

Louisiana Toxic Substance Incidents Program (LaTSIP)

2010: A Summary Report

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



**Prepared by William C. Trachtman, MS, Allison N. Koehler, MPH, and
Syed Atif Ahsan, MSPH**

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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 to Louisiana in 2010. 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 2010, 740 events met the LaTSIP surveillance definition. In 637 (86.1%) events, only one substance was released. The most commonly reported categories of substances were volatile organic compounds, acids, and other inorganic substances. During this reporting period, 62 events (8.4% of all reported events) resulted in a total of 91 victims. The most frequently reported injuries were chemical burns and chemical-related trauma. Evacuations were ordered for 36 (4.9%) 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 2010, 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 2010, 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 2010, a total of 740 acute toxic substances events met the LaTSIP surveillance definition; 531 (71.8%) events occurred in fixed facilities. The parishes with the most events (Table 1) were East Baton Rouge (159 [21.5%]), Ascension (82 [11.1%]), Calcasieu (79 [10.7%]) and Iberville (65 [8.8%]). 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, 2010

Parish	Type of Event				All Events	
	Fixed Facility		Transportation		No. Events	%*
	No. Events	%*	No. Events	%*		
Acadia	0	0.0	5	2.4	5	0.7
Allen	1	0.2	1	0.5	2	0.3
Ascension	65	12.3	17	8.1	82	11.1
Assumption	1	0.2	0	0.0	1	0.1
Avoyelles	1	0.2	0	0.0	1	0.1
Beauregard	3	0.6	0	0.0	3	0.4
Bienville	1	0.2	0	0.0	1	0.1
Bossier	0	0.0	3	1.4	3	0.4
Caddo	16	3.0	26	12.4	42	5.7
Calcasieu	63	11.9	16	7.7	79	10.7
Caldwell	1	0.2	0	0.0	1	0.1
Cameron	0	0.0	2	1.0	2	0.3
Catahoula	1	0.2	0	0.0	1	0.1
Claiborne	1	0.2	0	0.0	1	0.1
Concordia	0	0.0	1	0.5	1	0.1
De Soto	4	0.8	2	1.0	6	0.8

E. Baton Rouge	135	25.5	24	11.5	159	21.5
E. Carroll	1	0.2	0	0.0	1	0.1
E. Feliciana	No NTSIP Events					
Evangeline	No NTSIP Events					
Franklin	No NTSIP Events					
Grant	No NTSIP Events					
Iberia	1	0.2	1	0.5	2	0.3
Iberville	55	10.4	10	4.8	65	8.8
Jackson	1	0.2	2	1.0	3	0.4
Jefferson	10	1.9	11	5.3	21	2.8
Jefferson Davis	1	0.2	2	1.0	3	0.4
Lafayette	14	2.6	13	6.2	27	3.7
LaFourche	1	0.2	1	0.5	2	0.3
La Salle	No NTSIP Events					
Lincoln	0	0.0	1	0.5	1	0.1
Livingston	6	1.1	0	0.0	6	0.8
Madison	2	0.4	2	1.0	4	0.5
Morehouse	1	0.2	1	0.5	2	0.3
Natchitoches	3	0.6	2	1.0	5	0.7
Orleans	14	2.6	9	4.3	23	3.1
Ouachita	13	2.5	4	1.9	17	2.3
Plaquemines	7	1.3	2	1.0	9	1.2
Pointe Coupee	4	0.8	7	3.3	11	1.5
Rapides	3	0.6	8	3.8	11	1.5
Red River	1	0.2	0	0.0	1	0.1
Richland	2	0.4	1	0.5	3	0.4
Sabine	1	0.2	0	0.0	1	0.1
St. Bernard	9	1.7	4	1.9	13	1.8
St. Charles	23	4.3	5	2.4	28	3.8
St. Helena	No NTSIP Events					
St. James	17	3.2	5	2.4	22	3.0
St. John	13	2.5	4	1.9	17	2.3
St. Landry	1	0.2	0	0.0	1	0.1
St. Martin	1	0.2	3	1.4	4	0.5
St. Mary	1	0.2	1	0.5	2	0.3
St. Tammany	2	0.4	0	0.0	2	0.3
Tangipahoa	9	1.7	0	0.0	9	1.2
Tensas	No NTSIP Events					
Terrebonne	3	0.6	2	1.0	5	0.7
Union	No NTSIP Events					
Vermilion	3	0.6	2	1.0	5	0.7

Vernon	0	0.0	1	0.5	1	0.1
Washington	1	0.2	0	0.0	1	0.1
Webster	4	0.8	0	0.0	4	0.5
W. Baton Rouge	5	0.9	7	3.3	12	1.6
W. Carroll	2	0.4	0	0.0	2	0.3
W. Feliciana	2	0.4	1	0.5	3	0.4
Winn	No NTSIP Events					
Total[†]	530	100.6	209	100.4	739	99.7

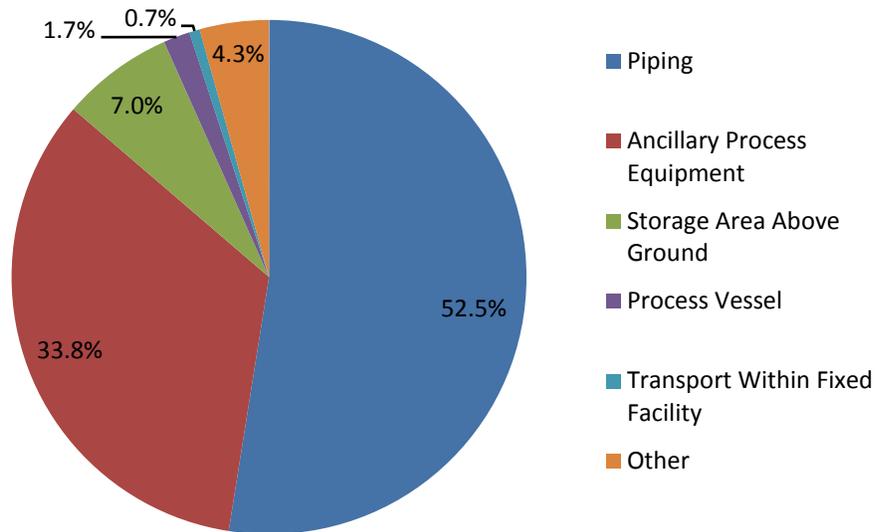
* Percentage = (number of events by type of event per parish ÷ total number of events) x 100

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

[§] Parish was unknown for 1 fixed facility event.

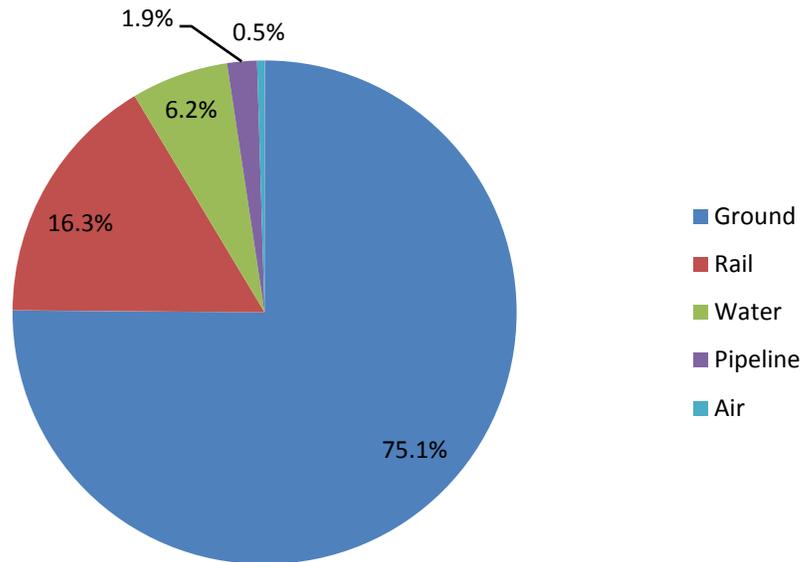
For each of the 404 fixed-facility event occurring in mining, manufacturing, or utilities, one or two choices can be selected to describe the type of area where the event occurred or the equipment involved with the event. Only one type of area was reported for 299 (74.0%) fixed facility events, a combination of two area types were reported for 85 (21.0%), and the type of area was unknown for 20 (5.0%) events. Among events with one type of area reported, the main areas were classified as follows: 157 (52.5%) piping, 101 (33.8%) ancillary process equipment, and 21 (7.0%) 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, 2010



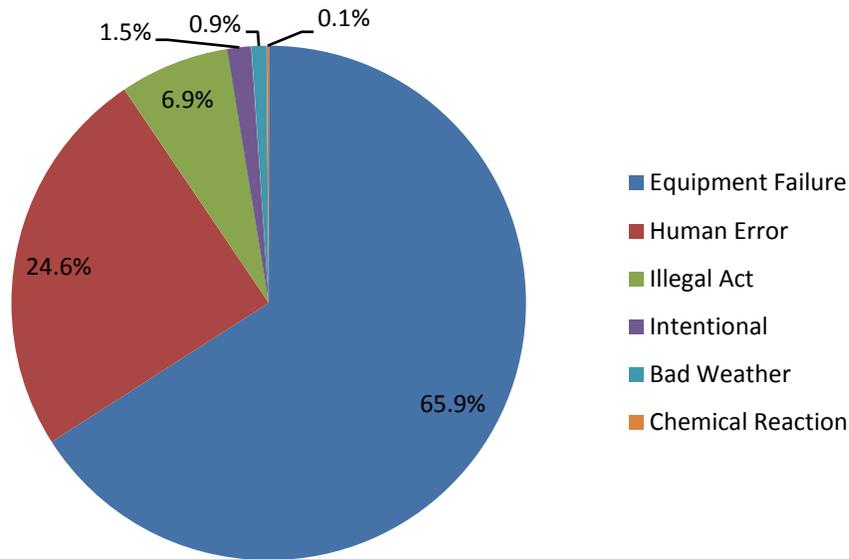
Of the 209 transportation-related events, most (157 [75.1%]) occurred during ground transport (e.g., truck, van, or tractor (Figure 2)). The largest proportions of transportation-related events occurred during unloading of a stationary vehicle or vessel (60 [28.7%]) or from a moving vehicle or vessel (58 [27.8%]).

Figure 2: Distribution of transportation-related events, by type of transport - Louisiana Toxic Substance Incidents Program, 2010



Primary and secondary factors contributing to the events were reported for all events (Figure 3). Most (77.6%) fixed-facility events reported equipment failure as the primary factor, and most (61.7%) transportation-related events reported human error as the primary factor. Secondary factors were reported for 11.2% of all events.

Figure 3: Primary factors reported as contributing to events - Louisiana Toxic Substance Incidents Program, 2010



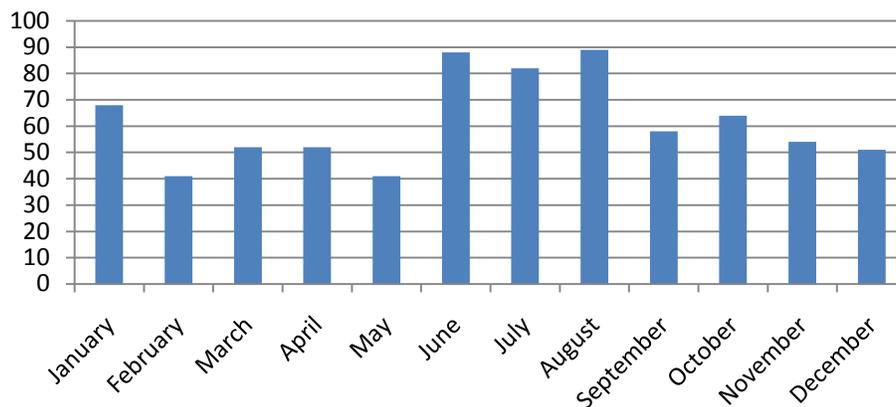
Over 86% of all events involved the release of only one substance. Two substances were released in 8.5% of the events, and 5.4% involved the release of more than two substances (Table 2). Fixed-facility events were more likely than transportation events to have two or more substances released in an event (18.5% vs. 2.4%).

Table 2: Number of substances involved per event, by type of event - Louisiana Toxic Substance Incidents Program, 2010

No. Substances	Type of Event						All Events		
	Fixed Facility			Transportation					
	No. Events	%	Total Substances	No. Events	%	Total Substances	No. Events	%	Total Substances
1	433	81.5	433	204	97.6	204	637	86.1	637
2	60	11.3	120	3	1.4	6	63	8.5	126
3	17	3.2	51	1	0.5	3	18	2.4	54
4	9	1.7	36	0	0.0	0	9	1.2	36
≥ 5	12	2.3	77	1	0.5	7	13	1.8	84
Total	531	100.0	717	209	100.0	220	740	100.0	937

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 (38.4%) and the 6 hours after and including noon (30.1%), compared with the 6 hours before midnight (17.6%) and the 6 hours after and including midnight (13.9%). Additionally, 15-19% of events occurred on each weekday as compared with 8-10% on a weekend day. The highest number of events occurred in August (89 [12.0%]) (Figure 4).

Figure 4: Monthly breakdown of LaTSIP events for calendar year 2010 - Louisiana Toxic Substance Incidents Program, 2010



Industries

The largest proportions of LaTSIP events were associated with the manufacturing 379 [51.1%]) and transportation / warehousing (189 [25.6%]) industries (Table 3). Within manufacturing, chemical manufacturing (263 [69.4%]) and petroleum manufacturing (110 [29.0%]) accounted for most of the events. The largest number of events with victims occurred in the manufacturing industry (18 [29.0%]). Although Agriculture is a multi-billion dollar industry for Louisiana, there were no incidents that qualified for LaTSIP in 2010. In the previous 9 years, only 16 agricultural

incidents qualified (for HSEES). It is possible that the low number of incidents is a result of underreporting and is possibly due to a lack of knowledge of reporting requirements.

The total number of victims was greatest in the manufacturing industry (30 [33.0%]) followed by the number of victims in the transportation / warehousing industries (18 [19.8%]). Although the manufacturing industry resulted in a large proportion of events with victims and a large number of victims, only 4.7% of all 380 events in that category resulted in victims. Conversely, all events in the “*Arts, Entertainment and Recreation*” and “*Educational Services*” categories resulted in victims, but these industries represent a small proportion (1.6%) of events with victims. The incident with the largest number of injuries was in the public administration industry. Five public road workers were inadvertently sprayed by an aircraft with a combination of insecticides.

Table 3: Industries involved in toxic substance events and events with victims, by category - Louisiana Toxic Substance Incidents Program, 2010

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	No LaTSIP Events					
Administrative and Support and Waste Management and Remediation Services	10	1.4	0	0.0	0.0	0
Agriculture, Forestry, Fishing and Hunting	No LaTSIP Events					
Arts, Entertainment, and Recreation	1	0.1	1	1.6	100.0	1 (1)
Construction	8	1.1	3	4.8	37.5	3 (1)
Educational Services	2	0.3	0	0.0	0.0	0
Finance and Insurance	No LaTSIP Events					
Health Care and Social Assistance	3	0.4	0	0.0	0.0	0
Information	No LaTSIP Events					
Management of Companies and Enterprises	No LaTSIP Events					
Manufacturing (Food, Textile, Apparel)	1	0.1	0	0.0	0.0	0
Manufacturing (Metal, Electrical, Transport, Professional)	1	0.1	1	1.6	100.0	3 (3)
Manufacturing (Paper, Printing, Chemicals, Petroleum, Leather, Lumber, Stone)	377	50.9	17	27.4	4.5	27 (3)
Mining	9	1.2	2	3.2	22.2	2 (1)
Not an Industry / Not Identified / Unknown	60	8.1	8	12.9	13.3	11 (2)
Other Services (except Public Administration)	3	0.4	1	1.6	33.3	1 (1)
Professional, Scientific, and Technical Services	8	1.1	4	6.5	50.0	4 (1)
Public Administration	5	0.7	2	3.2	40.0	6 (5)
Real Estate and Rental and Leasing	No LaTSIP Events					
Retail Trade I	4	0.5	1	1.6	25.0	1 (1)
Retail Trade II	3	0.4	0	0.0	0.0	0
Transportation and Warehousing I	179	24.2	12	19.4	6.7	16 (3)
Transportation and Warehousing II	10	1.4	1	1.6	10.0	2 (2)
Utilities	16	2.2	2	3.2	12.5	2 (1)
Wholesale Trade	40	5.4	7	11.3	17.5	12 (4)
Total[‡]	740	100.0	62	99.9	-	91 (5)

*Minimum number of victims per event = 1.

‡ Percentages do not total 100% because of rounding.

Substances

A total of 937 substances were released in all events. The individual substances most frequently released were Methamphetamine Chemicals NOS, Sulfuric Acid, Hydrochloric Acid, Benzene, and Ethylene (Appendix). Substances were grouped into 15 categories. The substance categories most commonly released in fixed-facility events were volatile organic compounds (293 [40.9%]) and other inorganic substances (84 [11.7%]) (Table 4). In transportation-related events, the most common substance categories released were acids (59 [26.8%]) and bases (30 [13.6%]).

Two types of releases for each substance (e.g., spill and air) could be reported. Twenty (2.1%) substances involved more than one release type. Of the substances with more than one release type, 60% 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, 2010

Substance Category	Type of Event				All Events	
	Fixed facility		Transportation			
	No. Substances	%	No. Substances	%	No. Substances	%
Acids	71	9.9	59	26.8	130	13.9
Agricultural Chemicals and Pesticides	18	2.5	12	5.5	30	3.2
Ammonia	27	3.8	6	2.7	33	3.5
Bases	21	2.9	30	13.6	51	5.4
Chlorine	27	3.8	8	3.6	35	3.7
Formulations	2	0.3	0	0	2	0.2
Hetero-organics	12	1.7	4	1.8	16	1.7
Hydrocarbons	17	2.4	1	0.5	18	1.9
Mixture Across Chemical Category *	10	1.4	5	2.3	15	1.6
Other †	85	11.9	8	3.6	93	9.9
Other Inorganic Substances ‡	84	11.7	17	7.7	101	10.8
Oxy-organics	12	1.7	9	4.1	21	2.2
Paints and Dyes	0	0.0	1	0.5	1	0.1
PCB's	1	0.1	0	0	1	0.1
Polymers	35	4.9	7	3.2	42	4.5
Category not assigned	2	0.3	2	0.9	4	0.4
Volatile Organic Compounds	293	40.9	51	23.2	344	36.7
Total§	717	100.2	220	100.0	937	99.8

*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 91 victims were involved in 62 events (8.4% of all events) (Table 5). Of the 62 events with victims, 43 (69.4%) events involved only one victim, and 12 (19.4%) involved two victims.

Of all victims, 70 (76.9%) were injured in fixed-facility events.

Table 5.—Number of victims per event, by type of event—Louisiana Toxic Substance Incidents Program, 2010

No. Victims	Type of Event						All Events		
	Fixed facility			Transportation			No. Events	%	Total Victims
	No. Events	%	Total Victims	No. Events	%	Total Victims			
1	31	67.4	31	12	75.0	12	43	69.4	43
2	9	19.6	18	3	18.8	6	12	19.4	24
3	4	8.7	12	1	6.3	3	5	8.1	15
4	1	2.2	4	0	0.0	0	1	1.6	4
≥5	1	2.2	5	0	0.0	0	1	1.6	5
Total[‡]	46	100.1	70	16	100.0	21	62	100.1	91

[‡] 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 27.2% of all events; however, only 4.5% of these events resulted in injuries. Conversely, events involving hydrocarbons accounted for 1.4% of all events respectively, but 20.0% of these events resulted in injuries.

Table 6: Frequency of substance categories in all events and events with victims - Louisiana Toxic Substance Incidents Program, 2010

Substance Category	All Events		Events with Victims		
	No.	%	No.	Percentage of all Releases with Victims	Percentage of Events with Victims in Substance Category
Acids	108	14.6	10	16.1	9.3
Agricultural Chemicals and Pesticides	23	3.1	3	4.8	13.0
Ammonia	32	4.3	2	3.2	6.3
Bases	51	6.9	5	8.1	9.8
Chlorine	32	4.3	3	4.8	9.4
Formulations	2	0.3	2	3.2	100.0
Hetero-organics	13	1.8	1	1.6	7.7
Hydrocarbons	10	1.4	2	3.2	20.0
Mixture Across Chemical Category [†]	12	1.6	1	1.6	8.3
Multiple Substance Category*	66	8.9	8	12.9	12.1
Other [‡]	77	10.4	12	19.4	15.6
Other Inorganic Substances [§]	63	8.5	2	3.2	3.2
Oxy-organics	14	1.9	2	3.2	14.3
Paints and Dyes	1	0.1	0	0.0	0.0
PCB's	0	0.0	0	0.0	0.0
Polymers	32	4.3	0	0.0	0.0
Indeterminate/Unknown	3	0.4	0	0.0	0.0
Volatile Organic Compounds	201	27.2	9	14.5	4.5
Total[¶]	740	100.0	62	99.8	8.4

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

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

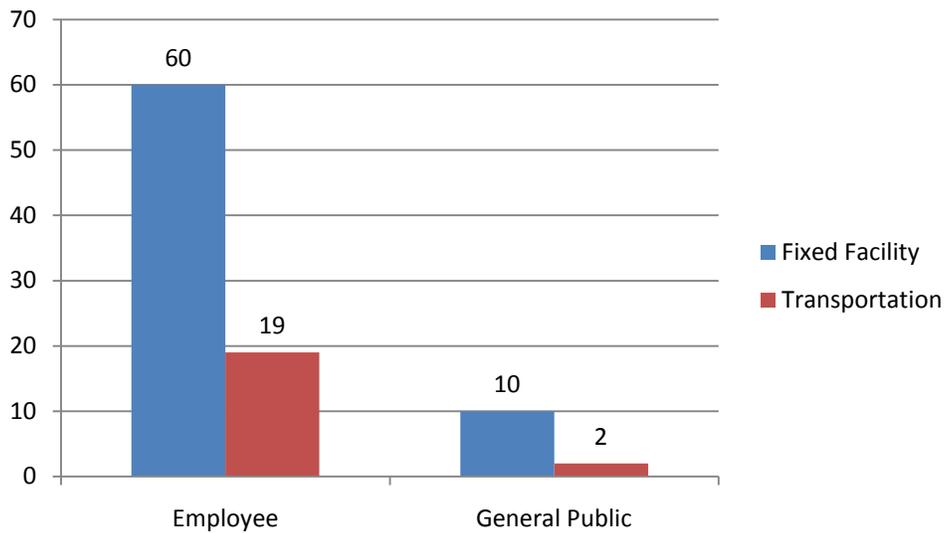
[‡]Not classified.

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

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

Employees (79 [86.8%]) constituted the largest proportion of the population groups injured, followed by members or the general public (12 [13.2%]) (Figure 5). While there were responder and student victims in previous years (LaHSEES), there were no victims in these categories in 2010.

Figure 5: Number of victims, by population group and type of event - Louisiana Toxic Substance Incidents Program, 2010



Victims were reported to have sustained a total of 103 injuries or symptoms (Table 7). Some victims had more than one injury or symptom. Of all reported injuries/symptoms, the most common in fixed-facility events were trauma (chemical-related) (16 [20.3%]), chemical burns (12 [15.2%]), and eye irritation (12 [15.2%]). In transportation-related events, trauma (not chemical-related) (8 [33.3%]) and chemical burns (7 [29.2%]) were reported most frequently.

Table 7: Frequencies of injuries/symptoms, by type of event* - Louisiana Toxic Substance Incidents Program, 2010

Injury/Symptom	Fixed Facility		Transportation		All Events	
	No. Injuries	%	No. Injuries	%	Total No.	%
Burns (Chemical)	12	15.2	7	29.2	19	18.4
Burns (Thermal)	2	2.5	0	0.0	2	1.9
Burns (Not Specified)	3	3.8	0	0.0	3	2.9
Dizziness/Central Nervous System Symptoms	1	1.3	0	0.0	1	1.0
Eye Irritation	12	15.2	2	8.3	14	13.6
Gastrointestinal System Problems	3	3.8	1	4.2	4	3.9
Headache	1	1.3	0	0.0	1	1.0
Other/Unknown	8	10.1	1	4.2	9	8.7
Respiratory Irritation	11	13.9	0	0.0	11	10.7
Skin Irritation	7	8.9	1	4.2	8	7.8
Trauma (Chemical-Related)	16	20.3	2	8.3	18	17.5
Trauma (Not Chemical-Related)	2	2.5	8	33.3	10	9.7
Trauma (Not Specified)	1	1.3	2	8.3	3	2.9
Total ‡	79	100.1	24	100.0	103	100.0

*The number of injuries is greater than the number of victims (91) because a victim could have had more than one injury.

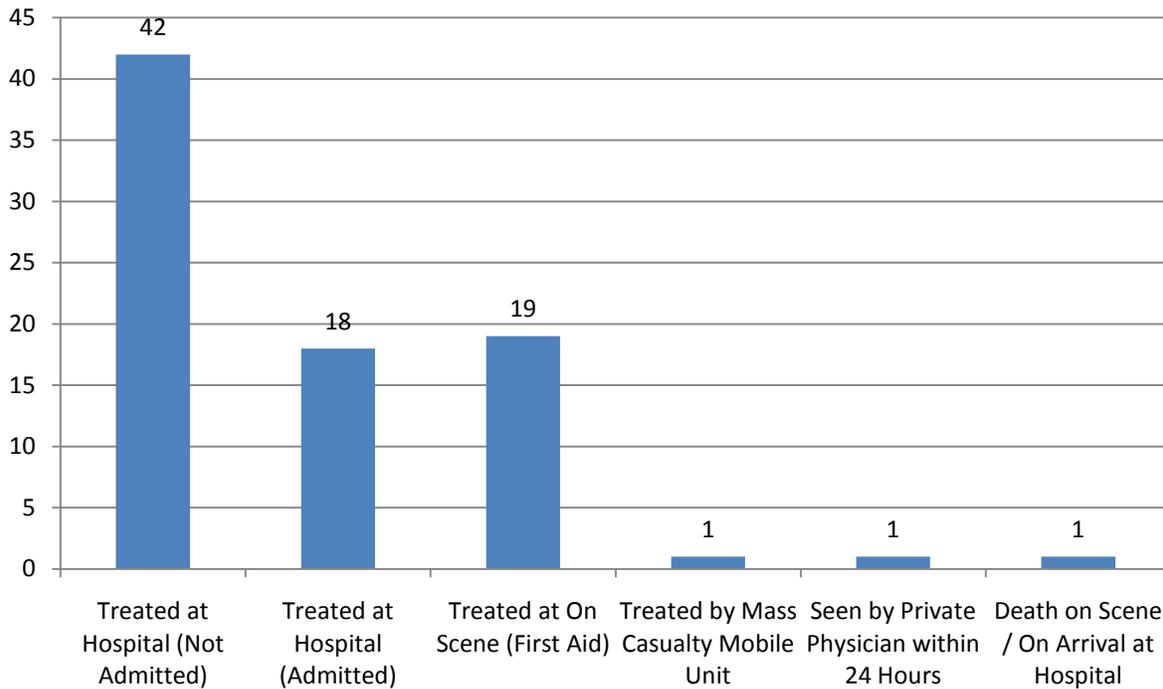
‡ Percentages do not total 100% because of rounding.

For the 34 (37.4%) injured persons for whom an age category was reported, all were 18 years of age or older. Of the 57 injured persons for whom age was not reported, 47 (82.5%) were presumably adults (because their population group was reported as employees), and 10 (17.5%) could have been adults or children (because their population group was reported as members of the general public).

Sex was known for 67 (73.6%) of the victims; of these, 56 (83.6%) were males. Of all employees and responders for whom sex was reported, 52 (88.1%) were males.

For the 82 (90.1%) injured persons for whom treatment was reported, 42 (51.2%) were treated at a hospital but not admitted, and 18 (22.0%) were admitted to a hospital (Figure 6).

Figure 6: Injury disposition - Louisiana Toxic Substance Incidents Program, 2010



Personal protective equipment (PPE) use was reported for 69 (97.5%) of employee-victims. For victims in which PPE status was reported, most employee-victims (88.1%) had not worn any form of PPE. Employee-victims (6 [75.0%]) who wore PPE most often used minimal protection such as gloves, eye protection, hard hat, and/or steel-toed shoes. Two (25.0%) employee-victims who wore PPE used firefighter turnout gear. Firefighter turnout gear is protective clothing usually worn by firefighters during structural firefighting operations and is similar to Level “D” protection. The Occupational Safety and Health Administration defines Level “D” protection as

coveralls, boots/shoes (chemical-resistant leather, steel toe and shank), safety glasses or chemical splash goggles, and hard hats. Level “D” provides limited protection against chemical hazards.

One event resulted in 5 victims. Five public road workers experienced skin and eye irritation after they were inadvertently sprayed with insecticides by an aircraft. The release occurred at approximately 8:15 AM on a Friday. 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 569 (76.9%) events, schools were within ¼ mile of 28 (3.8%) events, hospitals were within ¼ mile of 6 (0.8%) events, nursing homes were within ¼ mile of 14 (1.9%) events, licensed daycares were within ¼ mile of 42 (5.7%) events, industries or other businesses were within ¼ mile of 536 (72.4%) events, and recreational areas were within ¼ mile of 21 (2.8%) events.

The number of events at which persons were at risk of exposure was determined primarily using GIS. There were 560 (75.7%) events with persons living within ¼ mile of the event; 645 (87.2%) events with persons living within ½ mile; and 726 (98.1%) events with persons living within 1 mile.

Evacuations

Evacuations were ordered in 36 (4.9%) events. Of these evacuations, 63.9% were of buildings or affected parts of buildings; 13.9% were of defined circular areas surrounding the event locations; 8.3% were of defined circle radius and downwind/downstream; 2.8% were of downwind / downstream and 11.1% used no criteria.. The estimated number of people evacuated was known for 11 (30.6%) events and ranged from 2 to over 1,000 people. The median length of evacuation was 1.5 hours (range: less than one hour to 43.5 hours). Of all 36 events, 28 (77.8%) also had access to the area restricted (normal access availability was altered). An additional 19 (2.6%) events had in-place sheltering ordered by an official.

Decontamination

A total of 77 people were decontaminated in 49 events. Of the 77 people who were decontaminated, 48 (62.3%) were decontaminated at the hospital and 29 (37.7%) were decontaminated at the scene.

Response

Of the 740 events, 18.6% reported 2 or more categories of personnel who responded, 8.0% reported 3 or more categories, and 2.8% reported 4 or more categories. Company response teams (60.0%) responded most frequently to events, followed by law enforcement agencies (13.5%), third party clean-up contractors (8.5), and certified HazMat teams (7.2%) (Table 8).

Table 8: Distribution of personnel who responded to the event - Louisiana Toxic Substance Incidents Program, 2010

Responder Category	No.	%
Certified HazMat Team	69	7.2
Company's Response Team	577	60.0
Department of Transportation / Works / Utilities (Includes Coast Guard)	1	0.1
EMT	15	1.6
Environmental Agency	14	1.5
Fire Department	60	6.2
Hospital	4	0.4
Law Enforcement Agency	130	13.5
Other	4	0.4
State, County, or Local Emergency Managers	5	0.5
Third Party Clean-Up Contractor	82	8.5
Total[‡]	961	99.9

[‡]The number of responders is greater than the number of events (740) because an event could have had more than one category of responder

Methamphetamine

The chemical byproducts of methamphetamine production represent a significant health risk, and the number of methamphetamine laboratories in Louisiana has been increasing. As mentioned earlier, methamphetamine was the most commonly released substance reported to LaTSIP during 2010. Additional analyses were conducted on the 47 events involving methamphetamine releases to determine their association with injuries and the increasing frequency of events.

Three (6.4%) of the 47 events that involved methamphetamine resulted in a total of 5 victims; 4 (80.0%) members of the “General public” and 1 (20.0%) “Employee”. Three of the victims sustained burn injuries, and two victims had unknown injuries. No deaths were associated with methamphetamine releases. Two (40.0%) victims were treated at the hospital but not admitted, one (20.0%) was admitted to a hospital, and the medical outcome of 2 (40.0%) victims was unknown.

Over the last year, qualifying meth lab events have gone up significantly. In 2009, only 7 meth events qualified for inclusion in the HSEES / NTSIP database; this number increased to 47 events in 2010. In reality, the number of meth labs is higher than these numbers, as only a small percentage of meth lab events actually qualify for inclusion into the LaHSEES / LaTSIP database. In order for a meth lab incident to qualify for inclusion in the LaTSIP database (or the previous LaHSEES database), the lab must be active when discovered and require a clean-up.

Possible causes for this increase are listed below:

- *Cheaper and Easier Manufacturing Methods:* A manufacturing method, known as "shake and bake" or one-pot method, allows "cooks" to make meth by simply putting all of the ingredients in a sealed container and then flipping it over. The chemical reaction in the container is under a very high pressure and can explode. In addition, because the method is very portable (and usually done in a vehicle), when the reaction has finished, the container containing a toxic residue is simply thrown out of the window.²
- *New Law in Mississippi:* On July 1, 2010, the State of Mississippi began requiring a prescription for cold and allergy medicines containing pseudoephedrine, the main ingredient in the production of meth³. In the first eight months of this law passing, police raids of meth labs in that state dropped nearly 70% when compared to the same time period of the previous year (203 meth labs vs. 630 meth labs). Mississippi state officials also say that as much as 98% of the meth labs seized during that time period were using pseudoephedrine purchased from a neighboring state.³ However, LaTSIP data shows that meth events in Louisiana are occurring throughout the state, not just along the border with Mississippi.

- *Increased Media Awareness:* It should also be noted that LaTSIP surveillance methods for meth labs have improved over the years of data collection. Only within the last few years has the media really begun reporting on meth labs and the dangers associated with them.

While there are likely many possible causes of this increase, there is significant risk to public health in the meth production process involving explosive and toxic chemical risks.

SUMMARY OF RESULTS, 2010

The numbers of toxic substance events, number of substances released, events with victims, and deaths for the year 2010 in Louisiana are shown in Table 8. In the year 2010, 740 events qualified for LaTSIP surveillance. Among them, 531 were fixed facility events and 209 were associated with transportation. There were 937 substances released, and the most frequent releases involved Methamphetamine Chemicals NOS (47 releases or 6.4%) and Sulfuric Acid (47 releases or 6.4%).

There were a total of 91 victims resulting from 62 events; these victims included 1 (1.1%) fatality. Chemical burns were the most frequently reported injury and accounted for 18.4% of injuries. Employees were the most commonly reported victim type. Of employee victims, most (88.3%) had not worn any form of PPE.

Table 9: Cumulative data for 2010 - Louisiana Hazardous Substances Emergency Events Surveillance, 2010

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
Total	531	209	740	937	91	1	62	8.4

[†]Percentage of events with victims.

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APPENDIX

The 10 substances most frequently involved in events - Louisiana Toxic Substance Incidents Program, 2010

	Chemical Substance	Number of Releases
1	Methamphetamine Chemicals NOS	47
2	Sulfuric Acid	47
3	Hydrochloric Acid	46
4	Benzene	43
5	Ethylene	40
6	Ammonia	32
7	Mixture	28
8	Sodium Hydroxide	26
9	Vinyl Chloride	26
10	Propylene	25

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.