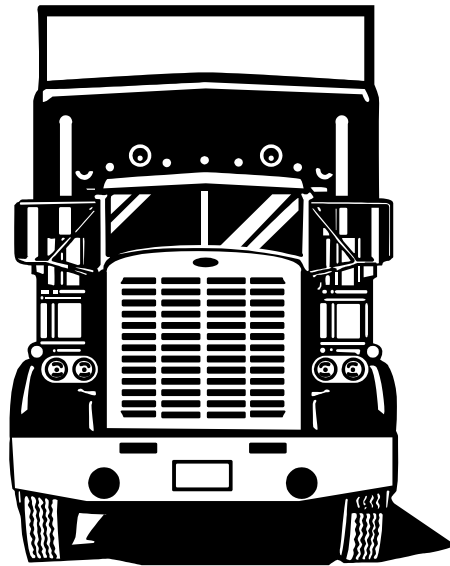


Iowa Hazardous Substances Emergency Events Surveillance (HSEES)

1998 – 2002 Report on Transportation Events



**Bureau of Toxicology and Environmental Health Services
Division of Health Protection and Environmental Health
Iowa Department of Public Health**

To better understand the risks to public health associated with transporting hazardous substances, the Hazardous Substances Emergency Events Surveillance (HSEES) database was examined.

Since 1990, the Agency for Toxic Substances and Disease Registry (ATSDR) has maintained an active, state-based HSEES system to describe the public health consequences associated with the release of hazardous substances. The goal of HSEES is to reduce the injury and death to employees, first responders and the general public that result from hazardous substances events. Since 1990, the Iowa Department of Public Health (IDPH) has participated in this surveillance system. This report summarizes the characteristics of events reported to the surveillance system by the IDPH during 1998 – 2002.

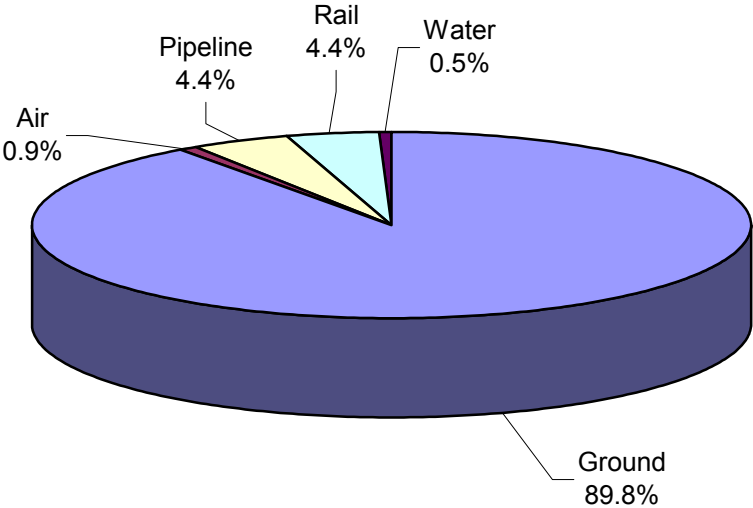
An HSEES event is defined as any emergency release or threatened release of at least one hazardous substance. A substance is considered hazardous if it might reasonably be expected to cause adverse human health effects. Releases of only petroleum products are excluded from this system.

Several data sources were used to obtain the maximum amount of information about each event. These sources include but are not limited to, the Iowa Department of Natural Resources, U.S. Coast Guard National Response Center, the U.S. Department of Transportation Hazardous Material Information System, law enforcement and the media.

The IDPH reported a total of 1,505 events for 1998-2002; of the events, 1,075 (71.4%) occurred at fixed facilities and 430 (28.6%) were transportation related.

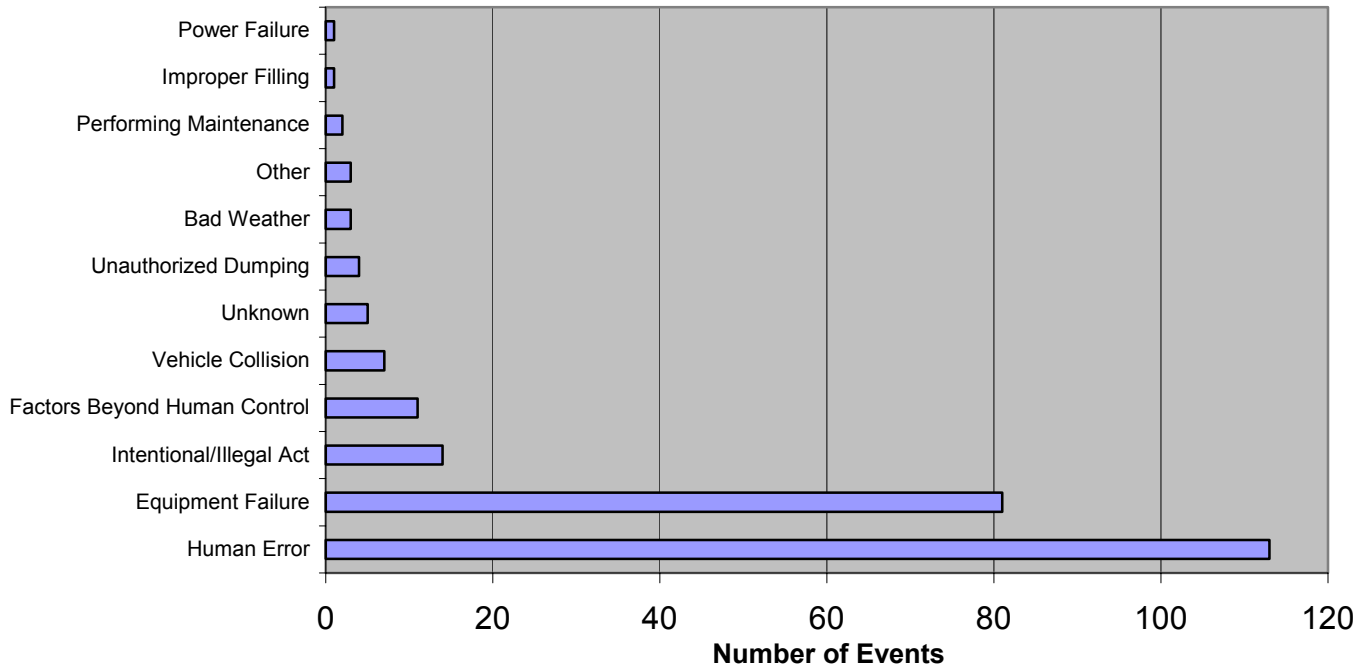
In transportation-related events, 386 (89.8%) occurred during ground transport (for example, truck, van, tractor), 19 (4.4%) involved transport by rail, pipeline events numbered 19 (4.4%), 4 (0.9%) occurred during air transport, and 2 (0.5%) occurred during water transport.

Figure 1
Distribution of transportation-related events, by type of transport
Hazardous Substances Emergency Event Surveillance
Iowa
1998-2002



Beginning in 2000, data was collected on primary factors that contributed to a transportation related event (Figure 2).

Figure 2
 Primary factors reported as contributing to the occurrence of transportation events
 Hazardous Substances Emergency Events Surveillance
 Iowa
 2000-2002



During the 430 events, a total of 491 chemicals were released. Of all transportation related events, approximately 91% involved the release of only one substance.

Table 1
 Distribution of the number of substances released during transportation
 Hazardous Substances Emergency Events Surveillance
 Iowa
 1998-2002

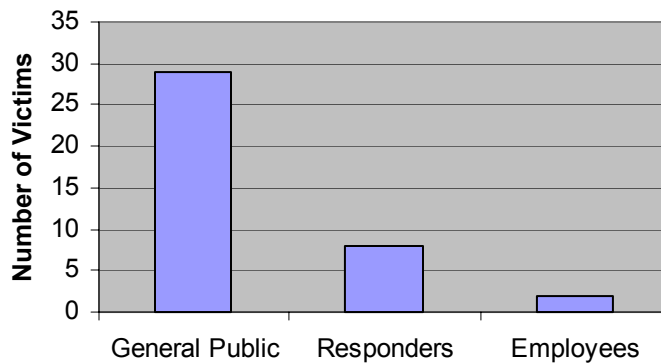
Number of Substances Released	Number of Transportation Events	Number of Substances	% of all Events
1	390	390	90.7
2	27	54	6.3
3	8	24	1.9
4	3	12	0.7
5	1	5	0.2
6	1	6	0.2
Total	430	491	100

Pesticides and ammonia were the most frequently released chemicals in transportation events for 1998 – 2002. Pesticides were released in 114 (26.5%) events and ammonia was released in 69 (16%) events.

A total of 63 victims were involved in 34 transportation events. Of the 63 victims, 24 experienced trauma injuries. The trauma may 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. For the purposes of this report, discussion will focus on victims who received some type of chemical exposure in transportation related events and victims with trauma injuries will not be included.

Most events (64.3%) had only one victim. The highest number of victims for a single event was 20. The population group most often adversely affected was members of the general public.

Figure 3
Distribution of victims by population groups
Hazardous Substances Emergency Events Surveillance
Iowa
1998-2002



The types of adverse health effects sustained by victims are shown in Table 2.

Table 2
 Distribution of type of adverse health effect
 Hazardous Substances Emergency Events Surveillance
 Iowa
 1998-2002

Injury/Symptom	Number of Injuries*	Percent
Gastrointestinal Problems	20	46.5
Dizziness/CNS**	2	4.7
Chemical Burn	3	7.0
Eye Irritation	1	2.3
Respiratory Irritation	11	25.6
Skin Irritation	3	7.0
Headache	1	2.3
Thermal Burn	2	4.7
Total	43	100

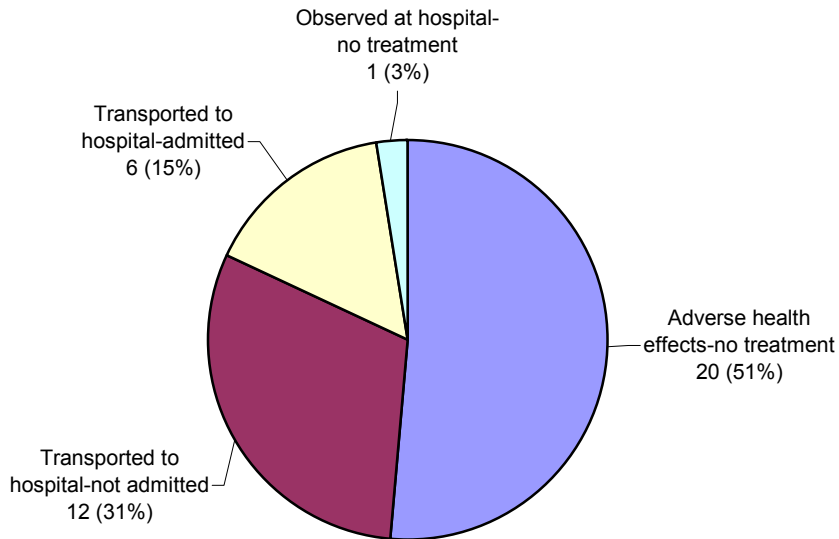
*The number of injuries is greater than the number of victims because a victim could have had more than one injury.

**Central nervous system symptoms.

***Victims with trauma related injuries are not included

Most victims (20) experienced adverse health effects but did not seek medical treatment. The injury outcomes from transportation related events are shown in Figure 4.

Figure 4
Injury Outcome
Hazardous Substances Emergency Events Surveillance
Iowa
1998-2002



*Victims with only trauma related injuries were excluded.

Every day there are hundreds of loads of hazardous materials crossing Iowa. The vast majority arrives at their destination safely but there still remains the potential for release where fatalities, serious injury and large-scale evacuations may occur. Human error is the greatest primary factor in transportation related chemical releases. It is essential that those persons responsible for handling hazardous materials be adequately trained. In a five-year period, there were 24 people who received trauma related injuries and 39 people who received chemical related injuries during the transportation of hazardous materials. Most of the victims were members of the general public. In a single incident 20 people, all members of the general public, experienced adverse health effects when methamphetamine oil was released on the airplane they were traveling on. Maintaining effective employee training and safe work practices will continue to minimize the number of events involving chemical releases and associated releases. The general public needs to better perceive the risks associated with placarded vehicles and gain an understanding of widespread consequences that could occur as a result of unsafe driving practices. Ideally, safeguards should be in place to help protect the hazardous material shipper, the driver, and the recipient of the hazardous material plus the surrounding community.