

Hazardous Substances Emergency Events Surveillance in Michigan: 2013

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SUMMARY

This report summarizes the characteristics of hazardous substances emergency events reported to the Michigan Department of Community Health (MDCH) for 2013. The Hazardous Substances Emergency Events Surveillance system (HSEES) was established in Michigan in 2004 with funding from the Agency for Toxic Substances and Disease Registry (ATSDR). This multi-state program followed standardized protocols and definitions for collection and compilation of hazardous substances release events. In late 2009, ATSDR funded a new surveillance program for hazardous substances releases modeled on HSEES, titled the National Toxic Substance Incidents Program (NTSIP), and funded 7 states, not including Michigan. As an unfunded state, Michigan currently uses the NTSIP database for tracking releases in Michigan, but does not follow all of the NTSIP protocols.

Releases tracked by states in the HSEES/NTSIP system include uncontrolled or illegal acute releases of any hazardous substance (except petroleum when petroleum is the only substance released). Some substances require a threshold minimum amount released in order to be included. Information collected about

these events includes the substance(s) released, number of victims, number and types of injuries, and number of evacuations. Reports of releases come from a variety of sources, primarily other state and federal agencies that are mandated to receive reports from industry and the public.

Because of resource constraints, beginning in 2010, the Michigan HSEES program limited the types of events included in its system to include for the most part only those that involved an agency response (e.g. hazmat, public health) and an injury, exposure, or evacuation.

A total of 137 reported events met MDCH criteria for inclusion in 2013. One hundred sixty-four of the events occurred at fixed facilities and the remainder were associated with transportation. The most commonly reported substances were mercury and natural gas, 137 (69.5%) of the events involved an injury or evacuation. Sixty-five of the events resulted in an injury, involving a total of 120 victims, 10 of whom died; the most frequently reported injuries were burns and trauma.

INTRODUCTION

Since 1990, the Agency for Toxic Substances and Disease Registry (ATSDR) has supported and maintained a state-based surveillance system through cooperative agreements with state health departments to describe the public health consequences of releases of hazardous substances. The system was titled "Hazardous Substances Emergency Events Surveillance" or HSEES until 2009, and then ATSDR funded a new surveillance program for hazardous substances releases modeled on HSEES, titled the National Toxic Substance Incidents Program (NTSIP), which involved collection of national data and data from seven participating states.

In October, 2004 the Michigan Department of Community Health (MDCH) was funded to establish HSEES in Michigan, joining 13 other states. It was not funded for NTSIP. However, as an unfunded state, Michigan currently uses the NTSIP database for tracking releases in Michigan, but does not follow all of the NTSIP protocols. The name of the Michigan system did not change with the change in the national program; it is still MI-HSEES.

The purpose of the national HSEES/NTSIP system has been to describe the public health consequences of releases of hazardous substances, with the goal being to reduce injury and illness from acute hazardous substance releases by linking the data to prevention programs. The objectives of the surveillance systems in Michigan and nationally are:

- To describe the distribution of hazardous substances emergencies within the participating states, and nationally.
- To describe the types and causes of morbidity and mortality experienced by employees, responders, and the general public as a result of hazardous substances emergencies.
- To analyze and describe risk factors associated with morbidity and mortality.
- To develop strategies to reduce subsequent morbidity and mortality when comparable events occur in the future.

This report summarizes the characteristics of hazardous substance releases and their associated public health consequences of events that occurred in 2013 in Michigan. The appendices include additional details about the data, and a brief narrative of each of the events that involved an injury, evacuation, or shelter-in-place.

Annual reports for MI-HSEES starting with 2005 can be found at http://www.michigan.gov/mdch/0,1607,7-132-2945_5105-110654--,00.html (A report for 2009 was not done because of the mid-year change in funding and event definitions.)

METHODS

The general definition of a HSEES event in Michigan, which is shared with the national NTSIP program is: “An uncontrolled or illegal acute release of a toxic substance.”

Beginning in 2010, MI-HSEES altered the specific definition of a release from the definition used in the earlier MI-HSEES system and the current definition used by ATSDR funded states for NTSIP in several ways, because of resource constraints. First, in order to be included as an event in Michigan the released chemical must have resulted in some kind of agency response (e.g. hazmat, fire, public health). In addition, it must have resulted in a human exposure, a human injury, or an evacuation. These events are included regardless of the amount of the chemical released. Second, all carbon monoxide releases/injuries are excluded, regardless of agency response, because they are being tracked in another public health surveillance system¹. Finally, since 2010 MI-HSEES has been collecting information about natural gas/propane releases/explosions that result in injuries and evacuations.

Various sources are used to identify and obtain information about HSEES-eligible events in Michigan. These include reports to the National Response Center (NRC)², the Federal Department of Transportation, the Michigan Department of Environmental Quality (DEQ), the Michigan Department of Agriculture and Rural Development, the Michigan State Police, the Michigan Poison Control Center, the media, and others.

Information collected on Michigan HSEES events includes the following, when available:

- Type of event: Events are classified according to whether they occur at fixed facilities or during transportation. Fixed-facility events involve hazardous substances released at industrial sites, schools, farms, or other permanent facilities. Transportation-related events involve hazardous materials released during transport by surface, air, or water. The type of area or equipment within fixed facilities involved in the release is also recorded (e.g., piping, storage tank, and laboratory).
- Event location: The location of the event is identified by longitude and latitude coordinates where possible, and an ATSDR-maintained Geographic Information System (GIS) uses this information to identify nearby population groups and institutions (e.g. schools). If the exact location is not available, nearby population groups are estimated based on incident information.
- Date and time of the release, and current weather conditions if known and a factor in the incident.
- Responsible party: If the responsible party for the release is a business, it is classified using the North American Industry Classification System (NAICS).

¹ <http://www.oem.msu.edu/AnnualReports.aspx>

² The NRC is the single portal for mandatory reporting of hazardous spills and releases to 16 federal agencies. See: <http://www.nrc.uscg.mil/>

- Response: Response actions are categorized including what activities were taken to protect public health (e.g., issuance of health advisories, health investigations, and environmental sampling), and the groups responding to the incident (e.g., fire department, HazMat, public health agency).
- Substance(s) released: Released substances are identified by chemical name or chemical category, including "mixture." Chemical constituents of brand name products are ascertained. The quantity released, type of release (e.g., spill, fire, volatilization), and whether the substance was actually released or a threatened release are also recorded.
- Causes: A primary or root cause of the release is assigned (e.g., human error, equipment failure, bad weather) and, when appropriate, a secondary or immediate cause of the release (e.g., improper mixing, vehicle collision, explosion).
- Victim(s): The number of individuals injured in the event is noted and which population group(s) were involved (e.g., the public, emergency responders, school children). Also recorded are the type(s) of injuries, severity of medical outcome, and demographics (age, gender) of injured individuals.
- Evacuation, sheltering-in-place, and decontamination: The numbers of individuals evacuated, sheltered in place, and decontaminated are recorded.

Because of loss of funding, Michigan HSEES is no longer conducting follow-up interviews to complete data fields where information was missing in the initial report.

All information is entered into a web-based application used by the NTSIP-participating states and maintained by ATSDR.

RESULTS

For 2013, 137 hazardous substance emergency events in Michigan were included in the Michigan MI-HSEES data set. The counties with the most frequent number of events were Wayne with 22 (16.1%) events, Ingham with 14 (10.7%) events and Oakland 12 (8.8%) events. A complete list of counties and event frequencies can be found in Appendix 1.

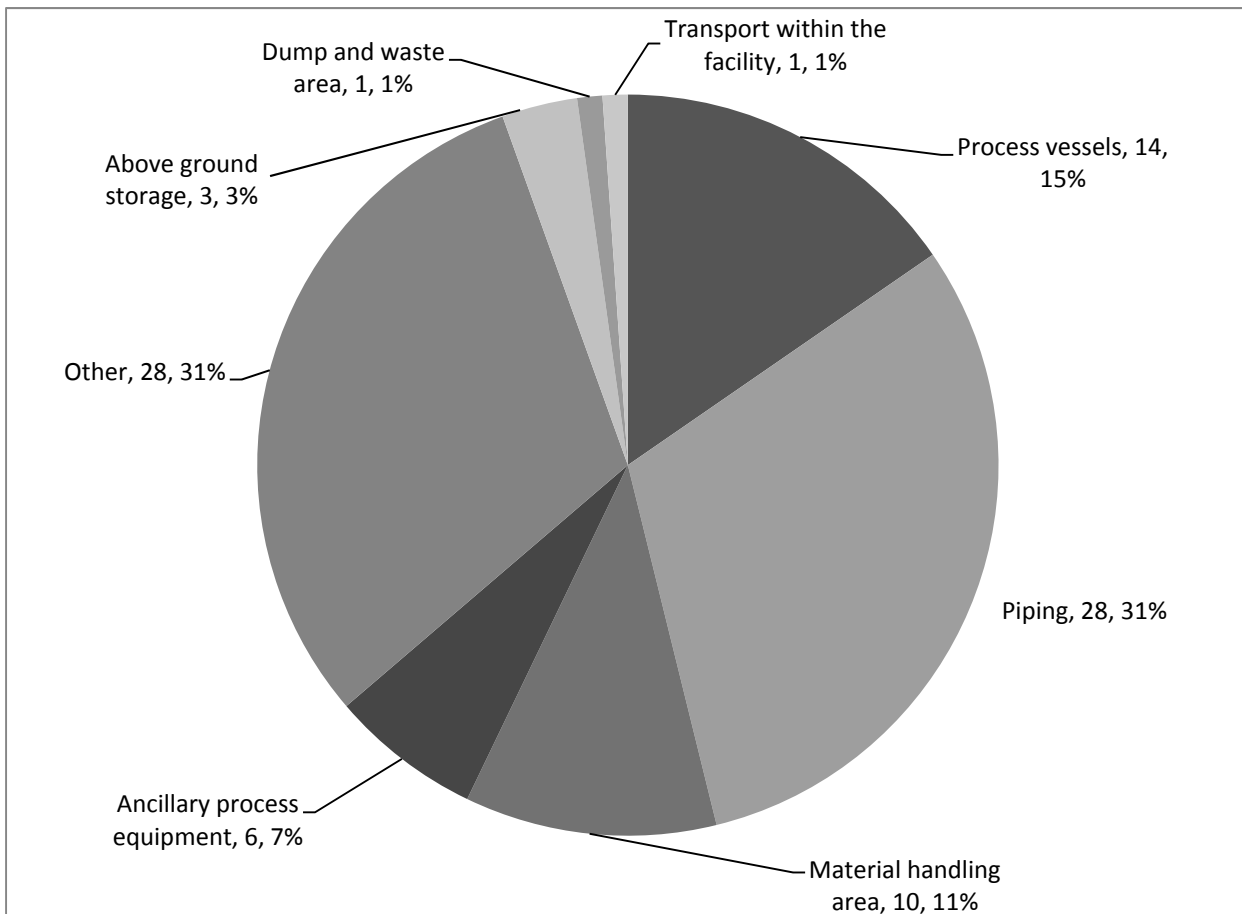
Facility type

A total of 107 (78.1%) events occurred in fixed facilities.

Fifteen (14.0%) of the 107 fixed facility events did not identify an area in the facility where the release occurred. The locations for the 92 (86.0%) events where an area was identified included; process vessels 14 (15.2%), piping 28 (30.4%), materials handling area 10 (10.9%), ancillary process equipment 6 (6.5%), above ground storage 3 (3.3%), dump and waste area 1 (1.1%), transport within the facility 1 (1.1%) and other 28 (30.4%). (Figure 1)

Of the 30 (21.8%) transportation events, 18 (60.0%) occurred during ground transport, 3 (10.0%) by rail, 1(3.3%) by water and 8 (26.7%) by pipeline.

Figure 1 – Distribution of fixed facility related events where location was known, (N=106) - Michigan HSEES 2013.



Causes of events

Primary or root cause factors were reported in all 137 events. Of the reported primary factors, human error, 49 (35.8%), and equipment failure, 59 (43.1%) accounted for most of the factors. For transportation incidents human error, 17 (56.6%), was responsible for the most incidents, while equipment failure, 49 (45.8%), accounted for the most fixed facility events. (Figure 2 and Table 1)

Figure 2 - Primary Causes of Events - Michigan HSEES 2013 (N=137).

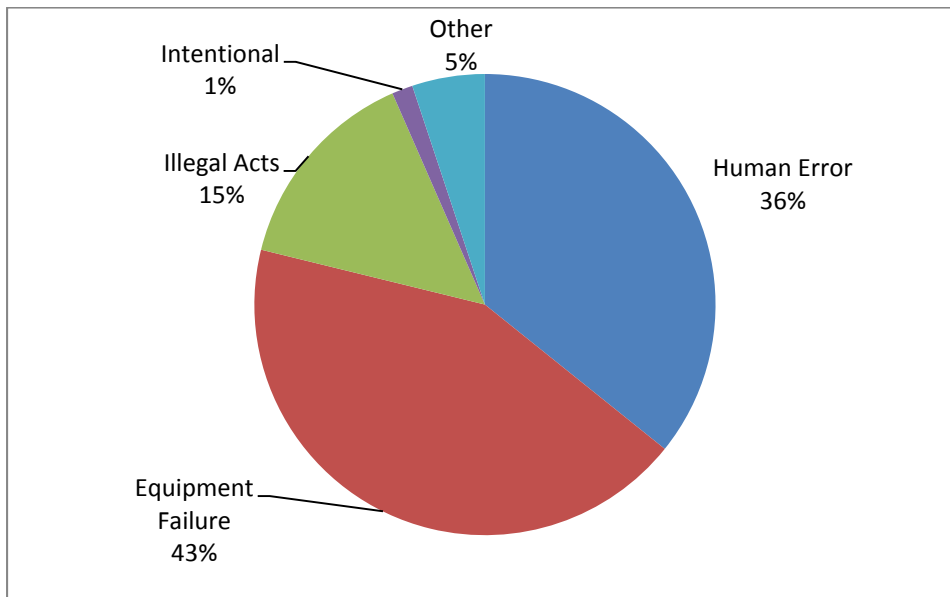


Table 1 – Primary factors associated with events by event type – Michigan HSEES 2013.

Primary Factor	Event Type					
	Fixed Facility*		Transportation		All Events	
	Number of Events	%	Number of Events	%	Number of Events	%
Human Error	32	29.9	17	56.7	49	35.8
Intentional	1	0.9	1	0.3	2	1.5
Equipment Failure	49	45.8	10	33.3	59	43.1
Illegal Act	18	16.8	2	0.7	20	14.6
Other	7	6.5	0	0	7	5.1
Total	107	78.1	30	21.9	137	100

Substances

A single substance was released in 133 (97.0%) of the 137 events. Four (2.9%) events were a mixture or reaction of two or more chemicals.

A total of 44 substances/mixtures were associated with the 137 events. The substances/mixtures that were released in more than one event and the numbers of events for each of these are listed in Table 2. The list of all 44 substances/mixtures released are in Appendix 2.

Table 2 - Substances/mixtures involved released in more than one event - Michigan HSEES 2013

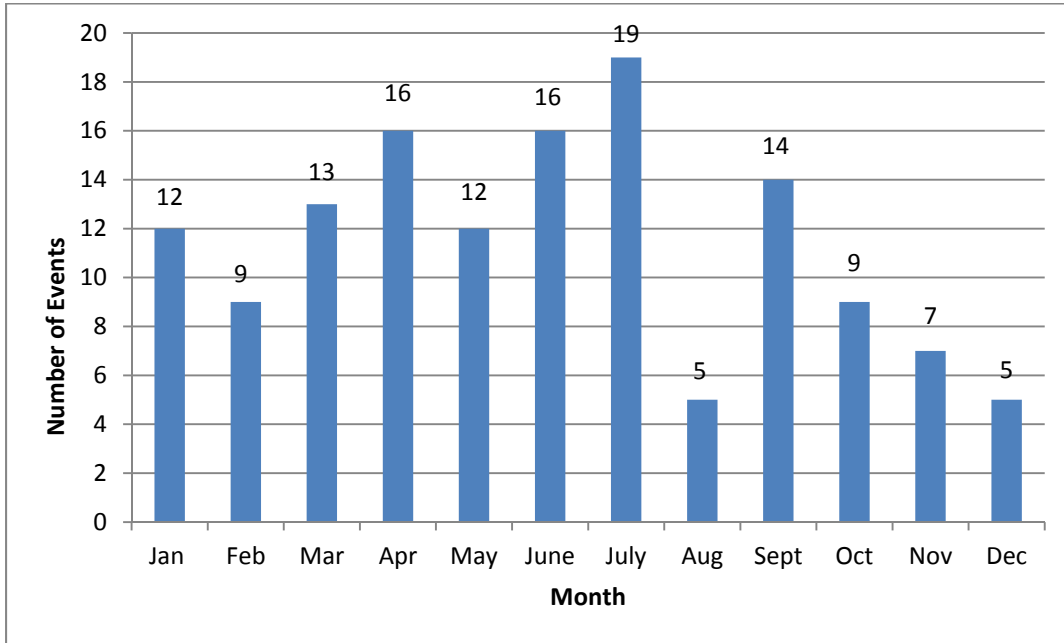
Substance	Number of times released
Natural Gas	34
Mercury	15
Methamphetamine Chemicals NOS*	11
Black Powder	9
Gasoline	8
Propane	6
Ammonia	5
Oil NOS	4
Chlorine	3
Diesel Fuel	3
Pesticides NOS	3
Butane	2
Flammable Liquid NOS	2

*NOS – Not Otherwise Specified

Time of release

The number of events by month ranged from 19 (13.8%) in July to 5 (43.6%) in August and December. (Figure 3)

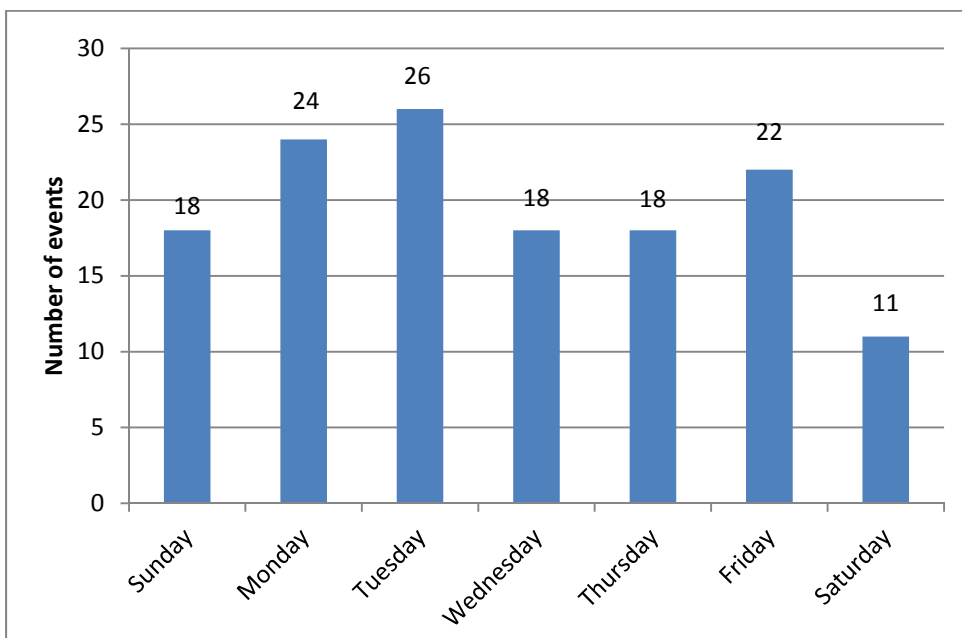
Figure 3 – Month distribution of events - Michigan HSEES 2013.



Day of week of releases

Events were less likely to occur on Saturday. (Figure 4).

Figure 4 – Event day of the week distribution - Michigan HSEES 2013.



Business/industry

Sixty-five (47.4%) of the 137 events were the responsibility of an industry or business. The largest proportion of the industry/business-associated events involved ground/air/rail transportation, with 12 (18.5%) events. (Table 4)

Table 4 – Industries involved in events by 2-digit NAICS codes - Michigan HSEES 2013.

NAICS Code	Industry Category	No. Events	%
11	Agriculture, Forestry, Fishing and Hunting	1	0.73
21	Mining, quarrying, and oil and gas extraction	1	0.73
22	Utilities	8	5.8
31	Manufacturing - Food/Textiles/Apparel	3	2.2
32	Manufacturing - Paper/Petroleum/Chemicals/Plastics	5	3.6
33	Manufacturing - Metal/Transportation	5	3.6
44	Retail Trade - Motor Vehicle/Building Materials/Gas Stations	6	4.4
48	Transportation - Ground/Air Rail	12	8.8
49	Electric, Gas and Sanitary Services	1	0.73
53	Real Estate and Rental and Leasing	5	3.6
56	Administrative Support/Waste Management and Remediation	1	0.73
61	Education	6	4.4
62	Health Care	3	2.2
71	Art, Entertainment, and Recreation	1	0.73
72	Accommodations/Food Services	4	2.9
81	Other Services	1	0.73
92	Public Administration	2	1.5

Response

Responders: There were 14 categories of responders to the 137 events. Table 5 shows the frequency of responses by responder categories.

Table 5 - Frequency of responses by responder category- Michigan HSEES 2013.

Responder category	Number of events responded	% events responded
Fire	109	23.2
Police	70	14.9
Emergency Medical Technicians	42	8.9
Dept. Works/Utilities/Transport	41	8.7
Hospital	39	8.3
Hazmat	37	7.9
Company Response Teams	33	7.0
Public Health	27	5.7
Poison Center	19	4.0
Third Party Clean-up Contractor	18	3.8
Environmental Agency	11	2.3
Specialized Multiagency Team	8	1.7
Specialized Multi-Agency Team	8	1.7
Emergency Managers	8	1.7

Public health actions

Twenty-seven (5.7%) of the 137 events resulted in a public health response. Environmental sampling was done in 41 (29.9%) events.

Victims and evacuations

Ninety-nine (72.3%) of the 137 events involved an injury or evacuation. A brief synopsis of each of the 99 events that included one or more of these public health impacts is included in Appendix 3.

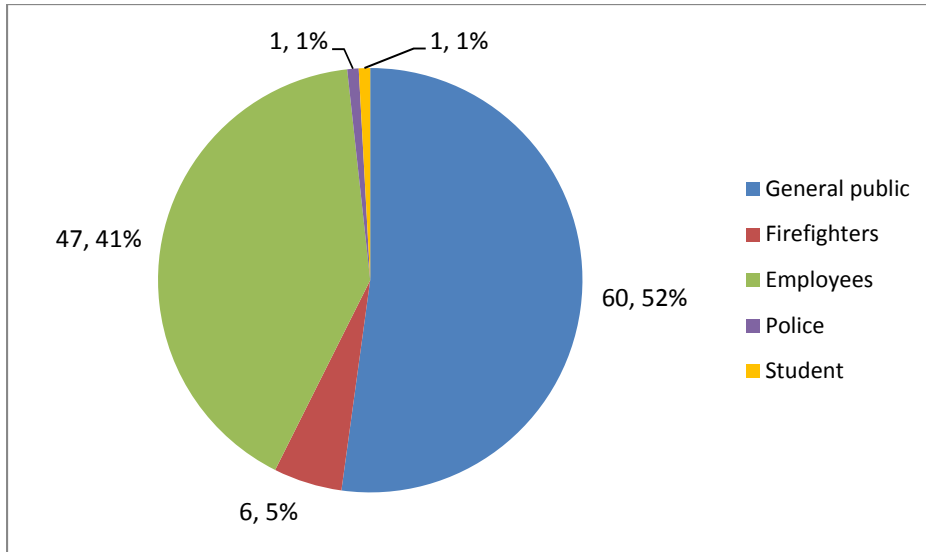
Victims

One hundred fifteen victims were reported in 54 events (39.4% of the 137 events) (Table 7). Of the 54 events with victims, 32 (59.3%) involved only one victim, 10 (18.5%) involved two victims, 4 (7.4%) had three victims, and 8 (14.8%) had four or more victims. Of all victims, 87 (75.6%) were injured in fixed facility events (Table 7).

Table 7 - Number of victims per event, by type of events - Michigan HSEES 2013.

Number of Victims	Type of event						All Events		
	Fixed Facility			Transportation			No. of Events	%	Total Victims
	No. of Events	%	Total Victims	No. of Events	%	Total Victims			
1	31	70.5	31	1	10	1	32	59.3	32
2	5	11.4	10	5	50	10	10	18.5	20
3	3	6.8	9	1	10	3	4	7.4	12
≥4	5	11.4	37	3	30	14	8	14.8	51
Total	44	81.5	87	10	18.5	28	54		115

Figure 7 – Victims by population group - Michigan HSEES 2013. (N=115)

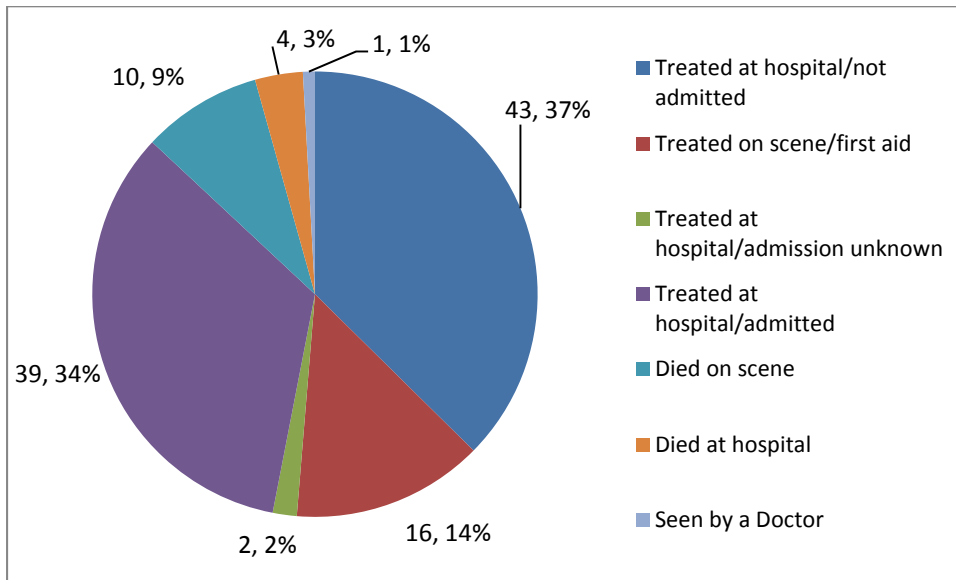


The age group was determined for 27 (23.5%) of the 115 victims: Two (1.7%) were five to 14 years old, 6 (5.2%) were 15 - 20 years old, 13 (11.3%) were 21 – 44 years old, 5 (4.3%) were 45 – 64 years old and 1(0.9%) was older than 65 years.

Sex was known for 60 (52.2%) of the victims; of these, 43(37.4%) were male.

Severity of injuries was known for 115 (100%) of the victims:43 (37.4%) were treated and released from the hospital, 2 (1.8%) were treated at hospital, admission status unknown,16(13.9%) were treated on scene, 39 (33.9%) were admitted to the hospital, 1 (0.9%) were seen by a doctor within 24 hours and 14 (12.2%) died (Figure 8).

Figure 8 - Injury outcomes - Michigan HSEES 2013.



Of the 115 victims, 97 injuries or symptoms could be determined (Table 8). Each victim was assigned one injury. (The remaining 18 victims were known to have been injured, but the types of injuries were unknown.) Of all the reported injuries/symptoms the most common were trauma with 32 (33.0%), followed by respiratory irritation with 27 (27.9%).

Table 8 – Number of Injuries/Symptoms - Michigan HSEES 2013.

Injury/Symptom	No. of injuries	%
Burns	23	23.7
Trauma	32	33
Respiratory Irritation	27	27.9
Other	15	15.5
Total	97	

Fatalities

Among the 115 victims there were 14 (12.2%) fatalities. Of the fatalities 5 (30.0%) were from natural gas explosions, 3 (20.0%) were from fireworks, 2 (10%) were intentional, 1 (10%) was from a methane explosion, 1 (10%) was from molten metal, 1 (10%) from an explosion of propane, and 1 (10%) was from oxygen tanks in a house fire.

Evacuations and sheltering-in-place

Evacuations were ordered in 72 (52.6%) of the 137 events. Of these evacuations 36 (50%) were of buildings or the affected parts of the building, 17 (23.6%) were within a circle or radius of the event, 2 (2.7%) had no defined criteria, 3 (4.1%) were downwind of the event, 2 (2.7%) were within a circle and downwind of the event, and for 12 (16.7%) the area of evacuation was unknown.

The number of people evacuated was known for 9 (12.5%) of the 72 events. Four of the evacuations were for less than 100 people, 4 events evacuated between 100 to 1,000, and 1 events evacuated more than 1000 people.

One of the events with evacuation orders had shelter-in-place orders.

Appendix 1 – Events by county – Michigan HSEES, 2013

County	Event Type				Total	
	Fixed Facility		Transportation		All Events	
	Number	%	Number	%	Number	%
Allegan	2	1.9	0	0	2	1.5
Arenac	1	0.9	0	0	1	0.7
Bay	1	0.9	0	0	1	0.7
Berrien	1	0.9	0	0	1	0.7
Branch	2	1.9	1	3.2	3	2.2
Calhoun	1	0.9	0	0	1	0.7
Chippewa	1	0.9	0	0	1	0.7
Clare	1	0.9	0	0	1	0.7
Eaton	0	0	1	3.2	1	0.7
Emmet	1	0.9	1	3.2	2	1.5
Genesee	3	2.8	0	0	3	2.2
Gladwin	0	0	1	3.2	1	0.7
Grand Traverse	1	0.9	0	0	1	0.7
Houghton	1	0.9	0	0	1	0.7
Ingham	13	12.3	1	3.2	14	10.7
Isabella	1	0.9	0	0	1	0.7
Jackson	2	1.9	2	6.5	4	2.9
Kalamazoo	7	6.6	0	0	7	5.1
Kalkaska	1	0.9	1	3.2	2	1.5
Kent	9	8.5	0	0	9	6.6
Leelanau	0	0	1	3.2	1	0.7
Lenawee	2	1.9	1	3.2	3	2.2
Livingston	3	2.8	0	0	3	2.2
Macomb	5	4.7	3	6.5	8	5.8
Mecosta	2	1.9	0	0	2	1.5
Midland	0	0	1	3.2	1	0.7
Montcalm	1	0.9	0	0	1	0.7
Muskegon	2	1.9	0	0	2	1.5
Oakland	9	8.5	3	6.5	12	8.8
Ottawa	4	3.8	0	0	4	2.9
Saginaw	3	2.8	1	3.2	4	2.9
Sanilac	1	0.9	0	0	1	0.7
Shiawassee	1	0.9	0	0	1	0.7
St. Joseph	1	0.9	0	0	1	0.7
Tuscola	2	1.9	0	0	2	1.5
Van Buren	1	0.9	0	0	1	0.7
Washtenaw	4	3.8	6	19.4	10	7.3
Wayne	15	14.2	7	22.6	22	16.1
Wexford	1	0.9	0	0	1	0.7
Total	106		31		137	

**Appendix 2 – Complete list of substances released and frequencies
– Michigan HSEES, 2013**

Chemical Name	Number of Events	Percent
Natural Gas	34	25
Mercury	15	11
Methamphetamine Chemicals NOS*	11	8.0
Black Powder	9	6.6
Gasoline	8	5.8
Propane	6	4.4
Ammonia	5	3.6
Oil NOS	4	2.9
Chlorine	3	2.2
Diesel Fuel	3	2.2
Pesticides NOS	3	2.2
Butane	2	1.5
Flammable Liquid NOS	2	1.5
Acid NOS	1	0.7
Acrylic Acid	1	0.7
Capsaicin	1	0.7
Carbon Dioxide	1	0.7
Chlorine Bleach NOS	1	0.7
Cleaning Agent NOS	1	0.7
Crude Oil NOS	1	0.7
Cyanide	1	0.7
Formaldehyde	1	0.7
Hydrochloric Acid	1	0.7
Hydrogen Sulfide	1	0.7
Isocyanates NOS	1	0.7
Lithium	1	0.7
Mercuric Chloride	1	0.7
MIX: Bleach/Line-Away	1	0.7
Oxygen	1	0.7
Paint Solvents NOS	1	0.7
Roofing Emulsion NOS	1	0.7
Reaction Acid NOS/Bleach	1	0.7
Reaction: Adhesive NOS	1	0.7
Reaction: Ammonium Hydroxide/Sodium Sulfate	1	0.7
Reaction Nitric Acid/Sodium Hydroxide	1	0.7
Sealant NOS	1	0.7
Sodium Hydroxide	1	0.7
Steel (molten)	1	0.7
Sulfur NOS	1	0.7
Sulfuric Acid	1	0.7
Tetrahydrofuran	1	0.7
Titanium	1	0.7
Vegetable Oil	1	0.7
Waste Solvents NOS	1	0.7
Water	1	0.7
Total	137	

*NOS – Not Otherwise Specified

Appendix 3- Events resulting in an evacuation, injury or exposure- Michigan HSEES, 2013

MI20130002 - A meth lab caught on fire burning operator and destroying the house.

MI20130003 - Workers hit a four inch gas main puncturing it. Traffic was rerouted while line was repaired.

MI20130006 - A natural gas leak occurred outdoors in a neighborhood. Residents were evacuated until the leak was repaired.

MI20130007 - A natural gas leak was discovered outside of a home resulting in the evacuation of homes in the area.

MI20130008 - A methamphetamine lab exploded blowing the front porch off the house and severely burning the operator's hands.

MI20130009 - A propane tanker was involved in an accident. Homes within a half mile were evacuated while the propane was transferred.

MI20130010 - A meth lab exploded in an apartment building burning two operators.

MI20130011 - A house caught fire and the fire was accelerated by four oxygen tanks in the home. One person was killed.

MI20130012 - Hydraulic test failed causing damage to building, no injuries reported.

MI20130013 - A fire at a pool company released chlorine fumes injuring one firefighter.

MI20130014 - A meth lab caught on fire destroying a mobile home, injuring the operator.

MI20130016 - A meth lab in an apartment exploded, 43 people in 24 apartments were displaced.

MI20130017 - A water treatment plant had a leak of chlorine. Workers were evacuated while spill was stopped and remediated.

MI20130019 - A meth lab exploded burning and injuring operator.

MI20130020 - Fumes from a leaking pesticide tanker sickened two railroad employees who were admitted to a hospital.

MI20130021 - Chlorine bleach was thrown at three occupants of a car who experienced burns and eye injuries.

MI20130022 - A student had a solution of mercuric chloride on a hot plate and it exploded getting into the student's eyes.

MI20130024 - Workers damaged a natural gas main, gas leaked into a house causing an explosion. One person was killed, 30 homes were evacuated.

MI20130025 - Welding sparks ignited flammable liquids in a pit. The resulting fire caused \$500,000 damage.

MI20130026 - A fire caused the release of cutting oil which washed into Lake Huron.

MI20130028 - An unresponsive woman was found in a car. It was determined that she was deceased from hydrogen sulfide gas produced from a suicide attempt. A police officer was treated for exposure.

MI20130030 - A man was repairing a boat in a storage facility. He lit a torch and there was an explosion. The man was burned and the resulting fire damaged a few boats.

MI20130031 - A natural gas leak from a water heater was discovered at an elementary school. The school was evacuated while the leak was repaired.

MI20130032 - Residents were manufacturing hash oil in an apartment building when the process exploded. Four residents were burned. The two story building was knocked off its foundation.

MI20130034 - An arsonist caught a house on fire which was occupied by four people. The fire caused a gas leak which resulting in the evacuation of three additional homes.

MI20130035 - An accelerant was thrown on a small campfire, the accelerant exploded out of the fire and severely burned one person.

MI20130036 - A meth lab exploded in an apartment building blowing the exterior wall out. The operator was hospitalized with severe burns and the apartment building was evacuated.

MI20130037 - An odor described as smelling like 'natural gas' occurred in a manufacturing plant. A total of 63 people received aid, 50 were treated in an adjacent building, 13 were hospitalized.

MI20130038 - A chlorine hose broke at an indoor pool and spilled 20 gallons of chlorine. The building was evacuated, three people were taken to the hospital and 6 were treated at the scene.

MI20130043 - A tanker overturned on the freeway spilling acrylic acid. Four firefighters were treated and released from the hospital.

MI20130044 - Two workers were disassembling a holding tank at a wastewater treatment plant. They were using a torch which ignited methane gas. One worker was killed, the other was severely injured.

MI20130045 - A natural gas leak resulted in the evacuation of a school until repairs were made.

MI20130047 - Molotov cocktails were set off in a house resulting in a fire. One firefighter was injured when the ceiling fell on him while fighting the fire.

MI20130048 - A waste water tank at a refinery caught fire. A neighborhood was evacuated while the fire was being put out.

MI20130049 - Employees were cleaning a filter when a spark ignited a residue of tetrahydrofuran.

MI20130050 - A person was creating fireworks when there was an explosion. He was severely burned and experienced severe trauma.

MI20130051 - Four people were treated at the scene when pesticide was released from a railcar.

MI20130052 - A natural gas leak contributed to an apartment fire, destroying the unit.

MI20130053 - Two boaters were fueling their boat, when they turned on the ignition the boat exploded.

MI20130055 - A pipe cracked leaking 100 gallons of sodium hydroxide. One employee was treated at the scene.

MI20130057 - A driver veered off the road and hit a natural gas transfer station resulting in a leak of natural gas. Driver died at the scene.

MI20130058 - Two workers were treated at a hospital for exposure to a cleaning solution.

MI20130059 - A natural gas leak occurred in a gas main. Two businesses were evacuated.

MI20130060 - Workers broke a natural gas line. Neighborhood was evacuated while repairs were completed.

MI20130061 - Gasoline was found in the sewers at a hotel; explosive levels were being emitted from the sewers' vent stacks. The hotel was evacuated and power was shut off to prevent an explosion.

MI20130062 - A propane stove exploded in a camper burning five people.

MI20130064 - A car hit the natural gas service lines to a health care clinic. The clinic was evacuated while the lines were repaired.

MI20130065 - A truck driver hit piping at a natural gas well site, the gas ignited resulting in the death of the driver.

MI20130067 - A refrigeration line broke at a farm, seven employees went to an emergency clinic. Two employees were transferred for further treatment.

MI20130068 - A meth lab caught fire in a house. Ten people were displaced.

MI20130069 - Two truck washers were injured when their steam cleaner ignited oil condensate on the truck they were washing.

MI20130070 - A tote leaked in a semi-truck spilling a roofing sealant on the Interstate. The road was closed while the spill was being cleaned.

MI20130072 - A car failed to yield at an intersection and collided with a fuel tanker carrying 3,000 gallons of diesel. The tanker caught fire causing extensive damage to the roadway. No injuries were reported.

MI20130073 - A chemical waste disposal company caught on fire resulting in the evacuation of residents and businesses.

MI20130074 - A restaurant worker mixed bleach and delimer, was treated at the hospital for respiratory issues.

MI20130075 - Two people were killed when the vehicle they were driving hit a tree at a high rate of speed and caught fire. They could not be quickly removed from the vehicle due to a large amount of fireworks in the vehicle that caught fire.

MI20130076 - A homeowner was trimming a tree when a tree branch fell on a propane tank valve releasing 800 gallons of propane. The house was evacuated until the propane dispersed.

MI20130077 - Fireworks were being ignited in the street when one went sideways into a garage injuring three adults and one child.

MI20130078 - Three people were packing black powder into a homemade cannon when it exploded injuring all three.

MI20130079 - A firework exploded prematurely breaking a person's wrist and fingers.

MI20130080 - A firework misfired, lighting the entire device instead of one at a time. A woman was severely burned.

MI20130082 - A natural gas main was broken by workers digging an irrigation system, buildings were evacuated while the break was repaired.

MI20130083 - Residents of a home were storing a very large amount of butane to manufacture illegal drugs. There was a very large explosion which destroyed the home and injured one occupant.

MI20130084 - A non-licensed resident was killed when a professional firework mortar he was lighting exploded.

MI20130085 - A construction crew broke a natural gas line resulting in the evacuation of an office building while repairs were made.

MI20130087 - Hot fireworks were disposed in a garage creating a fire that destroyed the garage and damaged the attached home.

MI20130088 - A natural gas leak caught a manufacturing facility on fire.

MI20130089 - A construction crew broke a gas main. Twenty houses were evacuated.

MI20130092 - A reaction vessel over pressurized releasing an isocyanate. The building and a few surround buildings were evacuated.

MI20130093 - A man was lighting a propane stove in a food tuck when it exploded.

MI20130094 - A pesticide was spilled in a building. The occupants were evacuated while the area was cleaned.

MI20130095 - A homeowner hit a natural gas line while excavating. The gas ignited destroying the home. There were two fatalities and one person was critically injured.

MI20130096 - Workers broke an ammonia refrigeration line, building was evacuated.

MI20130097 - Bricks fell off the parapet on a 10 story building breaking the gas meter and causing a gas leak.

MI20130098 - A tractor trailer overturned spilling 450 gallons of paint chemicals, the freeway was closed for 10 hours for cleanup.

MI20130099 - A large natural gas main broke resulting in the evacuation of residents.

MI20130102 - A contractor broke a 4 inch gas main at a shopping center resulting in the evacuation of several stores.

MI20130104 - An individual ingested potassium cyanide and was taken to an emergency room. The emergency room was shut down.

MI20130105 - A meth lab caught a house on fire.

MI20130111 - An explosion resulted from a propane leak in a house. The house was knocked off the foundation and the basement walls were blown out.

MI20130112 - A car hit a gas meter on the side of a building creating a large gas leak. Several homes and businesses were evacuated.

MI20130113 - A man was cooking on his stove and there was a propane explosion destroying his home.

MI20130114 - A house exploded from a propane leak killing the occupant.

MI20130115 - A construction crew broke a natural gas line while resurfacing a parking lot. A nearby church was evacuated and local roads were closed during repairs.

MI20130117 - A seasonal gas well was opened and the odorant was too high. This led to multiple reports of gas odor in the community and a leak was located at the school during the investigation.

MI20130118 - A house exploded from a natural gas leak and caught the adjacent house on fire

MI20130119 - A man was severely injured when a cannon exploded.

MI20130120 - A car slid off the road and hit a natural gas regulator causing it to leak. Adjacent homes were evacuated while the leak was repaired.

MI20130122 - A worker mixed a bleach and acid together and breathed the fumes for 10 minutes. He reported to the emergency department with respiratory issues.

MI20130123 - An instructor at a college mixed two chemicals together, breathed in the fumes and was experiencing respiratory distress.

MI20130126 - A woman was severely injured when her apartment was destroyed by a natural gas explosion.

MI20130127 - A tree fell on a house during a windstorm breaking the natural gas line. The area within a half mile of the break was evacuated while repairs were made.

MI20130128 - A methamphetamine lab exploded in the basement of a home damaging the foundation and injuring the operator.

MI20130129 - An adhesive company was destroyed after chemicals exploded and caught fire during a mixing operation.

MI20130130 - Three people were injured when a gas tank fell from a vehicle on a lift and caught on fire.

MI20130132 - A fence construction crew hit a natural gas line resulting in the evacuation of a nearby school while repairs were made.

MI20130135 - A methamphetamine lab exploded in the basement of a home severely burning the operator.

MI20130136 - A worker was killed when molten steel spilled from a ladle causing an explosion and fire.