 1: Number of events meeting the surveillance definition, by parish and type of event - Louisiana Toxic Substances Emergency Events Surveillance, 2013

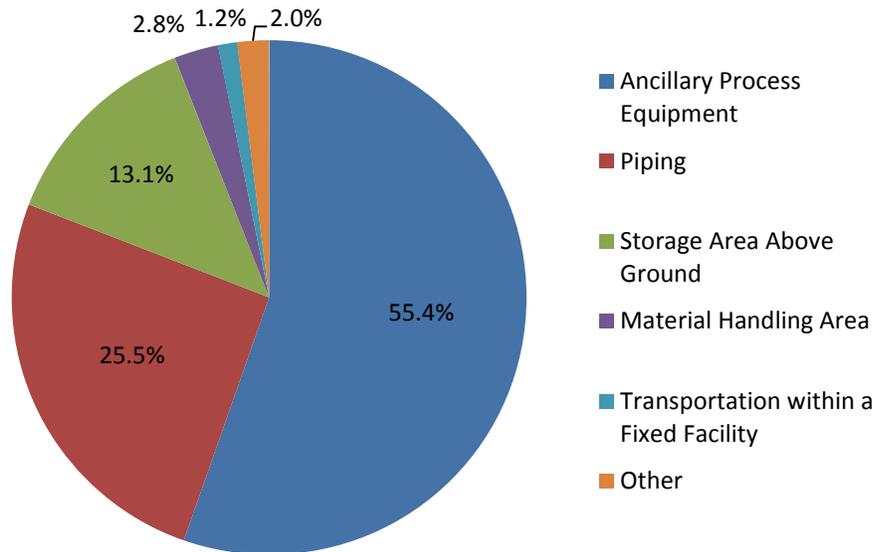
Parish	Type of Event				All Events	
	Fixed Facility		Transportation		No. Events	%*
	No. Events	%*	No. Events	%*		
Acadia	0	0.0	2	1.5	2	0.4
Allen	1	0.3	0	0.0	1	0.2
Ascension	59	16.1	11	8.1	70	14.0
Assumption	No NTSIP Events					
Avoyelles	2	0.5	1	0.7	3	0.6
Beauregard	No NTSIP Events					
Bienville	No NTSIP Events					
Bossier	4	1.1	6	4.4	10	2.0
Caddo	15	4.1	18	13.3	33	6.6
Calcasieu	52	14.2	13	9.6	65	13.0
Caldwell	No NTSIP Events					
Cameron	No NTSIP Events					
Catahoula	No NTSIP Events					
Claiborne	0	0.0	1	0.7	1	0.2
Concordia	No NTSIP Events					
De Soto	3	0.8	2	1.5	5	1.0
E. Baton Rouge	68	18.6	10	7.4	78	15.6
E. Carroll	0	0	1	0.7	1	0.2
E. Feliciana	1	0.3	0	0.0	1	0.2
Evangeline	0	0.0	2	1.5	2	0.4
Franklin	No NTSIP Events					
Grant	No NTSIP Events					
Iberia	2	0.5	2	1.5	4	0.8
Iberville	33	9.0	4	3.0	37	7.4
Jackson	1	0.3	0	0	1	0.2
Jefferson	9	2.5	9	6.7	18	3.6
Jefferson Davis	0	0.0	1	0.7	1	0.2
Lafayette	7	1.9	5	3.7	12	2.4
LaFourche	5	1.4	1	0.7	6	1.2
La Salle	No NTSIP Events					
Lincoln	0	0.0	1	0.7	1	0.2
Livingston	No NTSIP Events					
Madison	No NTSIP Events					
Morehouse	1	0.3	0	0.0	1	0.2
Natchitoches	2	0.5	1	0.7	3	0.6
Orleans	8	2.2	10	7.4	18	3.6

Parish	Type of Event				All Events	
	Fixed Facility		Transportation		No. Events	%*
	No. Events	%*	No. Events	%*		
Ouachita	4	1.1	1	0.7	5	1.0
Plaquemines	2	0.5	3	2.2	5	1.0
Pointe Coupee	0	0.0	3	2.2	3	0.6
Rapides	4	1.1	3	2.2	7	1.4
Red River	1	0.3	0	0.0	1	0.2
Richland	No NTSIP Events					
Sabine	0	0.0	2	1.5	2	0.4
St. Bernard	11	3.0	2	1.5	13	2.6
St. Charles	21	5.7	5	3.7	26	5.2
St. Helena	No NTSIP Events					
St. James	12	3.3	0	0.0	12	2.4
St. John	14	3.8	4	3.0	18	3.6
St. Landry	1	0.3	2	1.5	3	0.6
St. Martin	1	0.3	1	0.7	2	0.4
St. Mary	2	0.5	1	0.7	3	0.6
St. Tammany	1	0.3	2	1.5	3	0.6
Tangipahoa	6	1.6	2	1.5	8	1.6
Tensas	No NTSIP Events					
Terrebonne	2	0.5	1	0.7	3	0.6
Union	No NTSIP Events					
Vermilion	No NTSIP Events					
Vernon	No NTSIP Events					
Washington	1	0.3	0	0	1	0.2
Webster	0	0.0	1	0.7	1	0.2
W. Baton Rouge	8	2.2	1	0.7	9	1.8
W. Carroll	1	0.3	0	0.0	1	0.2
W. Feliciana	1	0.3	0	0	1	0.2
Winn	No NTSIP Events					
Total	135	100.0	366	99.5	501	100.2

*Percentages may not total 100% because of rounding.

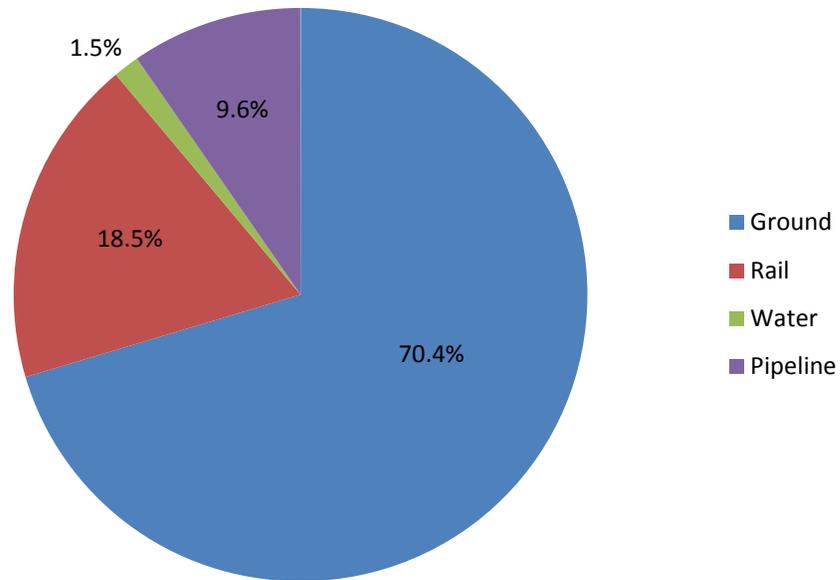
For each of the 276 fixed-facility event occurring in mining, manufacturing, or utilities, one or two choices can be selected to describe the type of area where the event occurred or the equipment involved with the event. Only one type of area was reported for 251 (90.9%) fixed facility events, a combination of two area types were reported for 25 (10.0%). Among events with one type of area reported, the main areas were classified as follows: 139 (55.4%) ancillary process equipment, 64 (25.5%) piping, and 33 (13.1%) 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, 2013



Of the 135 transportation-related events, most (95 [70.4%]) 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 / vessel (34 [25.2%]) or occurred en route that was later discovered at a fixed facility (33 [24.4%]).

Figure 2: Distribution of transportation-related events, by type of transport - Louisiana Toxic Substance Incidents Program, 2013



Primary and secondary factors contributing to the events were reported for all events (Figures 3a and b). Most (70.2%) fixed-facility events reported equipment failure as the primary factor, and most (58.5%) transportation-related events reported human error as the primary factor. Secondary factors were reported for 20 (4.0%) events (Figure 3b). Equipment failure was the most commonly reported secondary factor for both fixed facility and transportation events, accounting for 84.6% of fixed facility events and 100% of transportation events.

Figure 3a: Primary factors reported as contributing to events - Louisiana Toxic Substance Incidents Program, 2013

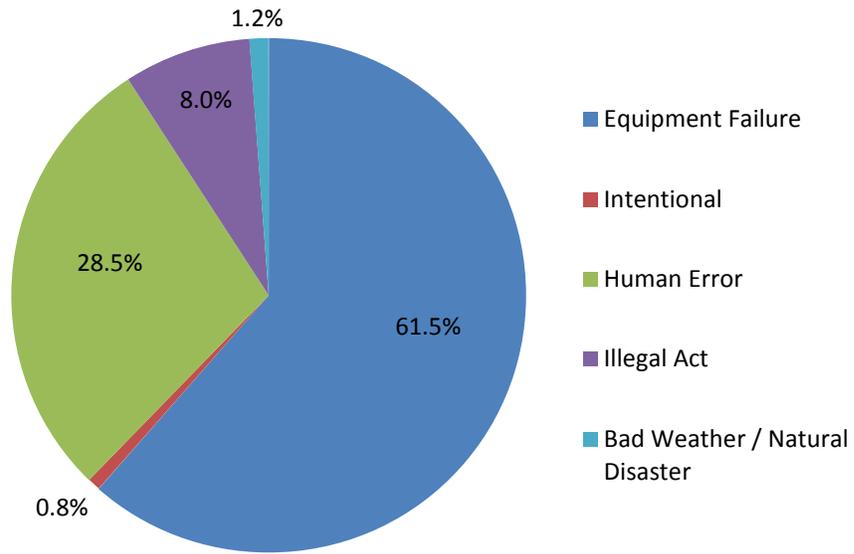
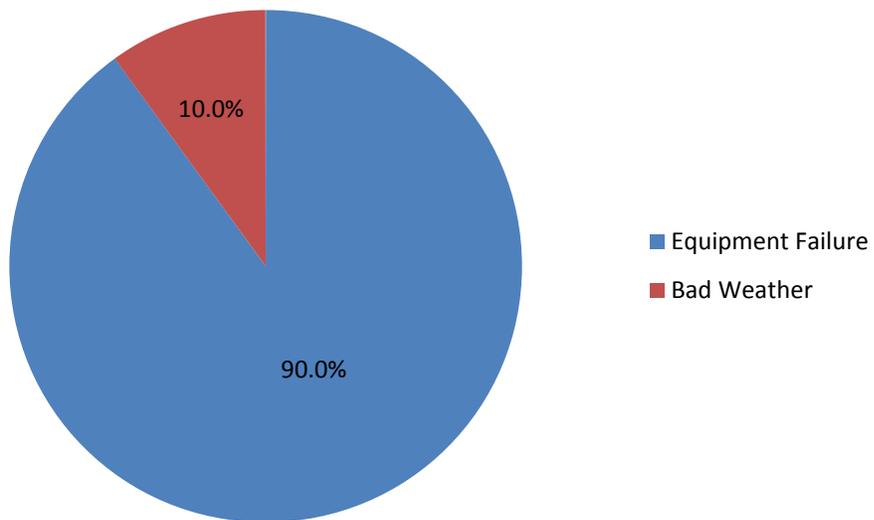


Figure 3b: Secondary factors reported as contributing to events – Louisiana Toxic Substance Incidents Program, 2013



Over 88% of all events involved the release of only one substance. Two substances were released in 7.8% of the events, and 4.0% 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 (5.2% vs. 0.7%).

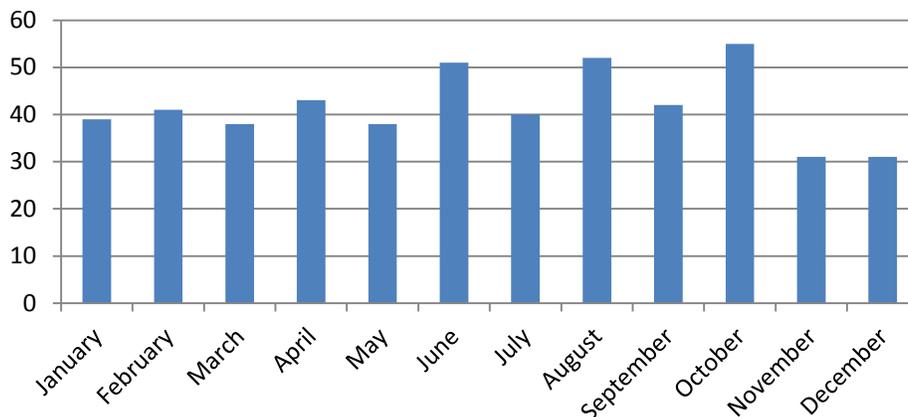
Table 2: Number of substances involved per event, by type of event - Louisiana Toxic Substance Incidents Program, 2013

No. Substances	Type of Event						All Events		
	Fixed Facility			Transportation					
	No. Events	%*	Total Substances	No. Events	%*	Total Substances	No. Events	%*	Total Substances
1	310	84.7	310	132	97.8	132	442	88.2	442
2	37	10.1	74	2	1.5	4	39	7.8	78
3	11	3.0	33	0	0.0	0	11	2.2	33
4	2	0.5	8	1	0.7	4	3	0.6	12
5+	6	1.6	35	0	0.0	0	6	1.2	35
Total	366	99.9	460	135	100.0	140	501	100.0	600

*Percentages may not total 100% because of rounding.

LaTSIP events were more likely to occur in industrial areas as opposed to commercial, residential or agricultural areas (for events where only 1 area was selected). In addition, for LaTSIP events where the time was known, LaTSIP events were more likely to occur in the 6 hours before noon (37.7%) and the 6 hours after and including noon (31.7%), compared with the 6 hours after and including midnight (17.0%) and the 6 hours before midnight (13.6%). Additionally, 15.2% – 20.0% of events occurred on each weekday as compared with 8.0% - 8.6% on a weekend day. The highest number of events occurred in October (55 [11.0%]) (Figure 4).

Figure 4: Monthly breakdown of LaTSIP events for calendar year 2013 - Louisiana Toxic Substance Incidents Program, 2013



Industries

The largest proportions of LaTSIP events were associated with the manufacturing (273 [54.5%]) and transportation / warehousing (129 [25.7%]) industries (Table 3). The industry with largest number of events with victims was the manufacturing industry (22 [53.7%]). Additionally, there were 6 (14.6%) 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 “*Manufacturing (Paper, Printing, Chemicals, Petroleum, Leather, Lumber, Stone)*” industry (89 [78.8%]) followed by the number of victims in the “*Transportation and Warehousing I*” industry (13 [11.5%]). 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 the largest number of victims; however, only 7.8% of all 269 events in that category resulted in victims. Conversely, 50.0% of events in the “*Retail Trade II*” industry and the “*Manufacturing (Food, Textile, Apparel)*” resulted in victims, but both of these industries represent a small proportion (4.9%) of events with victims. Two events within the “*Manufacturing (Paper, Printing, Chemicals, Petroleum, Leather, Lumber, Stone)*” industry resulted in more than 10 injuries. In one event, a standby re-boiler ruptured creating a vapor cloud that was ignited, causing the death of 2 workers. A total of 114 people were treated at local hospitals; however, only 17 reported symptoms that qualified for inclusion into the NTSIP database. In a second event, a fire and subsequent explosion forced the evacuation of a chemical facility. A major interstate highway was also shut down. Twenty-five people reported symptoms such as headaches, respiratory issues, or shortness of breath related to the event.

Table 3: Industries involved in toxic substance events and events with victims, by category - Louisiana Toxic Substance Incidents Program, 2013

Industry Category	Total Events		Events with Victims		Percentage of Events with Victims	Total Number of Victims (Maximum) [^]
	Number	%*	Number	%*	%*	
Accommodation and Food Services	No LaTSIP Events					
Administrative and Support and Waste Management and Remediation Services	1	0.2	0	0	0	0
Agriculture, Forestry, Fishing and Hunting	1	0.2	0	0	0	0
Arts, Entertainment, and Recreation	1	0.2	0	0	0	0
Construction	3	0.6	0	0	0	0
Educational Services	1	0.2	0	0	0	0
Finance and Insurance	No LaTSIP Events					
Health Care and Social Assistance	2	0.4	0	0	0	0
Information	1	0.2	0	0	0	0
Management of Companies and Enterprises	No LaTSIP Events					
Manufacturing (Food, Textile, Apparel)	2	0.4	1	2.4	50.0	1 (1)
Manufacturing (Metal, Electrical, Transport, Professional)	2	0.4	0	0	0	0
Manufacturing (Paper, Printing, Chemicals, Petroleum, Leather, Lumber, Stone)	269	53.7	21	51.2	7.8	89 (25)
Mining	6	1.2	0	0	0	0
Not an Industry / Not Identified / Unknown	48	9.6	6	14.6	12.5	8 (2)
Other Services (except Public Administration)	1	0.2	0	0	0	0
Professional, Scientific, and Technical Services	No LaTSIP Events					
Public Administration	No LaTSIP Events					
Real Estate and Rental and Leasing	No LaTSIP Events					
Retail Trade I	1	0.2	0	0	0	0
Retail Trade II	2	0.4	1	2.4	50.0	2 (2)
Transportation and Warehousing I	125	25.0	12	29.3	9.6	13 (2)
Transportation and Warehousing II	4	0.8	0	0	0	0
Utilities	19	3.8	0	0	0	0
Wholesale Trade	12	2.4	0	0	0	0
Total	501	100.1	41	99.9	-	113 (25)

[^]Minimum number of victims per event = 1.

* Percentages do not total 100% because of rounding.

Substances

A total of 600 substances were released in all events. The individual substances most frequently released were Hydrochloric Acid and Methamphetamine Chemicals NOS (Appendix).

Substances were grouped into 15 categories. The substance category most commonly released in fixed-facility events was volatile organic compounds (162 [35.2%]), other inorganic substances (62 [13.5%]), and acids (53 [11.5%]); while in transportation-related events, the most common substance categories released were acids (35 [25.0%]), volatile organic compounds (25 [17.9%]), and bases (23 [16.4%]).

Two types of releases for each substance (e.g., spill and air) could be reported. Of the 600 substances released, 20 (3.3%) substances involved more than one release type such as a liquid spill or a volatilization of a gas.

Table 4: Number of substances involved, by substance category and type of event - Louisiana Toxic Substance Incidents Program, 2013

Substance Category	Type of Event				All Events	
	Fixed facility		Transportation		No. Substances	%*
	No. Substances	%*	No. Substances	%*		
Acids	53	11.5	35	25.0	88	14.7
Agricultural Chemicals and Pesticides	10	2.2	4	2.9	14	2.3
Ammonia	22	4.8	1	0.7	23	3.8
Bases	18	3.9	23	16.4	41	6.8
Chlorine	18	3.9	1	0.7	19	3.2
Formulations	1	0.2	1	0.7	2	0.3
Hetero-Organics	10	2.2	2	1.4	12	2.0
Hydrocarbons	28	6.1	11	7.9	39	6.5
Mixture§	4	0.9	4	2.9	8	1.3
Other†	49	10.7	12	8.6	61	10.2
Other Inorganic Substances‡	62	13.5	8	5.7	70	11.7
Oxy-Organics	8	1.7	6	4.3	14	2.3
Paints and Dyes	0	0.0	2	1.4	2	0.3
Polymers	15	3.3	2	1.4	17	2.8
Undetermined	0	0.0	3	2.1	3	0.5
Volatile Organic Compounds	162	35.2	25	17.9	187	31.2
Total	460	100.0	140	100.0	600	100.0

§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 may not equal 100 due to rounding

Victims

A total of 113 victims were involved in 41 events (8.2% of all events) (Table 5). Of the 41 events with victims, 28 (68.3%) events involved only one victim, and 6 (14.6%) involved two victims. Of all victims, 93 (82.3%) were injured in fixed-facility events.

Table 5.—Number of victims per event, by type of event—Louisiana Toxic Substance Incidents Program, 2013

No. Victims	Type of Event						All Events		
	Fixed facility			Transportation					
	No. Events	%*	Total Victims	No. Events	%*	Total Victims	No. Events	%*	Total Victims
1	18	60.0	18	10	90.9	10	28	68.3	28
2	5	16.7	10	1	9.1	6	6	14.6	12
3	2	6.7	6	0	0.0	9	2	4.9	6
4	0	0.0	0	0	0.0	0	2	4.9	16
5+	5	16.7	59	0	0.0	0	3	7.3	51
Total	30	100.1	93	11	100.0	25	41	100.0	113

*Total percentage may not equal 100 due to 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 23.8% of all events; however, only 6.7% of these events resulted in injuries. Conversely, events involving chlorine accounted for 3.2% of all events, but 18.8% of these events resulted in injuries. Employees (76 [67.3%]) constituted the largest proportion of the population groups injured, followed by members of the general public (32 [28.3%]) (Figure 5).

Table 6: Frequency of substance categories in all events and events with victims - Louisiana Toxic Substance Incidents Program, 2013

Substance Category	All Events		Events with Victims		
	No.	%*	No.	Percentage of all Releases with Victims*	Percentage of Events with Victims in Substance Category
Acids	73	14.6	6	14.6	8.2
Agricultural Chemicals and Pesticides	14	2.8	0	0.0	0.0
Ammonia	21	4.2	2	4.9	9.5
Bases	36	7.2	5	12.2	13.9
Chlorine	16	3.2	3	7.3	18.8
Formulations	2	0.4	0	0.0	0.0
Hetero-organics	5	1.0	0	0.0	0.0
Hydrocarbons	35	7.0	0	0.0	0.0
Mixture Across Chemical Category [†]	7	1.4	1	2.4	14.3
Multiple Substance Category**	41	8.2	5	12.2	12.2
Other [‡]	58	11.6	6	14.6	10.3
Other Inorganic Substances [§]	45	9.0	4	9.8	8.9
Oxy-organics	12	2.4	0	0.0	0.0
Paints and Dyes	2	0.4	1	2.4	50.0
PCB's	0	0.0	0	0.0	0.0
Polymers	12	2.4	0	0.0	0.0
Indeterminate/Unknown	3	0.6	0	0.0	0.0
Volatile Organic Compounds	119	23.8	8	19.5	6.7
Total	501	100.2	41	99.9	8.2

*Total percentage may not equal 100 due to rounding

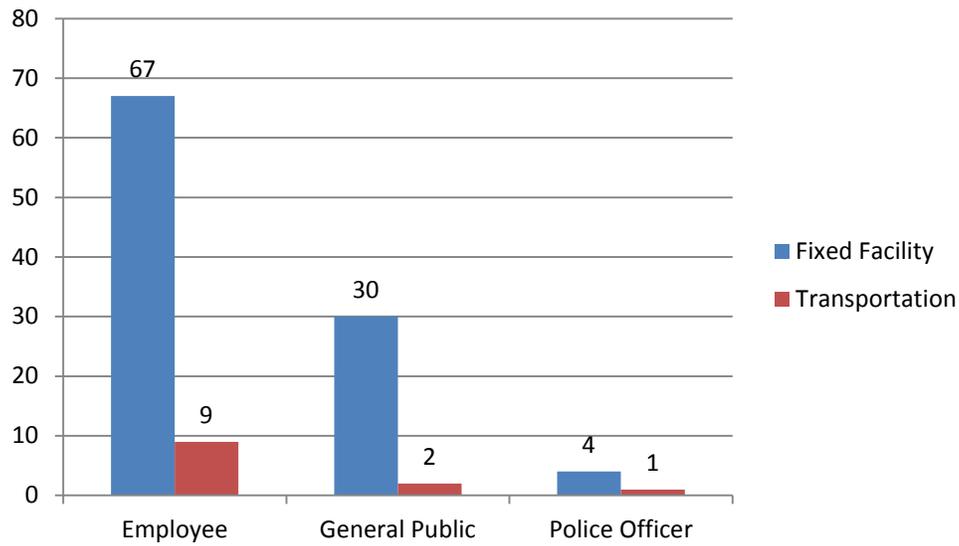
**Substances in events that involved multiple substances were counted only once in a substance category when all the substances were associated with the same category. If events involved multiple substances from different substance categories, they were counted only once in the multiple substance category.

[†]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.

Figure 5: Number of victims, by population group and type of event - Louisiana Toxic Substance Incidents Program, 2013



Victims were reported to have sustained a total of 134 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 system problems (39 [32.8%]), thermal burns (27 [22.7%]) and non-chemical related trauma (11 [9.2%]). In transportation-related events, chemical burns (5 [33.3%]) and non-chemical related trauma (4 [26.7%]) were reported most frequently.

Table 7: Frequencies of Injuries / Symptoms, by Type of Event[^] - Louisiana Toxic Substance Incidents Program, 2013

Injury/Symptom	Fixed Facility		Transportation		All Events	
	No. injuries	%*	No. injuries	%*	Total no.	%*
Burns (Chemical)	6	5.0	5	33.3	11	8.2
Burns (Thermal)	27	22.7	0	0.0	27	20.1
Burns (Both Chemical and Thermal)	No Injuries of this Type Reported					
Burns (Unknown)	No Injuries of this Type Reported					
Dizziness/Central Nervous System Symptoms	2	1.7	0	0.0	2	1.5
Eye Irritation	9	7.6	1	6.7	10	7.5
Gastrointestinal System Problems	7	5.9	1	6.7	8	6.0
Headache	8	6.7	0	0.0	8	6.0
Heart Problems	No Injuries of this Type Reported					
Heat Stress	No Injuries of this Type Reported					
Other/Unknown	2	1.7	0	0.0	2	1.5
Respiratory System Problems	39	32.8	2	13.3	41	30.6
Shortness of Breath	7	5.9	0	0.0	7	5.2
Skin Irritation	1	0.8	2	13.3	3	2.2
Trauma (Chemical-Related)	No Injuries of this Type Reported					
Trauma (Not Chemical-Related)	11	9.2	4	26.7	15	11.2
Trauma (Unknown)	No Injuries of this Type Reported					
Total	119	100.0	15	100.0	134	100.0

[^]The number of injuries is greater than the number of victims (113) because a victim could have had more than one injury.

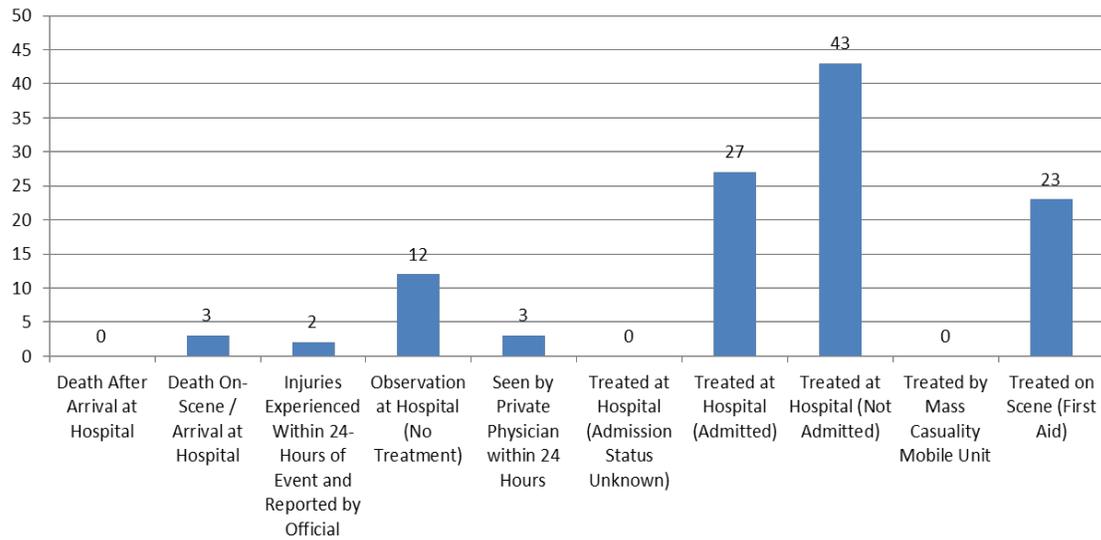
*Total percentage may not equal 100 due to rounding

The age category was reported for all 113 injured persons; all 113 injured persons were reported as adults (18 years of age or older). Sex was also known for all 81 victims; of these, 63 (77.8%) were males.

Of the 113 victims, 43 (38.1%) were treated at a hospital but not admitted, and 27 (23.9%) were admitted to a hospital (Figure 6). Three (2.7%) deaths were reported (Figure 6), all of which were the result of trauma.

Two events resulted in 42 (37.2%) victims. In one event, an explosion killed 2 employees and sent a total of 114 people to local hospitals (most of these people did not have symptoms, and were therefore not included in the NTSIP database). Of the victims that reported symptoms, most experienced thermal burns. A second event resulted in 17 victims. In this event, an explosion occurred at a chemical facility. Most of the victims reported symptoms of shortness of breath or other respiratory system issues. It is unknown what chemicals were released because the information had not been released at the time of NTSIP data finalization.

Figure 6: Injury disposition - Louisiana Toxic Substance Incidents Program, 2013



Personal protective equipment (PPE) use was reported for all employee-victims and responder-victims. Most (73.5%) had not worn any form of PPE. None of the victims wore Level “A” PPE; however 25 (22.1%) of the victims were wearing Level “D” 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 “D” provides limited protection against chemical hazards but includes protection as coveralls, boots/shoes (chemical-resistant leather, steel toe and shank), safety glasses or chemical splash goggles, and hard hat.

Nearby Populations

The proximity of the event location in relation to selected populations was determined using geographic information systems (GIS). Residences were within ¼ mile of 333 (66.5%) events, schools were within ¼ mile of 27 (5.4%) events, licensed daycares were within ¼ mile of 37 (7.4%) events, industries or other businesses were within ¼ mile of 272 (54.3%) events, and recreational areas were within ¼ mile of 10 (2.0%) events. There were no hospitals or nursing homes within ¼ mile of any of the events.

The number of events at which persons were at risk of exposure was determined primarily using GIS. There were 337 (67.3%) events with persons living within ¼ mile of the event; 417 (83.2%) events with persons living within ½ mile; and 480 (95.8%) events with persons living within 1 mile.

Evacuations / Restrictions / Shelter in Place

Evacuations were ordered in 53 (10.6%) events. Of these evacuations, 60.4% were of buildings or affected parts of buildings; 18.9 % had no defined criteria, while the remainder used either a circle/ radius, or evacuated the downstream / downwind area. The estimated number of people evacuated ranged from under 5 to over 1000 people per event. Evacuations lasted from approximately 5 minutes to nearly 2 days. Restricted access was reported for 80 (16.0%) events. Restricted access ranged from parking lots to portion of buildings, to entire facilities. Officials ordered in-place sheltering for 28 (5.6%) of events.

Decontamination

A total of 44 people were decontaminated in 24 events. Of the 44 people who were decontaminated, 27 (61.4%) were decontaminated at the scene, 16 (36.4%) were decontaminated at a medical facility, and 1 (2.3%) person was decontaminated both on scene and a medical facility.

Response

Of the 501 events, 22.4% reported 2 or more categories of personnel who responded, 9.6% reported 3 or more categories, and 4.4% reported 4 or more categories. Company response teams (59.9%) responded most frequently to events, followed by law enforcement agencies (12.9%), third party cleanup-up contractors (9.9%), and fire departments (7.7%) (Table 8).

Table 8: Distribution of personnel who responded to the event - Louisiana Toxic Substance Incidents Program, 2013

Responder Category	No.	%*
Certified HazMat Team	30	4.3
Company's Response Team	422	59.9
EMT	9	1.3
Environmental Agency	17	2.4
Fire Department	54	7.7
Health Department	5	0.7
Law Enforcement Agency	91	12.9
Other	6	0.9
Third Party Clean-Up Contractor	70	9.9
Total^	704	100

*Total percentage may not equal 100 due to rounding

^The number of responders is greater than the number of events (501) because an event could have had more than one category of responder

SUMMARY OF RESULTS, 2013

The numbers of toxic substance events, number of substances released, events with victims, and deaths for the year 2013 in Louisiana are shown in Table 9. In the year 2013, 501 events qualified for LaTSIP surveillance. Among them, 366 were fixed facility events and 135 were associated with transportation. There were 600 substances released, and the most frequent releases involved Hydrochloric Acid (43 releases or 7.2%), Methamphetamine Chemicals NOS (40 releases or 6.7%) and Benzene (27 releases or 4.5%).

There were a total of 113 victims resulting from 41 events; these victims included 3 (2.7%) fatalities. Respiratory system problems were the most frequently reported injury and accounted for 30.6% of injuries. Employees were the most commonly reported victim type. Of employee and responder victims, most (63.0%) had not worn any form of PPE.

Table 9: Cumulative data for 2010 through 2013 - Louisiana Toxic Substance Incidents Program, 2013

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
2012	457	222	679	798	77	5	50	7.4
2013	366	135	501	600	113	3	41	8.2
Total	1882	833	2715	3306	352	14	200	7.4

[†] 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, 2013

	Chemical Substance	Number of Releases
1	Hydrochloric Acid	43
2	Methamphetamine Chemicals NOS	40
3	Benzene	27
4	Natural Gas	26
5	Sulfur Dioxide	25
6	Sodium Hydroxide	24
7	Ammonia	23
8	Sulfuric Acid	22
9	Hydrogen Sulfide	21
10	Ethylene	21

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.