EXECUTIVE SUMMARY

Since 1990, the Agency for Toxic Substances and Disease Registry (ATSDR) has maintained an active, state-based Hazardous Substances Emergency Events Surveillance (HSEES) system to describe the public health consequences associated with the release of hazardous substances. Since calendar year 2000, the Utah State Department of Health has participated in this surveillance system. This report summarizes the characteristics of events reported to the surveillance system by the Utah Department of Health during calendar years 2000-2001.

Information on acute hazardous substances emergency events was collected. The types of data collected included general information on the event, substance(s) released, number of victims, number and types of adverse health effects experienced by the victims, and number of evacuations.

Several data sources were used to obtain the maximum amount of information about each event. These sources included, but were not limited to, Utah Division of Environmental Response & Remediation, Utah Highway Patrol, National Response Center, Utah Poison Control, Department of Transportation Hazardous Materials Information System, media (newspaper, radio, television), local health agencies, and industry. Data were entered into a web-based data entry system that allows for real-time data entry.

The Utah Department of Health reported a total of 837 events for calendar years 2000-2001; approximately 548 (65%) of the events occurred at fixed facilities, and 289 (35%) were transportation related. Equipment failure (324, 39%), and human error (323, 39%) were the contributing factors for the majority of the releases. In 598 (71%) of the events, only a single substance was released. The most commonly reported categories of substances were “Other Inorganic Substances” (778 substances, 53%) and “Other” (269) 18%). During this reporting period, 24 events (approximately 3% of all reported events) resulted in a total of 140 victims. The adverse health effects most frequently experienced by victims were respiratory irritation (56); dizziness or other CNS symptoms/headache (34), and trauma (26). One person died in one of the events, and 24 (3 %) events required evacuations.

For calendar years 2000 and 2001, the Utah Department of Health HSEES Program has found the distribution of the types of events, the number of events with victims and evacuations, and the numbers and types of injuries reported have, overall, been consistent.

HAZARDOUS SUBSTANCES EMERGENCY EVENTS SURVEILLANCE (HSEES)

INTRODUCTION

The surveillance system has four goals:

- To describe the distribution and characteristics of hazardous substances emergencies.
- To describe the morbidity and mortality experienced by employees, responders, and the general public as a result of hazardous substances releases.
- To identify risk factors associated with the morbidity and mortality.
- To identify strategies that might reduce future morbidity and mortality resulting from the release of hazardous substances.

This report summarizes the characteristics of hazardous substances releases and the associated public health consequences of events reported to the surveillance system during calendar years 2000-2001.

METHODS

Releases are eligible for inclusion if they are uncontrolled or illegal and require removal, cleanup, or neutralization according to federal, state, or local law. Threatened releases are also included in the system if 1) they involve actions such as evacuations which are taken to protect the public health and 2) they would have required removal, cleanup, or neutralization according to federal, state, or local law. A substance is considered hazardous if it can be reasonably expected to cause injury or death to an exposed person. Releases occurring to air and water that could not be cleaned up are also included in the system if the amount released would have needed to be cleaned up if the spill had occurred on land. Events involving only petroleum products are excluded.

Various data sources were used to obtain information about these events. These sources included, but were not limited to, Utah Division of Environmental Response & Remediation, Utah Highway Patrol, National Response Center, Utah Poison Control, Department of Transportation Hazardous Materials Information System, media (newspaper, radio, television), local health agencies, and industry. Census data were used to estimate the number of residents living in the vicinity of the events. For each event, information was collected about the type of event (fixed-facility or transportation-related event); substance(s) released (identity, chemical form, type of release, and quantity released); victim(s) (population group, type of injury sustained, medical outcome, demographics, personnel protective equipment [PPE] worn, and distance from the event); the type of area in which the event occurred; date and time of occurrence;

numbers of persons potentially affected; use of environmental sampling; evacuations; response plans; and causal factors.

Emergency events captured by HSEES 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. Victims are defined as individuals with symptoms (including psychological stress) or injuries (including death) that result from the event. Victims who receive more than one type of injury are counted once in each applicable type of injury.

Substances are grouped into 11 categories: acids, ammonia, bases, chlorine, mixtures, paints and dyes, pesticides, polychlorinated biphenyls, volatile organic compounds (VOCs), other inorganic substances, and other substances. The "mixtures" category consists of chemicals from different categories that are mixed before release, and the "other" category consists of chemicals that cannot be classified into any one of the other 10 chemical categories. The category "other inorganic substances" comprises all inorganic substances except acids, bases, ammonia, and chlorine.

Data were entered into a Web-based data entry system. ATSDR performs data management, data analysis, and report generation of the entered data. ATSDR provides Utah Department of Health with its own state-level data for analysis and report generation purposes. HSEES data are then used for prevention activities by ATSDR and by the Utah Department of Health.

RESULTS

A total of 837 hazardous substances emergency events was reported in calendar years 2000-2001 to the HSEES system by the Utah Department of Health; about 105 (13 %) of these events were threatened releases. Of these events, 548 (65%) occurred at fixed facilities, and 289 (35%) were transportation-related events (Table 1). Table 2 shows the number of events by county and type of event.

In Utah, the areas/locations with the highest percentages involved in fixed-facility events were process/ancillary process vessel (57%), and material handling (20%). Refer to figure 1 for breakout of all areas. In transportation-related events, 91 % occurred during ground transport (for example, truck, van, or tractor), and 5% involved transport by rail (Figure 2). The remaining transportation-related events involved water, air, or pipeline transport.

Factors contributing to events were also reported (Figure 3). Equipment failure (324, 39%) and human error (323, 39%) were a contributing factor in 647 (78%) of the events. Thirty-four (4%) events were reported as involving maintenance, and the remainder were attributable to other factors.

Seventy-one percent of all events involved the release of only one substance. Two substances were released in approximately 4% of the events, and the remainder involved the release of 3 to 5 substances (Table 3). Therefore, the number of substances released was higher than the number of events. Chemicals were either released or threatened to be released in the events. A total of 1,467 (99%) of the substances was actually released, and a total of 12 (1%) substances was threatened to be released. Most substances released were either spills (35%) or air emissions (64%). Of the spills, 42% occurred in fixed-facility events. Of the air emissions, 99% occurred in fixed-facility events. The remaining releases resulted from fires (1%) or other types of releases (or combinations of types of releases) (1%).

Of the events with known time of occurrence, 35% occurred primarily from 6:00 AM to 12 noon, and 38% from 12 noon to 6:00 PM. Approximately 15% of events occurred on a Saturday or Sunday. In calendar years 2000-2001, 59% of the events occurred between March and August, and 41% occurred during the other 6 months.

SUBSTANCES

Of the 11 categories into which HSEES substances were grouped, the categories of substances most commonly released in fixed-facility events were "Other Inorganic Substances" (63%) and "Volatile Organic Compounds" (16%). (Table 4). In transportation-related events, "Other Substances" (43%), and "Volatile Organic Compounds" (19%), were most frequently released. The 10 substances most frequently released in Utah for 2000-2001 are listed in Appendix as Appendix 1.

VICTIMS

A total of 140 victims were involved in 24 events (3% of all events) (Table 5). Of the events with victims, 58% involved only one victim, and 71% involved either one or two victims. The majority of victims were involved in fixed facility events (94%), while 6% of the victims were injured during transportation events.

The substances released may not necessarily be the most likely to result in victims (Table 6). For example, Other Inorganic Substances were released during 778 events; however, only 7 (1%) of these events resulted in adverse health effects. Conversely, Acid was released in only 70 events, and 7 (10%) of these events resulted in adverse health effects, indicating its greater potential for immediate harm.

The population groups most often adversely affected were employees (41%) and students (36%) (Figure 4). There were 3 first responder victims in fixed-facility events. Of those, 2 were police officers, and 1 was a firefighter. There were no first responder victims in transportation-related events.

The types of adverse health effects sustained by victims are shown in Table 7 and Figure 5. The victims sustained a total of 184 adverse health effects, and some victims had more than one adverse health effect. The most commonly reported adverse health

effects in fixed-facility events were respiratory problems (30%, 52), dizziness/central nervous system (CNS) problems (20%, 34), and trauma (13%, 23). In transportation-related events, respiratory problems (33%, 4) and trauma (25%, 3) were reported most frequently. Trauma was reported more frequently in transportation-related events (25%, 3) than in fixed-facility events (13%, 23). The trauma might have been caused by the sequence of events (for example, a motor vehicle accident) leading to the release of a hazardous substance, and not necessarily by exposure to the hazardous substance itself.

The sex of 29% of the victims was known; of these, 75% were male. Among the population groups, the emergency responders (100%) and employees (100%) were male. Of the general public, 56% of the victims were female. The age of 39% of the victims was known; of these, the mean age was 17.3 years (range: [2-53] years). Of the 140 victims, 78 (56%) were treated at the hospital (not admitted), and 37 (26%) were treated at the scene of the event (Figure 6**).**

Among victims, 67% of employees, 67% of first responders, and 100% of students had not worn any form of PPE. For employee victims reported as wearing PPE, 6% were listed as wearing “unknown” type of PPE. Of the first responder victims, the most frequently worn PPE was firefighter turn-out gear without respiratory protection (33%).

Level "A" protection is worn when the highest level of respiratory, skin, and eye protection is needed. It includes a supplied-air respirator, approved by the Mine Safety and Health Administration (MSHA), U.S. Department of Labor, and the National Institute for Occupational Safety and Health (NIOSH); pressure-demand, self-contained breathing apparatus; fully encapsulating chemical-resistant suit; coveralls; long cotton underwear; chemical resistant gloves (inner); boots, chemical-resistant, steel toe and shank; hard hat; disposable gloves and boot covers; cooling unit; and 2-way radio communications. Level "D" is worn as a work uniform and is not recommended for sites with respiratory or skin hazards. Level "D" includes coveralls, gloves, boots/shoes (leather or chemical-resistant, steel toe and shank), safety glasses or chemical splash goggles, and hard hat. Level "D" provides no protection against chemical hazards. Firefighter turnout gear is protective clothing normally worn by firefighters during structural fire-fighting operations, and is similar to level "D" protection. In Utah during calendar years 2000-2001, from events reported to the Utah Department of Health HSEES program, one person was reported to have died.

EVACUATION

Evacuations were ordered in 24 (3%) events, and the evacuation status of the 837 events reported was known in all cases. Of known evacuations, 18 (75%) were of a building or the affected part of a building, 6 (25%) were of an area beside an affected building, and 0 (0%) were reported as having no criteria. The median number of persons evacuated was 25 (range: 1-280), and the median length of evacuation was 3 hours (range: 1-90 hours). In 1 event, in-place sheltering was ordered by an official, and no instructions regarding precautions to take during in-place sheltering were provided.

CONTINGENCY PLANS

The types of contingency or preparedness plans used during an event varied. Contingency plans were identified as being used 95% of the time. Plans included company standard operating procedure (79%), HAZMAT response team standard operating procedure (14%), unknown (0.6%), incident specific ad hoc plan (0.4%), Other (0.3%), and RCRA contingency plan (0.2%).

SUMMARY OF UTAH EVENTS

During the 2 year period 2000-2001, 837 hazardous substance events qualified for entry into the Utah HSEES program database. Of these events, 548 (65%) occurred at fixed facilities, and 289 (35%) were transportation related. The most common factors resulting in an event at a fixed facility involved material handling, or failure of ancillary process equipment. Of the 289 transportation events, 91% involved ground transportation, and 5% involved hazardous substances hauled by rail.

Seventy-one percent of events in Utah involved the release of only one substance, and 25% involved 3-5 substances. Sixty-four percent of the time the release was volatilized, and released in the air, while 35% of the time the release was a liquid spill. The substances most frequently released were Sulfur Dioxide (233 events), Carbon Monoxide (177), Volatile Organic Compounds (127), Nitric Oxide (117), Nitrogen Dioxide (74), Corrosive liquid NOS (57), Hydrogen sulfide (56), Chlorine (24), Isopropanol (24), Flammable liquid NOS (22), and Oxides of Nitrogen NOS (22).

In Utah, during calendar year 2001, three different HSEES events resulted in a total of 500 people being evacuated. All three releases occurred at fixed site facilities. No evacuations were required for transportation events. The substances that were released were Hydrochloric Acid, Ammonia, and Chlorine.

The first release involving hydrochloric acid resulted in a total of 120 people ordered to evacuate. One person was sent to the hospital for observation for breathing noxious fumes. Due to human error, approximately one liter of HCL spilled at a laboratory drug testing facility. Fire Department personnel were called, and promptly evacuated 120 people from two buildings, and shut down a main east-west street for three hours. Twenty-six people were examined and released by paramedics at the scene. The release occurred around noon, and a total of 30 employees and 5 responders required decontamination procedures at the scene. The response was coordinated by the county fire department who followed the HAZMAT response team standard operating procedures.

A total of 280 persons were evacuated from a household electrical appliance manufacturing facility as a precaution when approximately 100 pounds of anhydrous

ammonia was released from a storage tank. The tank had overheated due to factors related to the maintenance of the unit. As a result of the overheating, the tank relief valve opened for approximately 10 minutes. No persons required hospitalization, or treatment at the scene. The response was coordinated by company officials who followed the company standard operating procedures, and occurred around 2:00 p.m. local time.

Ninety pounds of chlorine gas was released from a storage cylinder used at a water treatment facility. As a precaution, 100 employees were evacuated from the facility around 2:30 pm local time. The cause of the release was determined to be equipment failure. No persons required treatment at the scene. The response was coordinated by company officials who followed company standard operating procedures.

A total of 346 events occurred in Salt Lake County, which is the most populous county in the state. However, the second most number of events occurred in San Juan county, (252), which is one of the least populated counties. A majority of the events that occurred in San Juan County did so at one particular facility. The facility is a petroleum bulk station and terminal (compression). The most common releases at this facility are comprised of carbon monoxide, sulfur dioxide, volatile organic compounds, and nitrogen oxide. The facility is located in a remote portion of the state, in a sparsely populated area.

USES OF HSEES DATA

This report will be distributed to local health departments, emergency service agencies and providers, first responders, high risk industries, and other interested stakeholders. As trends are more accurately identified, intervention strategies will be directed toward those high risk factors noted in order to assist in prevention of injury to responders, and the general public.

SUMMARY OF RESULTS 2000–2001

In Utah, HSEES surveillance commenced with calendar year 2000. Utah HSEES data for this report describes events occurring in calendar years 2000-2001. The number of events, substances released, events with victims, and deaths for the years 2000 through 2001 are shown in Table 8. With limited data (2 years), trend analysis is difficult, and more data are necessary to make an accurate trend analysis. Table 8 indicates that in calendar year 2000, there were more transportation events (163) than fixed facility (140). However, in calendar year 2001, fixed facility events (408) outnumbered transportation events (126). There were more events reported in calendar year 2001 (534) than 2000 (303), and also more substances released (2000, 375; 2001, 1104). It is worth noting that (Figure 7) the number of responders noted as victims were low both years: 2000 (0), 2001 (3). Additionally, the number of events with victims is consistent for years 2000 (11) and 2001 (13) (Figure 8). However, the number of victims did double (2000, 46; 2001, 94).

APPENDICES

Appendix 1. The 10 Most Frequently Released Substances, Hazardous Substances Emergency Events Surveillance, Utah, 2000-2001.

Number	Standardized Substance Name	Frequency
1.	Sulfur Dioxide	233
2.	Carbon Monoxide	177
3.	Volatile Organic Compounds	127
4.	Nitric Oxide	117
5.	Nitrogen Dioxide	74
6.	Corrosive Liquid NOS	57
7.	Hydrogen Sulfide	56
8.	Chlorine	24
9.	Isopropanol	24
10.	Flammable Liquid NOS	22
11.	Oxides of Nitrogen NOS	22
Total		933

Table 1.—Number of events meeting the surveillance definition, by year and type of event, Hazardous Substances Emergency Events Surveillance, Utah, 2000-2001.

Year	Type of event				Total no. of events
	Fixed facility		Transportation		
	No. of events	%	No. of events	%	
2000	140	46	163	54	303
2001	408	76	126	24	534
Total	548	65	289	35	837

Figure 1. —Areas of fixed facilities involved in events, Hazardous Substances Emergency Events Surveillance, Utah, 2000-2001.

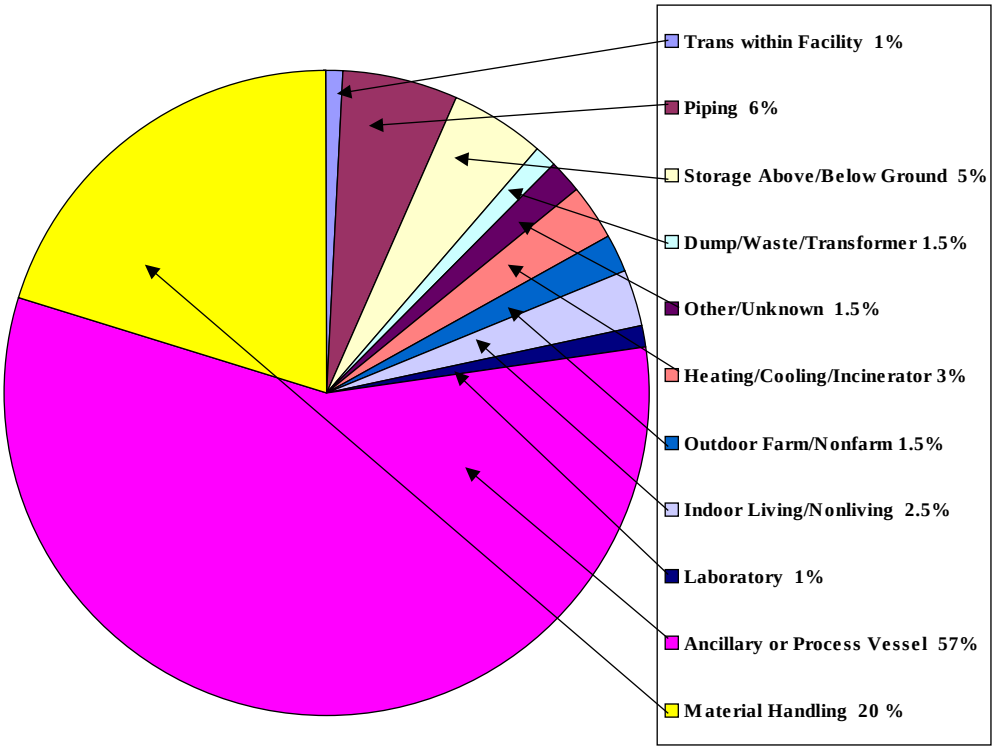


Figure 2. —Distribution of transportation-related events, by type of transport, Hazardous Substances Emergency Events Surveillance, Utah, 2000-2001.

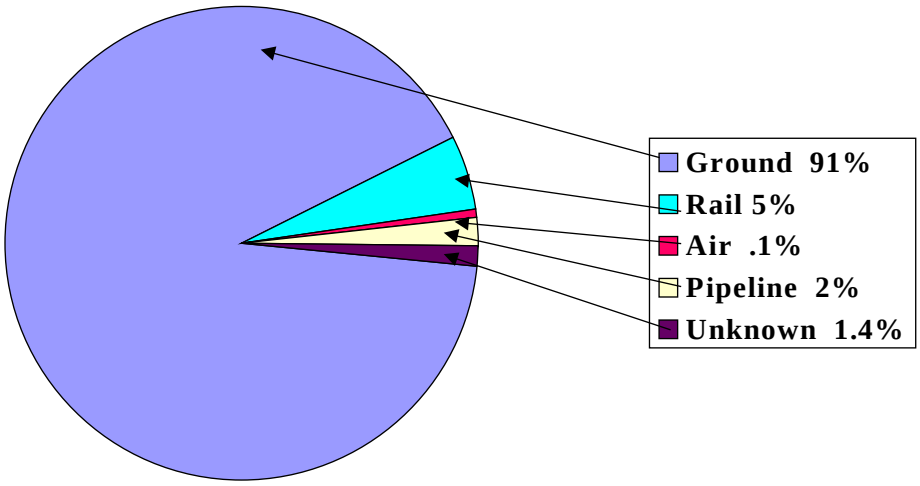


Figure 3. —Factors reported as contributing to the occurrence of fixed-facility events, Hazardous Substances Emergency Events Surveillance, Utah, 2000-2001.

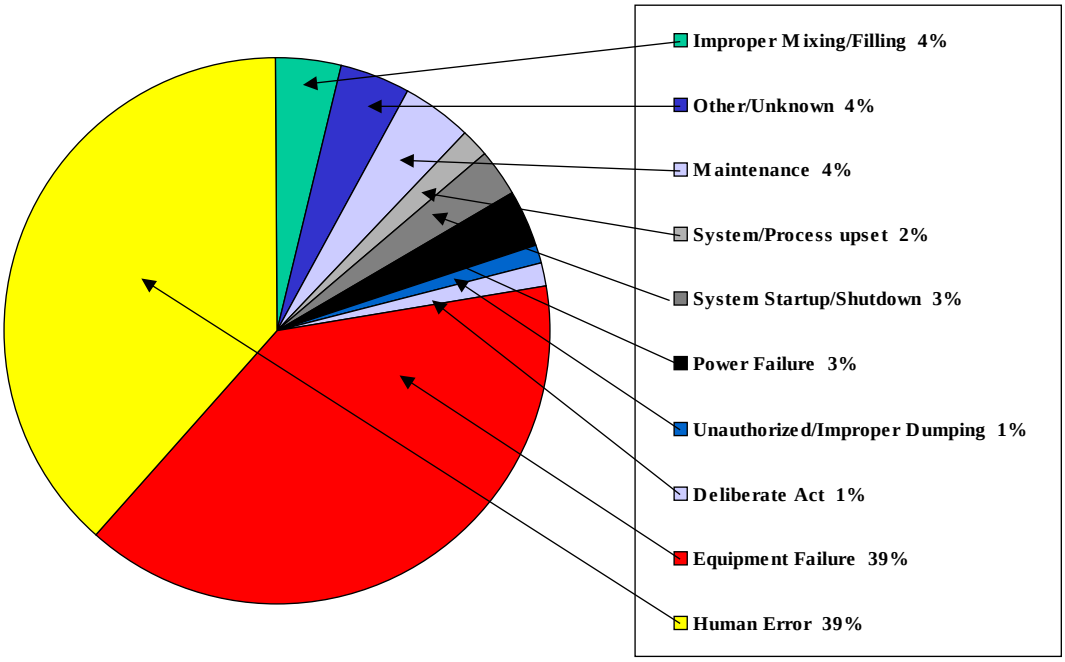

Improper Mixing/Filling 4%
Other/Unknown 4%
Maintenance 4%
System/Process upset 2%
System Startup/Shutdown 3%
Power Failure 3%
Unauthorized/Improper Dumping 1%
Deliberate Act 1%
Equipment Failure 39%
Human Error 39%

Table 2.—Number of events meeting the surveillance definition, by county and type of event, Hazardous Substances Emergency Events Surveillance, Utah, 2000-2001.

County	Type of event				Total no. of events
	Fixed facility		Transportation		
	No. of events	%	No. of events	%	
Beaver	1	0.2	0	0	1
Box Elder	3	0.5	0	0	3
Cache	3	0.5	1	0.3	4
Carbon	5	0.9	2	0.7	7
Davis	31	5.7	84	29.2	115
Duchesne	1	0.2	1	0.3	2
Grand	1	0.2	0	0	1
Iron	2	0.4	5	1.7	7
Millard	2	0.4	0	0	2
Salt Lake	180	32.8	166	57.5	346
San Juan	249	45.4	3	1.0	252
Summit	2	0.4	0	0	2
Tooele	32	5.8	8	2.8	40
Uintah	3	0.5	5	1.7	8
Utah	23	4.2	5	1.7	28
Wasatch	0	0	2	0.7	2
Washington	1	0.2	1	0.3	2
Weber	9	1.7	6	2.1	15
Total	548	100	289	100	837

Table 3.—Distribution of the number of substances released, by type of event, Hazardous Substances Emergency Events Surveillance, Utah, 2000-2001.

No. of substances released	Type of event						All events		
	Fixed facility			Transportation					
	No. events	%	No. of substances	No. events	%	No. of substances	No. events	%	No. of substances
1	318	58.0	318	280	96.9	280	598	71.4	598
2	25	4.6	50	5	1.8	10	30	3.6	60
3	73	13.3	219	2	0.7	6	75	9	225
4	73	13.3	292	1	0.3	4	74	8.8	296
≥ 5	59	10.8	295	1	0.3	5	60	7.2	300
Total	548	100	1174	289	100	305	837	100	1479

Table 4.—Distribution of the number of substances released, by substance category and type of event, Hazardous Substances Emergency Events Surveillance, Utah, 2000-2001.

Substance category	Type of event				All events	
	Fixed facility		Transportation			
	No. of substances	(%)	No. of substances	(%)	No. of substances	(%)
Acids	37	(3.2)	33	(10.8)	70	(4.7)
Ammonia	5	(0.4)	3	(1.0)	8	(0.6)
Bases	13	(1.1)	15	(4.9)	28	(1.9)
Chlorine	25	(2.1)	0	(0)	25	(1.7)
Mixtures*	15	(1.3)	6	(2.0)	21	(1.4)
Other inorganic substances	737	(62.7)	41	(13.4)	778	(52.6)
Other substances	137	(11.7)	132	(43.3)	269	(18.2)
Paints and dyes	5	(0.4)	7	(2.3)	12	(0.8)
Pesticides	6	(0.5)	10	(3.3)	16	(1.1)
Polychlorinated biphenyls	3	(0.3)	0	(0)	3	(0.2)
Volatile organic compounds	191	(16.3)	58	(19.0)	249	(16.8)
Total	1174	(100)	305	(100)	1479	(100)

* Mixtures of substances from different categories.

Table 5.—Distribution of the number of victims, by type of event, Hazardous Substances Emergency Events Surveillance, Utah, 2000-2001.

No. of Victims	Type of Event					All Events		
	Fixed Facility			Transportation				
	No. of events	(%)	No. of victims	No. of events	(%)	No. of victims	No. of events	(%)	No. of victims
1	8	(47.1)	8	6	(85.7)	6	14	(58.3)	14
2	2	(11.8)	4	1	(14.3)	2	3	(12.5)	6
3	1	(5.9)	3	0	(0)	0	1	(4.2)	3
4	0	(0)	0	0	(0)	0	0	(0)	0
5	0	(0)	0	0	(0)	0	0	(0)	0
≥ 6	6	(35.2)	117	0	(0)	0	6	(25)	117
Total	17	(100)	132	7	(100)	8	24	(100)	140

Figure 4. —Distribution of victims by population group and type of event, Hazardous Substances Emergency Events Surveillance, Utah, 2000-2001.

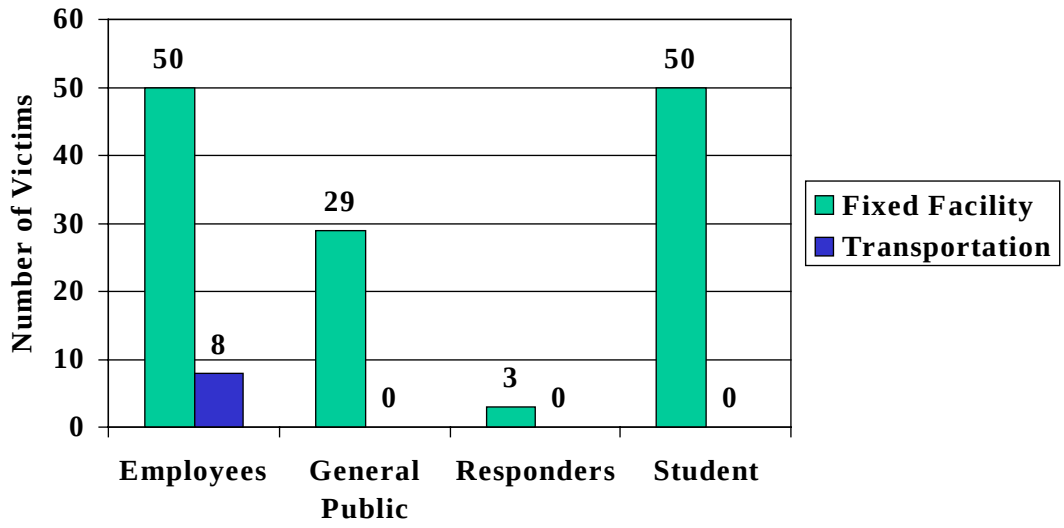

60
50
40
30
20
10
0
Number of Victims
50
8
29
0
3
0
50
0
Employees
General Public
Responders
Student
Fixed Facility
Transportation

Table 6.—Number of substances released in all events and events with victims, by substance category, Hazardous Substances Emergency Events Surveillance, Utah, 2000-2001.

Substance category	Total releases		Releases with victims		
	Number	Percentage of total releases	Number	Percentage of all releases with victims	Percentage of releases in substance category
Acids	70	(4.7)	7	(23.3)	(10)
Ammonia	8	(0.6)	0	(0)	(0)
Bases	28	(1.9)	0	(0)	(0)
Chlorine	25	(1.7)	0	(0)	(0)
Mixtures	21	(1.4)	3	(10)	(14.3)
Other inorganic substances	778	(52.6)	7	(23.3)	(0.9)
Other, not otherwise specified	269	(18.2)	6	(20)	(2.2)
Paints and dyes	12	(0.8)	2	(6.7)	(16.7)
Pesticides	16	(1.1)	1	(3.3)	(6.3)
Polychlorinated biphenyls	3	(0.2)	0	(0)	(0)
Volatile organic compounds	249	(16.8)	4	(13.3)	(1.6)
Total*	1479	(100)	30	(100)	(2.0)

*Total exceeds total number of events because events at which more than one substance was released were counted more than once.

Figure 5. —Distribution of type of injury for all events, Hazardous Substances Emergency Events Surveillance, Utah, 2000-2001*.

*A total of 184 injuries were reported. The number of injuries was greater than the number of victims because some victims had more than one injury

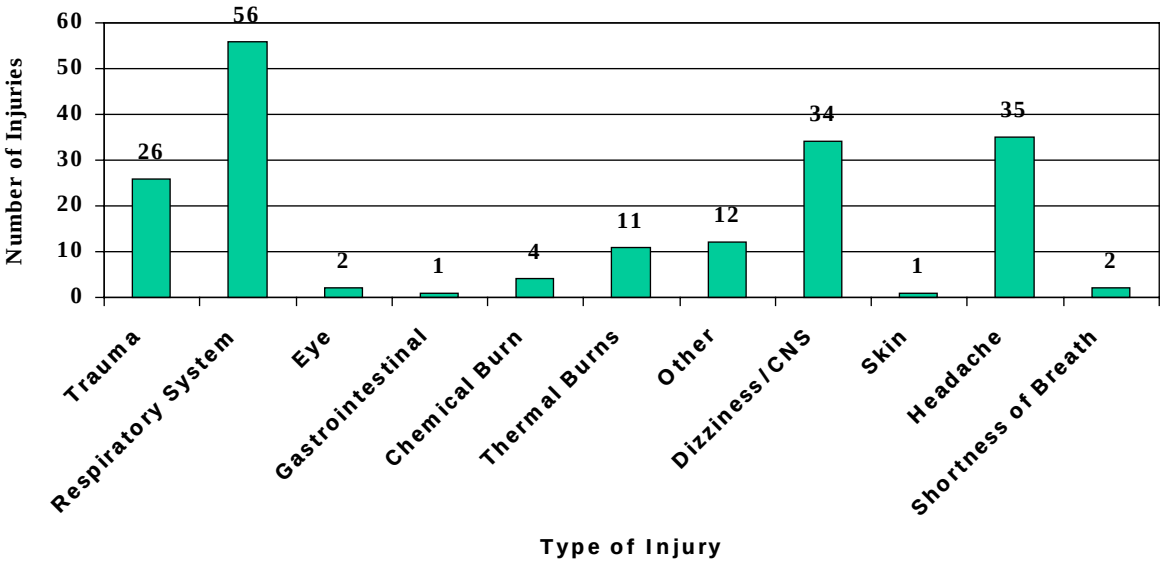

Number of Injuries
60
50
40
30
20
10
0
26
56
2
1
4
11
12
34
1
35
2
Trauma
Respiratory System
Eye
Gastrointestinal
Chemical Burn
Thermal Burns
Other
Dizziness/CNS
Skin
Headache
Shortness of Breath
Type of Injury

Figure 6. —Injury outcome, Hazardous Substances Emergency Events Surveillance, Utah, 2000-2001.

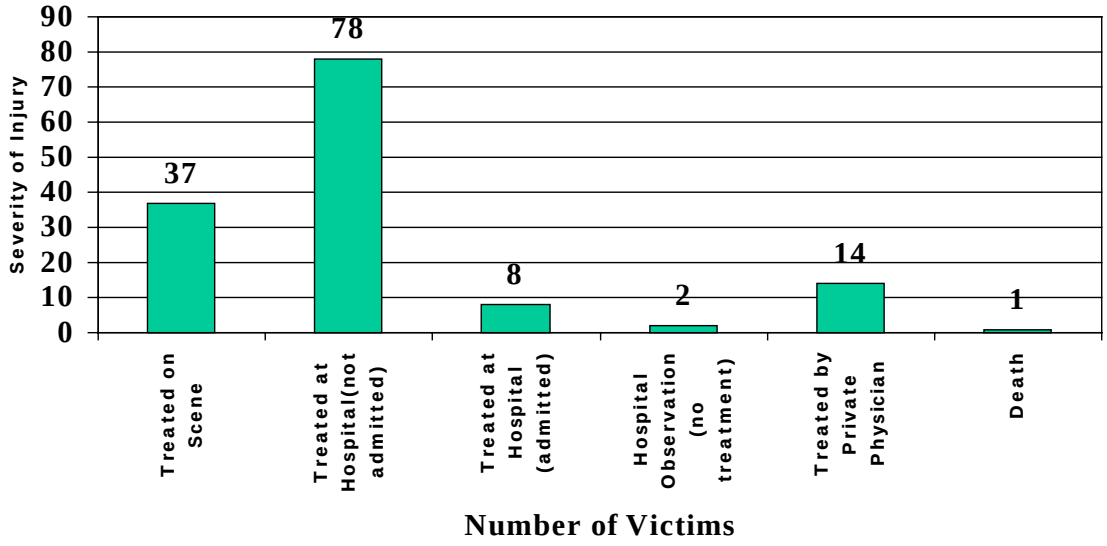

90
80
70
60
50
40
30
20
10
0
Severity of Injury
37
78
8
2
14
1
Treated on Scene
Treated at Hospital(not admitted)
Treated at Hospital (admitted)
Hospital Observation (no treatment)
Treated by Private Physician
Death
Number of Victims

Table 7.—Distribution of type of adverse health effect, by type of event,* Hazardous Substances Emergency Events Surveillance, Utah, 2000-2001.

Type of adverse health effect	Type of events				All events	
	Fixed facility		Transportation			
	Number	%	Number	%	Number	%
Chemical burns	4	2.3	0	0	4	2.2
Dizziness/CNS†	34	19.8	0	0	34	18.5
Eye irritation	2	1.2	0	0	2	1.1
Headache	33	19.2	2	17	35	19.0
Gastrointestinal problems	1	0.6	0	0	1	0.5
Respiratory problems	52	30.2	4	33	56	30.4
Shortness of breath	0	0	2	17	2	1.1
Skin irritation	1	0.6	0	0	1	0.5
Thermal burns	11	6.4	0	0	11	6.0
Trauma	23	13.3	3	25	26	14.1
Other	11	6.4	1	8	12	6.6
Total	172	100	12	100	184	100

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

† Central nervous system symptoms.

Table 8.—Cumulative data, Hazardous Substances Emergency Events Surveillance, Utah, 2000-2001.

Year	Type of event			No. of substances released	No. of deaths	No. of victims	Events with victims	
	Fixed facility	Transport	Total				No.	%
2000	140	163	303	375	0	46	11	3.6
2001	408	126	534	1104	0	94	13	2.4
Total	548	289	837	1479	0	140	24	2.9

Figure 7.—Distribution of victims, Hazardous Substances Emergency Events Surveillance, Utah, 2000-2001.

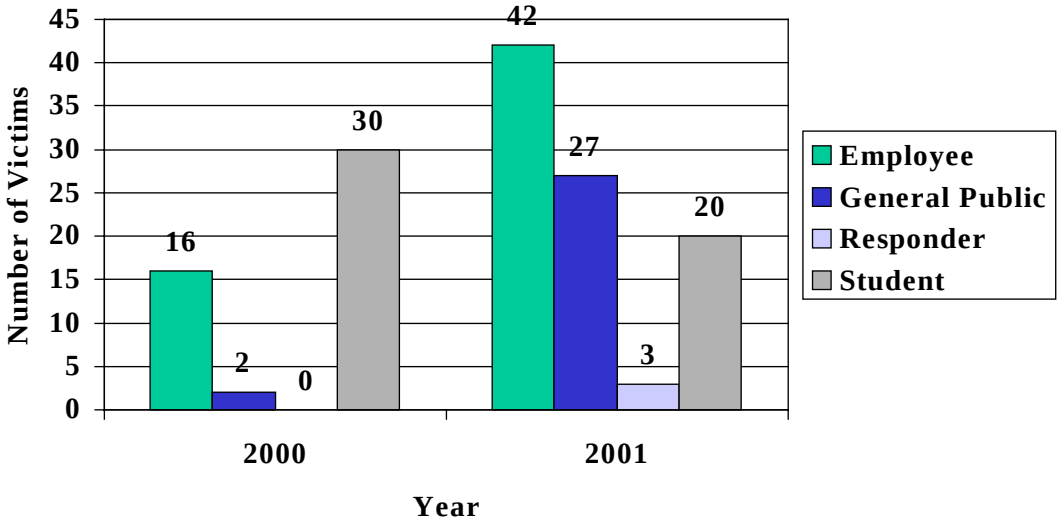
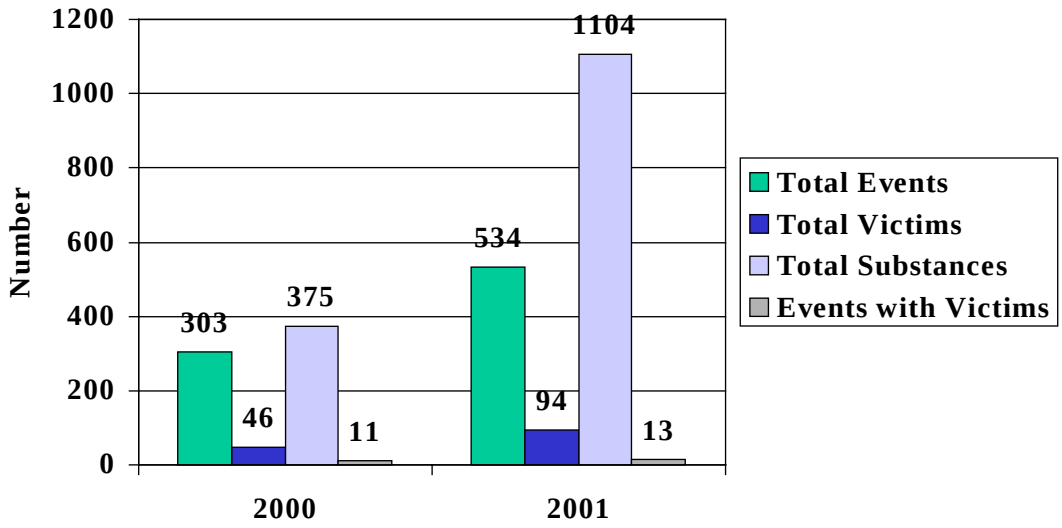

45
40
35
30
25
20
15
10
5
0
Number of Victims
16
2
0
30
42
27
3
20
2000
2001
Year
Employee
General Public
Responder
Student

Figure 8. —Cumulative data for Utah, Hazardous Substances Emergency Events Surveillance, 2000-2001.


1200
1000
800
600
400
200
0
Number
303
46
375
11
534
94
1104
13
2000
2001
Total Events
Total Victims
Total Substances
Events with Victims