



DEPARTMENT OF  
**MINERALS AND ENERGY**  
WESTERN AUSTRALIA



GOVERNMENT OF  
WESTERN AUSTRALIA

**Explosives and Dangerous Goods Act 1961**

**Dangerous Goods (Transport) Act 1998**

**SUMMARY OF ACCIDENT REPORTS**

**1999**

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**EXPLOSIVES AND DANGEROUS GOODS DIVISION**

**MINERAL HOUSE, 100 PLAIN STREET, EAST PERTH, WESTERN AUSTRALIA**



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# Summary of Accident Reports 1999

## Summary Overview

1999 saw an improvement in accident rates in all categories: explosives, transport and dangerous goods storage. The biggest improvement was in transport, down to 18 accidents from the dismal performance of 27 last year.

In the storage area, the most significant incidents were a methyl bromide release on a Carnarvon plantation and the release of a solution containing arsenic trioxide in the Kwinana industrial area.

In transport, the full impact of the on-road enforcement program has yet to be felt and this will hopefully result in a further reduction in transport incidents.

Unfortunately, explosives continue to attract experimentation by a small group of people who often suffer serious injury as a result. There was another such case in 1999. That and two fireworks incidents, was the total for the year.

The Division will continue to work with industry and keep the pressure on to continue the downward trend in accidents by continuing:

- ◆ the training sessions on the legislation; and
- ◆ with legal action, prosecutions and on-the-spot fines.



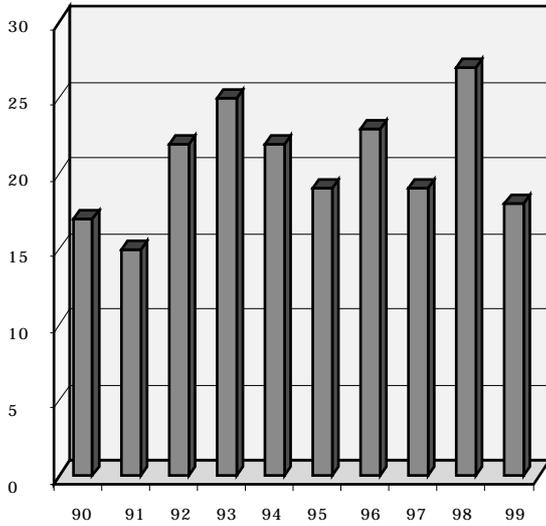
**K Price**

**Director  
Explosives and Dangerous Goods Division**

2 May, 2000

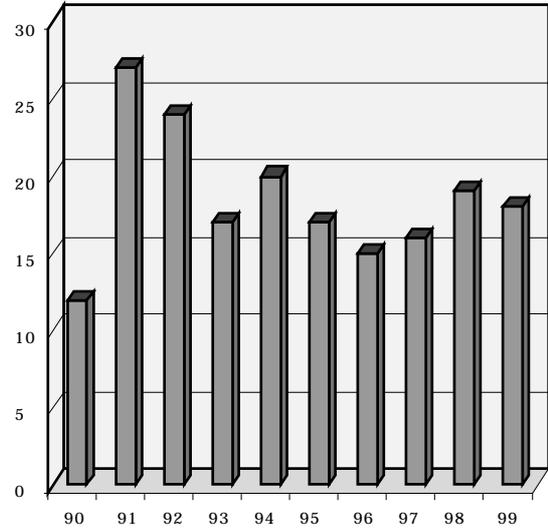
# Explosives and Dangerous Goods Accident Statistics

### Transport Accidents



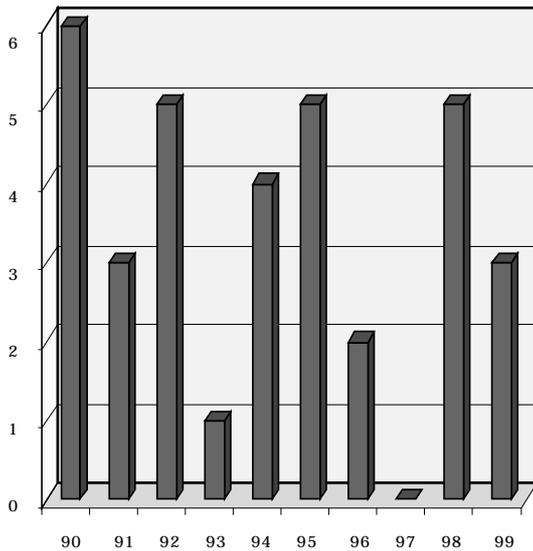
The number of dangerous goods transport accidents recorded in 1999 was less than the number recorded in 1998 and less than the ten-year average of 21.

### Storage Accidents



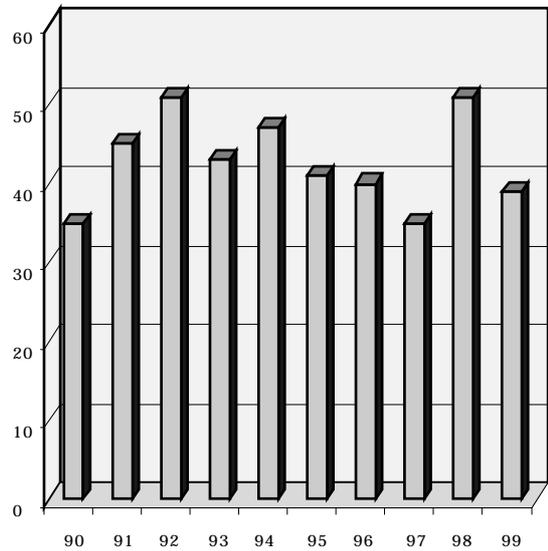
The number of storage accidents recorded in 1999 was one less than recorded in the previous year, however it is equal to the average for the last ten years.

### Explosives Accidents



Three accidents were recorded in 1999, just under the ten-year average of three and a half.

### Total Accidents



The total number of accidents recorded in 1999 was less than the number recorded in 1998 and is less than the ten-year average of 43.

# Explosives Accidents

## Introduction

There were three reportable explosives incidents during 1999, which is about the average for the last 10 years and an improvement on the five incidents recorded in 1998.

One of the incidents involved unauthorised use of explosives that resulted in severe injuries to the hands of the user. Incidents resulting from the unauthorised use of explosives unfortunately occur almost each year and reinforce our view that only persons with demonstrated experience and authority to possess explosives, should handle them. The Division, through inspections and correspondence, is working to reduce these incidents by ensuring that those persons with authority to possess explosives are aware of their responsibilities in relation to the security of explosives.

Another of the incidents resulted in burns to a spectator at a fireworks display, when fireworks were fired too close to spectators. This incident has resulted in the drafting of a Code of Practice, for fireworks displays, and the Division has commenced legal action against the fireworks operator. The Code of Practice will specify safety distances between fireworks and spectators, which should minimise the recurrence of this type of incident.

## Explosives Accident Summary Reports

	<b>Date</b>	<b>Location</b>	<b>Goods</b>	<b>Class</b>	<b>Comments</b>
W01	21/01/99	EAST PERTH	<b>Fireworks</b>	1.4	The failure of a pyrotechnics operator to follow procedures resulted in a premature detonation of a pyrotechnic effect.
W02	24/04/99	CRAIGIE	<b>Detonators, Non-Electric, For Blasting</b>	1.1	A boy sustained serious hand injuries when a homemade explosive device detonated prematurely.
W03	03/07/99	SUBIACO	<b>Fireworks</b>	1.4	At a fireworks display a spectator was burnt due to a firework malfunctioning and insufficient separation distance from the spectators' area.

# Explosives Accident Report

**Date** : 21 January 1999      **Time** : 1300 hours

**Location** : Adelaide Tce  
EAST PERTH

**Explosives Involved** : **FIREWORKS**

Class	1.4
Compatibility Group	G
UN No.	0431
Quantity Present	1
Quantity Involved	1

## Incident

A pyrotechnics operator was preparing for a show later that evening, in a hotel ballroom, when a theatrical pyrotechnic initiated prematurely.

The operator had instructed his assistant not to load any pyrotechnics when setting up the equipment as part of the firing system was thought to be faulty. However, a medium-sized maroon had been connected and when testing the equipment for a firing signal, the pyrotechnic initiated. As the equipment was correctly separated from other people in the room, there were no injuries.

## Cause

The pyrotechnics operator did not follow his operating procedures and allowed a theatrical pyrotechnic device to be connected to faulty electrical firing equipment, which was initiated by an unapproved circuit tester.

## Consequences

The operator was instructed to repair the faulty equipment prior to proceeding with the show, review his operating procedures and use an approved circuit tester to check electrical continuity.

**EA : WO1/99**

**FILE NO. : 34/99**





# **Dangerous Goods Storage Accidents**

## **Introduction**

Eighteen incidents involving the storage of dangerous goods, which met the criteria for the recording of an accident, were notified to the Division in 1999, compared with nineteen in 1998 and sixteen in 1997.

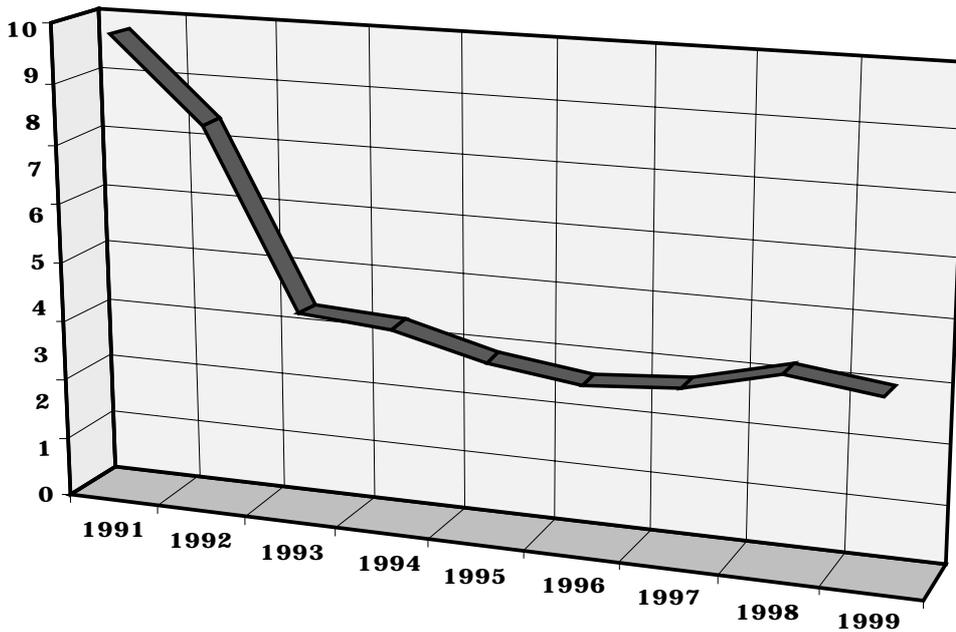
The most significant incidents of 1999 were a methyl bromide release on a Carnarvon plantation and the release of a solution containing arsenic trioxide in the Kwinana industrial area.

There were no serious injuries with the Carnarvon incident and an outcome of the incident investigation was a concerted inspection campaign of methyl bromide storage in the Carnarvon region, which resulted in a significant improvement in methyl bromide storage in the area. Similar inspection campaigns are planned for Kununurra plantations and Perth suppliers during 2000.

As a result of the Kwinana incident, the Division has commenced legal proceedings against the dangerous goods licensee, for breaches of the Explosives and Dangerous Goods (Dangerous Goods Handling and Storage) Regulations 1992.

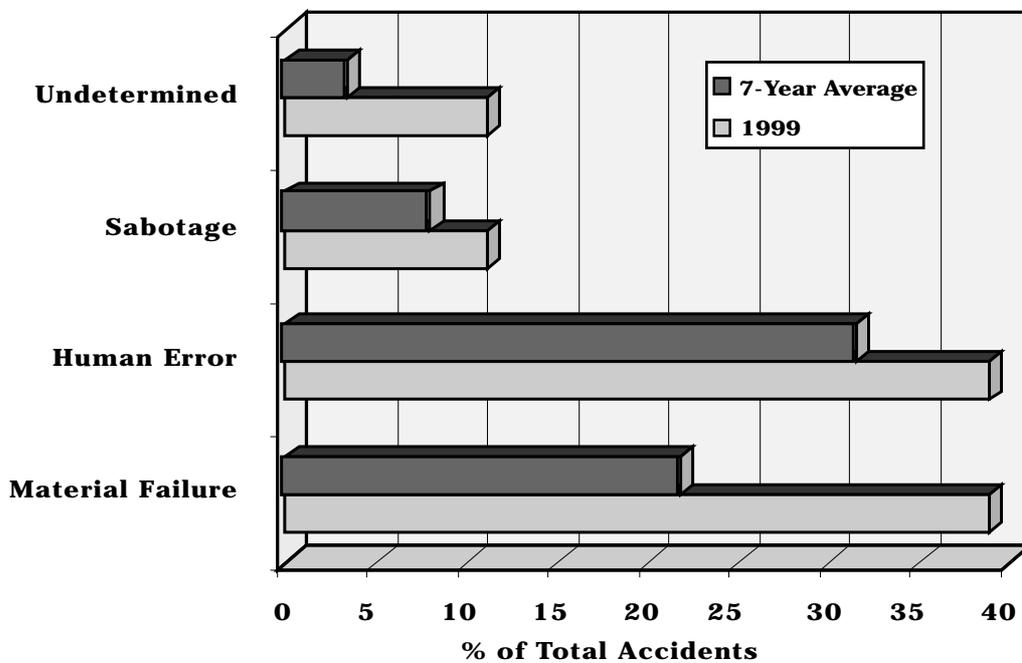
Early in the year, there were three anhydrous ammonia releases from refrigeration systems. Following the Division's investigation of the accidents, the licensees were required to upgrade their preventive maintenance programs. One of the licensees was prosecuted for breaches of the Dangerous Goods Regulations 1992.

## Selected Storage Accident Statistics



### Number of Accidents per 1 000 Licensed Premises

The 1999 figure is similar to that recorded in recent years, confirming the trend of about three accidents per 1 000 licensed premises.



### Causes of Storage Accidents - (1999 vs 7-Year Average)

In line with previous years, the major causal group of storage accidents is the failure of people to follow standard operating procedures (reported as human error), and material failure.

## Dangerous Goods Storage Accident Summary Reports

	<b>Date</b>	<b>Location</b>	<b>Goods</b>	<b>Class</b>	<b>Comments</b>
W01	05/01/99	OSBORNE PARK	<b>Diesel Fuel</b>	C1	An overhead diesel pipeline broke causing the contents of a diesel tank to spill into a nearby stormwater drain.
W03	26/01/99	SUBIACO	<b>Petroleum Gases, Liquefied. Mixed Cylinder Gases</b>	2.1 2.2	Gas cylinders, which had been loaded onto a vehicle ready for distribution, were involved in a fire that destroyed the vehicle and damaged a large number of nearby empty cylinders.
W05	11/02/99	OSBORNE PARK	<b>Ammonia, Anhydrous</b>	2.3	Failure of a valve in an ammonia refrigeration system resulted in release of 56 kg of anhydrous ammonia to the atmosphere.
W04	11/02/99	KWINANA	<b>Ammonia, Anhydrous</b>	2.3	Contractors at an adjacent construction site required medical attention after a mixture of ammonia and synthesis gas was released from a chemical plant vent during a process upset.
W06	19/02/99	PALMYRA	<b>Ammonia, Anhydrous</b>	2.3	The failure of a corroded pipe in a refrigeration system resulted in release of 340 kg of ammonia to the atmosphere.
W07	27/02/99	MYAREE	<b>Sulfur Dioxide</b>	2.3	A sulfur dioxide system drawing from a cylinder leaked inside a glass manufacturing factory. There were no injuries and the system has been modified to prevent a recurrence.
W09	13/03/99	OSBORNE PARK	<b>Petroleum Gases, Liquefied</b>	2.1	Vandals opened vent valves and removed valve seals on two 190-kg LP Gas cylinders, as the cylinder security covers had been left unlocked. There were no injuries or damage as a result of the release.
W17	18/03/99	ALBANY	<b>Fluosilicic Acid</b>	8	An acid spill caused the closure of a water treatment plant. The spill was neutralised and cleaned up without further incident. There were no injuries as a result of the spill.
W08	19/03/99	CASUARINA	<b>Diesel Fuel</b>	C1	A customer caused the malfunction of a diesel dispenser unit at a service station, resulting in the spillage of approximately 25 litres of diesel, which was contained on-site.

# Dangerous Goods Storage Accident Summary Reports

	<b>Date</b>	<b>Location</b>	<b>Goods</b>	<b>Class</b>	<b>Comments</b>
W10	09/04/99	KEWDALE	<b>Ammonia, Anhydrous</b>	2.3	Failure of several components in an ammonia refrigeration system resulted in release of 430 kg of anhydrous ammonia to the atmosphere.
W18	27/05/99	MUNJINA	<b>Petroleum Gases, Liquefied</b>	2.1	A parked cattle road train rolled and crashed into a 7 500-litre LP Gas storage tank, at a service station, severing tank piping.
W14	03/06/99	KWINANA	<b>Ammonia, Anhydrous. Nitrogen Dioxide</b>	2.3 2.3	A release of process gases, including ammonia, steam and oxides of nitrogen, occurred from a failed gasket during start-up of a chemical plant.
W11	03/06/99	KWINANA	<b>Ammonia, Anhydrous</b>	2.3	A release of ammonia occurred from a chemical plant when a nitrogen hose burst after being pressurised with liquid ammonia.
W12	14/06/99	EAST FREMANTLE	<b>Petrol</b>	3	A leaking underground petrol pump caused petrol to pool in a carpark. The fuel was recovered without further incident.
W13	14/06/99	CARNARVON	<b>Methyl Bromide</b>	2.3	A nominally empty methyl bromide cylinder, stored in a plantation shed, was involved in a shed fire. Emergency responders and bystanders to the fire were taken to hospital for observation.
W15	08/09/99	KWINANA	<b>Arsenic Compound, Liquid, N.O.S.</b>	6.1	A toxic liquid containing arsenic trioxide was released through a surface drainage system, into Cockburn Sound, due to a gasket failure. The flange was part of pipework used for heating a tank that contained the liquid.
W16	29/09/99	ALBANY	<b>Chlorine</b>	2.3	Four bolts on a chlorine vacuum regulator sheared due to chloride-induced-stress cracking, resulting in release of chlorine gas.
W19	01/12/99	KWINANA	<b>Cyanide Solution, N.O.S.</b>	6.1	The combination of a faulty valve and an operator not following standard operating procedure, led to a tank overflowing. The spill was contained within the tank bund and fully recovered without further incident.

# Dangerous Goods Storage Accident Report

**Date** : 5 January 1999                      **Time** : 2000 hours

**Location** : Main St  
OSBORNE PARK

**Dangerous Goods Involved** : **DIESEL FUEL**

Class	C1
Sub-Risk	-
UN No.	-
Packing Group	-
Quantity Present	2 000 litres
Quantity Involved	2 000 litres

## Incident

An overhead diesel pipeline supplying a bakery from an external 2 000-litre elevated tank broke. This caused the contents of the tank to spill outside the bunded area and spread into a nearby stormwater drain.

## Cause

Damage to the 10-millimetre fuel line appeared to be deliberately caused by somebody swinging from the overhead pipe.

## Consequences

The Fire and Emergency Services Authority was contacted immediately, and the spilt material was recovered. The old bronze pipe was replaced with stronger galvanised steel piping.

**DGAS : W01/99**

**FILE No. : 3/99**

# Dangerous Goods Storage Accident Report

**Date** : 26 January 1999      **Time** : 1600 hours

**Location** : Hay St  
SUBIACO

**Dangerous Goods Involved** : **PETROLEUM GASES, LIQUEFIED**

Class	2.1
Sub-Risk	-
UN No.	1075
Packing Group	-
Quantity Present	3 600 litres
Quantity Involved	3 600 litres

**MIXED CYLINDER GASES**

Class	2.2
Sub-Risk	5.1
UN No.	-
Packing Group	-
Quantity Present	1 250 litres
Quantity Involved	1 250 litres

## Incident

A fire and explosion occurred on a gas cylinder delivery vehicle which was parked in the main loading area of a cylinder-filling and distribution operation. The fire completely gutted the vehicle and several explosions during the fire resulted in cylinders being thrown clear. A total of 73 full cylinders on the truck and approximately 1 600 nominally empty cylinders within a 25-metre radius of the vehicle were either destroyed or damaged.

## Cause

Despite a thorough investigation, the cause of the fire has not been determined. However, four possible scenarios have been identified and used to assist future planning.

## Consequences

Cylinder-filling operations have been thoroughly reviewed to ensure that cylinders are not being over-filled. The types of safety relief devices and the direction of venting has also been reviewed. Emergency planning for the site is being reviewed to ensure appropriate information is conveyed, in a timely fashion, to all relevant parties.

**DGAS : W03/99**

**FILE No. : 24/99**

# Dangerous Goods Storage Accident Report

**Date** : 11 February 1999      **Time** : 0450 hours

**Location** : King Edward Rd  
OSBORNE PARK

**Dangerous Goods Involved** : **AMMONIA, ANHYDROUS**

Class	2.3
Sub-Risk	8
UN No.	1005
Packing Group	-
Quantity Present	500 kg
Quantity Involved	56 kg

## Incident

Approximately 56 kg of anhydrous ammonia was released to the atmosphere from a 25-year-old refrigeration system. The emergency services stopped the leak by closing an isolating valve. There was no injury. The site was not licensed for the storage of anhydrous ammonia.

## Causes

One valve failed to close and stop filling up the accumulator of the refrigerating system. This resulted in flooding of the refrigeration compressor by liquefied anhydrous ammonia, causing one of the compressor O-rings to fail, thereby causing the release of anhydrous ammonia to the atmosphere. This points to an inadequate maintenance program.

## Consequences

The operator has been instructed to take appropriate measures so that the refrigerating system complies with the relevant safety standard and the Dangerous Goods Regulations. The operator was successfully prosecuted for failing to placard the site and have a licence to store anhydrous ammonia.

**DGAS : W05/99**

**FILE No. : 37/99**

# Dangerous Goods Storage Accident Report

**Date** : 11 February 1999      **Time** : 1600 hours

**Location** : Kwinana Beach Rd  
KWINANA

**Dangerous Goods Involved** : **AMMONIA, ANHYDROUS**

Class	2.3
Sub-Risk	8
UN No.	1005
Packing Group	-
Quantity Present	2 000 kg
Quantity Involved	400 kg

## Incident

A mixture of synthesis gas and ammonia was released from an ammonia plant during the start-up process following a shutdown for maintenance. The release occurred from a high vent after ammonia had been allowed to collect in the vent system through a valve left open as a result of failure to tag the valve as out of service. During the start-up, operators failed to control levels in the process, resulting in a high level alarm in an ammonia catchpot which led to a release of synthesis gas (as designed) into the vent system. However, as the vent system already contained ammonia, the gas mixture was forced out of the high vent. The wind direction took the gas cloud over an adjacent construction area on the same site resulting in fourteen contract employees experiencing irritation and discomfort and later seeking medical attention. Six of these contractors were physically affected as a result of the exposure but nobody suffered serious or long-term injuries. The ammonia release dispersed and was not detected at neighbouring premises.

## Cause

The incident was caused by a combination of factors including a failure of the tagging system and the failure to adequately control the catchpot level during start-up.

## Consequences

The tagging system for equipment which is out of service, has been reviewed to ensure during maintenance there is no unauthorised operation of equipment. Resource allocation has been reviewed to ensure that process control is secured and level indicators in the catchpot have been assessed to ensure accuracy for process control. Also, workers at the adjacent construction site will now carry gas respirators at all times and will be notified of any operating conditions, such as start-ups and shutdowns, with the potential to lead to releases of gas.

**DGAS : W04/99**

**FILE No. : 35/99**

# Dangerous Goods Storage Accident Report

**Date** : 19 February 1999      **Time** : 1110 hours

**Location** : Leach Hwy  
PALMYRA

**Dangerous Goods Involved** : **AMMONIA, ANHYDROUS**

Class	2.3
Sub-Risk	8
UN No.	1005
Packing Group	-
Quantity Present	3 500 kg
Quantity Involved	340 kg

## Incident

Approximately 340 kg of anhydrous ammonia leaked from a corroded pipe in a 20-year-old refrigeration system. The site was evacuated and emergency service personnel, equipped with self-contained breathing apparatus, isolated the leaking pipe. There was no injury.

## Cause

Failure of equipment due to inadequate maintenance.

## Consequences

The operator has implemented a preventive maintenance program and is upgrading the installation to comply with the relevant Australian safety standard.

**DGAS : W06/99**

**FILE No. : 44/99**



# Dangerous Goods Storage Accident Report

**Date** : 13 March 1999                      **Time** : 0430 hours

**Location** : Howe St  
OSBORNE PARK

**Dangerous Goods Involved** : **PETROLEUM GASES, LIQUEFIED**

Class	2.1
Sub-Risk	-
UN No.	1075
Packing Group	-
Quantity Present	740 litres
Quantity Involved	60 litres

## Incident

Fire and Emergency Services Authority officers attended a site in Osborne Park on receiving advice that two 190-kg LP Gas cylinders were leaking. The officers were unable to stop the leak and requested assistance from the LP Gas supplier. The representative of the LP Gas supplier found that valves on both cylinders were leaking vapour as vent screws had been removed. The representative replaced the screws and stopped the leaks.

## Cause

The leaks occurred because vent screws on both cylinders were removed by unknown persons. The valve protection covers on the cylinders had not been locked.

## Consequences

The representative of the LP Gas supplier locked the cylinder covers. The proprietor was advised that failure to keep the valve protection covers locked at all times was a breach of the Dangerous Goods Regulations 1992 and future failure to comply would result in prosecution.

**DGAS : W09/99**

**FILE No. : 83/99**

# Dangerous Goods Storage Accident Report

**Date** : 18 March 1999      **Time** : 0930 hours

**Location** : Two Peoples Bay Rd  
ALBANY

**Dangerous Goods Involved** : **FLUOSILICIC ACID**

Class	8
Sub-Risk	-
UN No.	1778
Packing Group	II
Quantity Present	6 000 litres
Quantity Involved	30 litres

## Incident

Upon entering the dosing control room at a water treatment plant, an employee noticed a pool of liquid covering the floor. The leak was traced back to the fluosilicic acid dosing line which was dripping from a valve connection. The injection pump was immediately turned off and the acid storage tank was isolated.

The employee wore personal protective equipment and spread a lime and sand mixture over the acid to neutralise it. The sand was left overnight to ensure that the spill was completely neutralised, and the following morning the area was swept up.

## Cause

The PVC pipe carrying the acid split at a valve connection producing a slow leak. This is thought to have been caused by incorrect installation, leading to excessive stress on the pipe.

## Consequences

Approximately 30 litres of acid was spilt. The plant was shutdown for 24 hours to enable the recovery of neutralised product, and for the correct installation of new piping. There were no injuries as a result of the spill.

# Dangerous Goods Storage Accident Report

**Date** : 19 March 1999                      **Time** : 2030 hours

**Location** : Thomas Rd  
CASUARINA

**Dangerous Goods Involved** : **DIESEL FUEL**

Class	Cl
Sub-Risk	-
UN No.	-
Packing Group	-
Quantity Present	20 000 litres
Quantity Involved	25 litres

## Incident

Approximately 25 litres of diesel fuel was spilt from a service station dispenser onto the forecourt area.

## Cause

A customer used undue force to pull a diesel nozzle free of its holster. This caused damage to the dispenser housing and associated mechanical switching devices. When the nozzle was returned to its holster the flow activated and in the time it took for the console operator to hit the emergency stop, a spill occurred.

## Consequences

The spill was contained because the forecourt drainage led to an on-site interceptor. The company involved has notified the manufacturer with a view towards improving the design of the dispenser.

**DGAS : W08/99**

**FILE No. : 68/99**

# Dangerous Goods Storage Accident Report

**Date** : 9 April 1999                      **Time** : 1720 hours

**Location** : Miles Rd  
KEWDALE

**Dangerous Goods Involved** : **AMMONIA, ANHYDROUS**

Class	2.3
Sub-Risk	8
UN No.	1005
Packing Group	-
Quantity Present	1 200 kg
Quantity Involved	430 kg

## Incident

About 430 kg of anhydrous ammonia was released to the atmosphere from a 20-year-old refrigeration system. The leak was stopped by the intervention of emergency services equipped with protective equipment. The site emergency procedures were not adequate to deal with the incident. There was no injury.

## Cause

The accident occurred because of three separate failures: water supply cut-off, high-pressure switch failure and relief-valve failure. This points to inadequate maintenance.

## Consequences

The operator has implemented a preventive maintenance program and is upgrading the installation to comply with the relevant Australian safety standard. The site emergency procedures have been overhauled and revised.

# Dangerous Goods Storage Accident Report

**Date** : 27 May 1999                      **Time** : 1700 hours

**Location** : Gt Northern Hwy  
MUNJINA

**Dangerous Goods Involved** : **PETROLEUM GASES, LIQUEFIED**

Class	2.1
Sub-Risk	-
UN No.	1075
Packing Group	-
Quantity Present	7 500 litres
Quantity Involved	1 litre

## Incident

Piping was sheared from an LP Gas storage tank located at a service station, resulting in a release of LP Gas. A customer activated the emergency shut off for the tank, from the forecourt of the service station, shutting off the gas flow. A wet rag was used to freeze up a small residual leak.

The area surrounding the LP Gas tank was barricaded-off overnight. A recovery tanker arrived the morning following the incident and pumped out the tank contents.

## Cause

A triple road train carrying cattle, that was parked without its handbrake on, rolled 200 metres and through the tank's crash protection and stopped on the LP Gas pump and piping. Some piping and a valve were sheared from the LP Gas tank.

## Consequences

A replacement tank was installed in a location less vulnerable to vehicular collision.

**DGAS : W18/99**

**FILE No. : 243/99**

# Dangerous Goods Storage Accident Report

**Date** : 3 June 1999 **Time** : 1725 hours

**Location** : Kwinana Beach Rd  
KWINANA

**Dangerous Goods Involved** : **AMMONIA, ANHYDROUS**

Class	2.3
Sub-Risk	8
UN No.	1005
Packing Group	-
Quantity Present	40 litres
Quantity Involved	40 litres

**NITROGEN DIOXIDE**

Class	2.3
Sub-Risk	-
UN No.	1067
Packing Group	-
Quantity Present	7 litres
Quantity Involved	7 litres

## Incident

A mixture of process gases was released to the atmosphere through a failed gasket during the start-up of a chemical plant. Operators had just completed the start-up when they heard a large steam release and received alarms from ammonia detectors. The plant was shutdown, however the plume released travelled off-site necessitating the evacuation into refuges of a small number of workers on a neighbouring site. No-one was injured as a result of the release.

## Cause

An investigation showed that the gasket failed as a result of a hole in a boiler tube which had allowed water to pass from the boiler side into the process side. The temperature generated during start-up caused the pooled water to rapidly boil leading to a surge in pressure which resulted in the failure of the gasket. Non-destructive testing of the boiler tubes showed gouge-type corrosion believed to have been caused by flow distribution problems in the boiler. This resulted in excessive metal temperature, which led to corrosion of the tube.

## Consequences

A complete boiler inspection has now been conducted and boiler tubes showing signs of corrosion have been plugged off. Actions to prevent a recurrence include the addition of insulation at the top of all boiler tubes and further investigation into the boiler water chemistry to minimise potential for corrosion. The company has also modified the boiler to incorporate a drain valve in order to provide early warning in the event of water leakage.

**DGAS : W14/99**

**FILE No. : 167/99**

# Dangerous Goods Storage Accident Report

**Date** : 3 June 1999                      **Time** : 0710 hours

**Location** : Kwinana Beach Rd  
KWINANA

**Dangerous Goods Involved** : **AMMONIA, ANHYDROUS**

Class	2.3
Sub-Risk	8
UN No.	1005
Packing Group	-
Quantity Present	1 587 litres
Quantity Involved	284 litres

## Incident

A release of ammonia occurred from a chemical plant when a hose burst following maintenance to an ammonia filter. The release of ammonia was detected by operators due to ammonia alarms and a high flow of ammonia to the plant. The site emergency siren was activated to alert people of the incident and operators isolated the supply of ammonia to the plant. Operators donned personal protective equipment and doused the leak with water in order to gain access to the area to isolate the leak.

## Cause

Ammonia filters were used to remove contaminants from the liquid ammonia, prior to it being processed in the plant. An essential step in the maintenance of filters is a nitrogen purge of the system. After purging occurs, the filter is changed, resealed and the nitrogen hose disconnected. The relevant valves are then opened to recommission the system with ammonia. In this instance, the nitrogen hose remained connected to the filter and drain valves were left open allowing the hose to become pressurised with liquid ammonia. While the hose was suitable for the pressures normally experienced under service with nitrogen, the hose was not suitable for the much higher pressures of liquid ammonia and as a result the hose burst in two places.

## Consequences

The incident occurred as a result of the failure to follow the appropriate procedure and the company has taken the action of reviewing the competence of each operator to carry out the task. The company has also reviewed the operating procedures associated with the filter cleaning process to ensure they are appropriate.

**DGAS : W11/99**

**FILE No. : 137/99**

# Dangerous Goods Storage Accident Report

**Date** : 14 June 1999                      **Time** : 1400 hours

**Location** : Riverside Rd  
EAST FREMANTLE

**Dangerous Goods Involved** : **PETROL**

Class	3
Sub-Risk	-
UN No.	1203
Packing Group	-
Quantity Present	14 400 litres
Quantity Involved	447 litres

## Incident

A contract worker noticed a pool of petrol spreading over a carpark. The petrol appeared to be coming from a submersible petrol pump supplying jetty bowsers from an underground tank. The power to the pump was shut down immediately and the area evacuated. The Fire and Emergency Services Authority arrived and covered the pool with a blanket of fire-suppressant foam. A recovery team collected the spilt fuel. Recovery operations were conducted until the concentration of petrol vapour was below the lower explosive limit for petrol.

## Cause

It was determined that the flange gasket that joins the pipeline, that feeds the bowser to the top of the tank, had failed. One of four bolts holding the flange joint was loose suggesting that it had not been properly secured.

## Consequences

There were no injuries. The operator has reviewed maintenance procedures to ensure that the incident does not recur.

**DGAS : W12/99**

**FILE No. : 138/99**

# Dangerous Goods Storage Accident Report

**Date** : 14 June 1999                      **Time** : 1400 hours

**Location** : North River Rd  
CARNARVON

**Dangerous Goods Involved** : **METHYL BROMIDE**

Class	2.3
Sub-Risk	-
UN No.	1062
Packing Group	-
Quantity Present	420 litres
Quantity Involved	0.5 litres

## Incident

A fire at a plantation involved a shed and an empty cylinder of methyl bromide, stored within the shed. Emergency responders attended the fire and successfully put it out. However during the course of the fire, methyl bromide vapour from the cylinder was released. As a precautionary measure all responders and bystanders were asked to go to the local hospital for observation.

## Cause

The cause of the fire is unknown, however inadequate housekeeping of combustible materials surrounding the shed, caused the shed to be involved in the fire. A lack of placarding, site manifest and site emergency response procedures resulted in emergency responders and bystanders being unknowingly exposed to methyl bromide.

## Consequences

The incident was investigated and it was found that storage of methyl bromide, at plantations in the region, was poor. It was clear that plantation owners, consignors and transporters of methyl bromide, required education in respect to applicable legislative and safe-practice requirements. A number of State Government Departments participated in a program to educate and advise all interested parties in the region involved with the storage, transport and use of methyl bromide.

**DGAS : W13/99**

**FILE No. : 152/99**

# Dangerous Goods Storage Accident Report

**Date** : 8 September 1999      **Time** : 1600 hours

**Location** : Kwinana Beach Rd  
KWINANA

**Dangerous Goods Involved** : **ARSENIC COMPOUND, LIQUID, N.O.S.**

Class	6.1
Sub-Risk	-
UN No.	1556
Packing Group	-
Quantity Present	2 050 kg
Quantity Involved	970 kg

## Incident

A release of toxic liquid (containing arsenic trioxide) from a storage tank occurred following the shutdown of a chemical plant. The release occurred from a steam coil passing through a storage tank used to store the solution during the shutdown. The release flowed into a surface-drainage system, through a series of secondary catchment sumps and ponds, into Cockburn Sound.

## Cause

An investigation into the incident has identified that the toxic liquid was released through a hole in a gasket of a flange. The flange was located on the steam coil pipework within the tank. It was found that the steam-line terminated outside the bunded area in a partially-covered surface-drainage system.

## Consequences

To prevent a recurrence, all steam-lines within the plant were cut to ensure that they terminated within the bunded area. The company has also decommissioned the plant and will commission a new plant that does not utilise arsenic compounds.

# Dangerous Goods Storage Accident Report

**Date** : 29 September 1999      **Time** : 0541 hours

**Location** : Frenchman Bay Rd  
ALBANY

**Dangerous Goods Involved** : **CHLORINE**

Class	2.3
Sub-Risk	8
UN No.	1017
Packing Group	-
Quantity Present	920 kg
Quantity Involved	150 kg

## Incident

Approximately 150 kg of chlorine gas was released over a period of 140 minutes, due to failure of bolts on a vacuum gas regulator attached to an on-line liquefied chlorine gas drum, used for water treatment. The incident occurred outside work hours, however plant operators were not called out, as the plant alarm system was not correctly programmed.

Impact from the release to the surrounding community was limited to chlorine odour being detected by a passing motorist who reported the odour to the operator of the site.

The leak was isolated by a plant operator who arrived at the scene after the release was reported.

## Cause

Inspection of the vacuum gas regulator revealed that the release was due to the failure of four bolts on the regulator. Material test results show that the failure of the stainless steel bolts was due to chloride-induced-stress cracking from chlorine attack, which is assumed to have resulted from an extremely small leak over a short duration.

## Consequences

As part of the investigation, a number of changes to prevent recurrence of the event have been identified and implemented. These include introduction of a weekly leak check, the company committing to inspection of all vacuum regulators, the replacement of any inappropriate bolts and reprogramming of the chlorine alarm. In addition, the company will investigate the use of different alloy bolts.

**DGAS : W16/99**

**FILE No. : 217/99**

# Dangerous Goods Storage Accident Report

**Date** : 1 December 1999      **Time** : 1700 hours

**Location** : Kwinana Beach Rd  
KWINANA

**Dangerous Goods Involved** : **CYANIDE SOLUTION, N.O.S.**

Class	6.1
Sub-Risk	-
UN No.	1935
Packing Group	-
Quantity Present	1 323 000 litres
Quantity Involved	84 000 litres

## Incident

A plant operator responded to a bund alarm and observed sodium cyanide solution overflowing from a storage tank. A pool of approximately 84 000 litres of solution had formed and was contained within the tank bund. The site emergency plan was enacted and an exclusion zone was established around the area whilst the product in the bund was transferred to another tank.

The concrete bund contained the spill, and the recovered solution and all of the washings were kept for use in future blending operations.

## Cause

The combination of a faulty valve and failure by an operator to follow standard operating procedure, led to the tank overfilling. The overflow spilt into the bunded area and activated the bund alarm.

## Consequences

The defective valve was repaired and the tank high-level critical alarm system has been reviewed and improved. The tank overflow piping is also under review to identify options to prevent recurrence. The responsible operator has been counselled on appropriate self-check work systems. There were no injuries or damage to any property as a result of the incident and the emergency response plan functioned as intended.

**DGAS : W19/99**

**FILE No. : 226/99**

# **Dangerous Goods Transport Accidents**

## **Introduction**

There were 18 reportable dangerous goods transport incidents in 1999, which is a reduction from that recorded in 1998 and slightly less than the ten-year average to 1998 of approximately 21.

Three fatalities occurred in incidents where vehicles transporting dangerous goods were involved. However, all of these incidents were traffic-related where there was no significant release of dangerous goods and the dangerous goods being transported did not contribute to the cause of the fatalities.

Two accidents occurred during rail transport and sixteen occurred on road. Ten road incidents involved transport in, or transfer from, bulk containers whilst six incidents involved packaged dangerous goods. Seven of the accidents, including the incidents leading to the three fatalities, were traffic-related incidents.

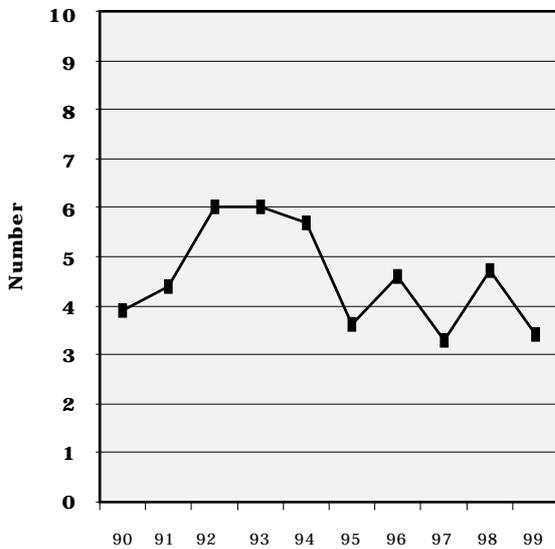
It is a tribute to the international engineering design standards of the dangerous goods tanks and packages, and high compliance with these standards, that loss of containment as a result of road crashes was low.

Rail incidents involving sulfuric acid were identified as a problem area during 1998 and the Division worked with consignors and carriers to ensure that modifications were made to design faults. No such incidents were reported during 1999. The two rail incidents that were recorded during 1999 related to minor vapour leaks from ammonia tankers and this problem has been thoroughly investigated and it was found that the flange gaskets used were inappropriate. All gaskets on the rail tanker fleet have now been replaced, and no further problems have been experienced. A number of less significant rail incidents also occurred during 1999 and as a result, the Division will continue to focus its efforts to ensure rail operators have appropriate safety management systems in place.

The introduction of the on-road enforcement program was delayed during 1999 but is now progressing well. The program should get into full swing during 2000 and it is anticipated that the introduction of on-the-spot fines should result in improved compliance and reduced transport incidents, further boosting the ongoing safety improvement in the transport of dangerous goods.

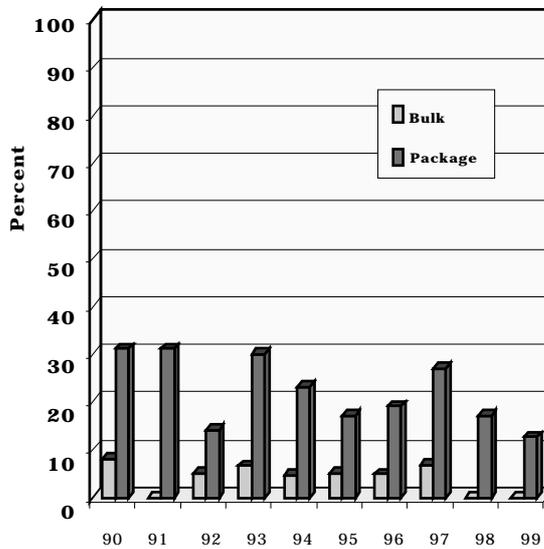
# Selected Road Transport Accident Statistics

**Number of Accidents per 1 000 Licensed Vehicles (Bulk Only)**



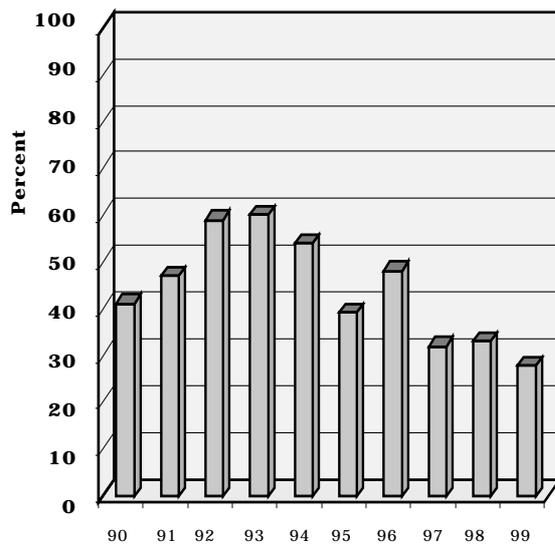
The 1999 value is lower than in 1998 due to a lower number of bulk vehicle accidents.

**Non-Complying Vehicles in Accidents (Bulk/Package)**



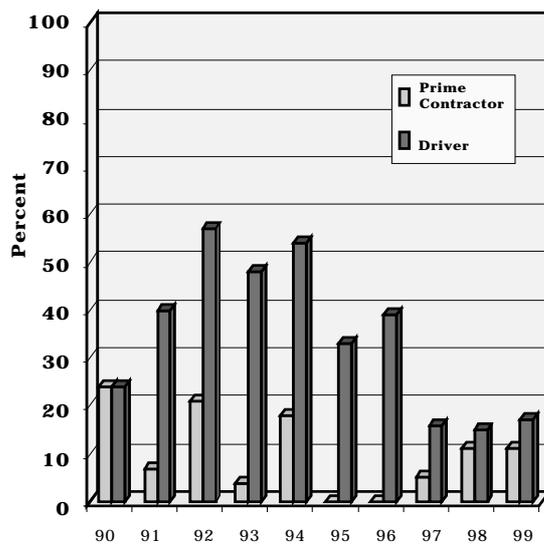
While bulk vehicles have very good compliance with the Australian Dangerous Goods Code, there is room for improvement for packaged vehicles; substandard stowage is the main problem.

**Percentage of Accidents Caused By Non-compliance**



The above figure includes only non-compliance from dangerous goods legislation and/or standard operating procedures, it does not include deviation from road safety legislation.

**Contribution to Non-compliance Caused Accidents as a Percentage of Total Accidents**



The introduction of compulsory refresher driving course in January 1997 has possibly decreased the number of accidents caused by the driver in subsequent years.

## Dangerous Goods Transport Accident Summary Reports

	<b>Date</b>	<b>Location</b>	<b>Goods</b>	<b>Class</b>	<b>Comments</b>
W03	02/02/99	KUKERIN	<b>Phenoxyacetic Acid Derivative Pesticide, Liquid, Toxic</b>	6.1	A liquid pesticide leaked after frictional contact between two drums during transport, caused a hole to develop on top of one of the drums.
W06	26/02/99	SWANBOURNE	<b>Petrol</b>	3	Approximately 50 litres of petrol spilt from a vapour-recovery line whilst a tanker vehicle was delivering fuel to a service station.
W02	27/02/99	MUNDRABILLA	<b>Carbon Dioxide, Liquid</b>	2.2	A head-on collision between a gas tanker and a semi-trailer combination resulted in two fatalities and the loss of a small quantity of carbon dioxide gas.
W05	04/04/99	KWINANA	<b>Ammonia, Anhydrous</b>	2.3	During shunting operations at a Kwinana railyard, there was a small ammonia vapour leak from a faulty valve on an empty rail container.
W10	19/04/99	KUNUNURRA	<b>Petroleum Fuel</b>	3	During the delivery of petrol to a service station, a man was killed when the tanker vehicle accidentally reversed into him.
W13	21/05/99	CASUARINA	<b>Petrol. Diesel Fuel</b>	3 NDG	A road train consisting of tankers transporting petrol and diesel fuel was involved in a single vehicle accident at an intersection when excessive speed and wet weather conditions caused the vehicle to lose traction whilst braking.
W12	29/05/99	COOLGARDIE	<b>Radioactive Material, LSA1</b>	7	A small quantity of a low-level radioactive material spilt from two drums on a truck's trailer due to insecure lids on the drum.
W16	12/06/99	UPPER SWAN	<b>Petrol</b>	3	Fuel was spilt onto the forecourt of a service station as a result of a tanker driver not following safe transfer procedures.
W14	23/06/99	SOUTHERN CROSS	<b>Corrosive Liquid, N.O.S.</b>	8	A vehicle veered off the road to avoid an oncoming vehicle. Several drums were dislodged and the impact resulted in a leak from one of the drums.
W17	30/07/99	KOJONUP	<b>Sulfuric Acid</b>	8	A trailer loaded with sulfuric acid drums was left unattended due to mechanical failure. Whilst unattended, it appears that a drum of acid was removed from the trailer and abandoned several kilometres away. This resulted in drum rupture and loss of product.

NDG = Not Classified as Dangerous Goods for transport purposes.

# Dangerous Goods Transport Accident Summary Reports

	<b>Date</b>	<b>Location</b>	<b>Goods</b>	<b>Class</b>	<b>Comments</b>
W15	08/08/99	NORSEMAN	<b>Paint and Paint Related Material</b>	3	A load of packaged paints and thinners exploded on a tautliner completely destroying the prime mover, trailer and other general freight on board.
W18	27/08/99	BEVERLEY	<b>Petroleum Fuel</b>	3	A fuel tanker collided with a freight train causing the fuel tanker to roll-over resulting in the rupture of a tanker compartment and loss of diesel fuel and petrol.
W21	10/09/99	KAMBALDA	<b>Petroleum Gases, Liquefied</b>	2.1	An LP Gas tanker was unable to stop at a T-junction and so came to rest approximately 10 metres into the bush. No product was lost but extensive vehicle damage occurred.
W20	04/10/99	PINJARRA	<b>Sulfuric Acid</b>	8	Failure to follow procedures to depressurise a line containing sulfuric acid resulted in a small quantity of acid being sprayed onto employees during decoupling.
W19	08/10/99	PADBURY	<b>Corrosive Liquid, Acidic, Organic, N.O.S.</b>	8	A vehicle transporting drums of corrosive liquid was involved in a single vehicle accident at an intersection where excessive speed and wet weather conditions caused the vehicle to lose traction and jackknife.
W22	22/11/99	WILUNA	<b>Oxidizing Liquid N.O.S.</b>	5.1	Due to a deteriorated and wet road surface, the rear tank-trailer of a triple road train overturned resulting in the loss of a small quantity of product from the tank vent. This was recovered and appropriately disposed of.
W24	19/12/99	FORRESTFIELD	<b>Ammonia, Anhydrous</b>	2.3	Ammonia vapour was found to be leaking from a flange on top of a 42-tonne rail tanker that was stopped at a marshalling yard.
W25	29/12/99	KEMERTON	<b>Sodium Hydroxide</b>	8	The failure of a tanker driver and plant operator to follow safe working procedures during product loading led to the spillage of sodium hydroxide when a road tanker was over-filled.

# Dangerous Goods Transport Accident Report

**Date** : 2 February 1999      **Time** : 0630 hours

**Location** : Kukerin-Lake Grace Rd  
KUKERIN

**Dangerous Goods Involved** : **PHENOXYACETIC ACID DERIVATIVE PESTICIDE, LIQUID, TOXIC**

Class	6.1
Sub-Risk	-
UN No.	3348
Packing Group	III
Quantity Present	1 280 litres
Quantity Spilt	4 litres

## Incident

During a routine stop the driver of a semi-trailer vehicle transporting packaged pesticides, with non-dangerous goods, smelt chemical odours emanating from his vehicle. On examining the load, a hole in a 20-litre drum of pesticide was located. Authorities were notified and the leaking drum was removed. All contaminated surfaces were then cleaned.

## Cause

The hole in the top of the 20-litre drum was caused by the frictional contact with the base of a container that had moved during transport. Insufficient restraint of packages during transport on rough roads allowed the drums to come into contact.

## Consequences

The Division has requested the transport company review their load restraint methods and the company has decided to pack more cushioning material around dangerous goods containers. The Division will conduct a follow-up review of the company.

**DGAT : W03/99**

**FILE No. : 66/99**

# Dangerous Goods Transport Accident Report

**Date** : 26 February 1999      **Time** : 2105 hours

**Location** : Cnr of Servetus St and Claremont Cr  
SWANBOURNE

**Dangerous Goods Involved** : **PETROL**

Class	3
Sub-Risk	-
UN No.	1203
Packing Group	II
Quantity Present	40 000 litres
Quantity Spilt	50 litres

## Incident

Approximately 50 litres of petrol spilt from a vapour-recovery line onto a service station forecourt after the driver of a petrol tanker opened an outlet valve to deliver petrol from the first compartment of the tanker into an underground storage tank. The petrol spill was contained to the service station forecourt and did not flow off-site. The emergency services attended and cleaned up the spill.

## Cause

The tanker vehicle was parked on a slope with a significant camber causing the internal vapour vent of the tank compartment to be immersed in petrol. When the unloading operation commenced, the vapour vent automatically opened allowing petrol to flow into the vapour-recovery system and out of the vapour-recovery line.

## Consequences

As a result of the incident, the fuel delivery company has replaced all of the old-style vapour vents on its petroleum tanker vehicle fleet.

# Dangerous Goods Transport Accident Report

**Date** : 27 February 1999      **Time** : 2325 hours

**Location** : Eyre Hwy  
MUNDRABILLA

**Dangerous Goods Involved** : **CARBON DIOXIDE, LIQUID**

Class	2.2
Sub-Risk	-
UN No.	2187
Packing Group	-
Quantity Present	750 kg
Quantity Spilt	Undetermined

## Incident

A road tanker vehicle carrying bulk carbon dioxide, travelling east from Perth to Adelaide collided head-on with a west-bound truck carrying general freight, resulting in the death of the tanker driver and his passenger who was asleep in the sleeper compartment at the time of the accident. Although the tanker at the time of the collision was nominally empty, there was a small release of carbon dioxide gas. Police and emergency services attended the accident and cleared the road.

## Cause

The Coroner's Report showed that the accident was caused by the tanker vehicle crossing onto the incorrect side of the road into the path of a road train.

## Consequences

The dangerous goods involved did not contribute significantly to the incident and there was no evidence of any breaches of the dangerous goods legislation.

# Dangerous Goods Transport Accident Report

**Date** : 4 April 1999                      **Time** : 1100 hours

**Location** : Kwinana Railyard  
KWINANA

**Dangerous Goods Involved** : **AMMONIA, ANHYDROUS**

Class	2.3
Sub-Risk	8
UN No.	1005
Packing Group	-
Quantity Present	Vapour Only
Quantity Spilt	Undetermined

## Incident

A rail worker engaged in a shunting operation smelt ammonia coming from an empty container at an adjacent siding. Staff were advised to leave the area and the vessel owner was notified. After being advised by the owner that the container was empty and may have a faulty valve, the container was immediately removed and examined. The rail worker felt dizzy for a couple of hours, but later showed no further ill-effects.

## Cause

The cause could not be determined.

## Consequences

The consignor took the vessel out of service and it was examined, however a full inspection revealed no defects or ammonia leaks. Despite the failure to find any problems with the isotainer, a decision was made to fully decommission the vessel. The consignor has been advised by the prime contractor that leaking containers are not to be used on the rail system where it may jeopardise the health of rail workers. The Division has also advised the consignor to improve operating procedures to prevent a recurrence.

**DGAT : W05/99**

**FILE No. : 84/99**

# Dangerous Goods Transport Accident Report

**Date** : 19 April 1999                      **Time** : 1640 hours

**Location** : Messmate Way  
KUNUNURRA

**Dangerous Goods Involved** : **PETROLEUM FUEL**

Class	3
Sub-Risk	-
UN No.	1270
Packing Group	II
Quantity Present	17 600 litres
Quantity Spilt	Nil

## Incident

A man was killed during a petrol delivery operation at a Roadhouse when the tanker vehicle accidentally reversed into him. The tanker driver, unable to follow his normal delivery sequence at the Roadhouse, had downloaded a delivery of super petrol and was reversing the truck to the delivery point for unleaded petrol when the accident occurred.

## Cause

The driver checked the forecourt area of the Roadhouse before commencing to reverse the vehicle, however the time lapse between checking everything was clear, starting the vehicle and beginning to reverse was sufficient for a pedestrian to enter the blind spot of the reversing vehicle without being seen by the driver.

## Consequences

A fatal accident investigation and report was completed by Worksafe Western Australia, and the transport industry was advised of the hazards exposed by this event and recommended preventive strategies. The petroleum supply company has now implemented a policy whereby tanker drivers drive forward only, or where this is impractical, reverse only with the aid of a lookout.

**DGAT : W10/99**

**FILE No. : 119/99**

# Dangerous Goods Transport Accident Report

**Date** : 21 May 1999 **Time** : 0230 hours

**Location** : Cnr of Thomas and Johnson Rd  
CASUARINA

**Dangerous Goods Involved** : **PETROL**

Class	3
Sub-Risk	-
UN No.	1203
Packing Group	II
Quantity Present	Vapour only
Quantity Spilt	Nil

**DIESEL FUEL**

Class	NDG
Sub-Risk	-
UN No.	-
Packing Group	-
Quantity Present	Vapour only
Quantity Spilt	Nil

## Incident

The driver of a road train braked as he approached a traffic-light controlled intersection. The vehicle lost traction and jackknifed, causing the rear tanker and the front tanker to collide. The front tanker sustained two large impact indentations, however it was not punctured. Approximately 50 litres of diesel fuel leaked from the prime mover's fuel tank.

## Cause

The incident was caused by the combination of excessive vehicle speed and the wet weather conditions.

## Consequences

The company employing the driver dismissed him on the grounds of unsafe driving.

NDG = Not Classified as Dangerous Goods for transport purposes.

**DGAT : W13/99**

**FILE No. : 139/99**

# Dangerous Goods Transport Accident Report

**Date** : 29 May 1999                      **Time** : 1800 hours

**Location** : Coolgardie-Esperance Hwy  
COOLGARDIE

**Dangerous Goods Involved** : **RADIOACTIVE MATERIAL, LSA1**

Class	7
Sub-Risk	8
UN No.	2912
Packing Group	I
Quantity Present	410 litres
Quantity Spilt	30 litres

## Incident

During a routine tyre check of his vehicle in a parking bay on the side of the road, the driver observed liquid leaking from both front corners of the trailer. He opened the doors of the trailer and observed that the lids of two drums marked as a radioactive material had come off. Emergency services personnel were contacted and attended the site, and on advice received from the consignor that the radioactivity was extremely low and did not pose a hazard, cleaned up the spilt sulfuric and re-secured the lids on the drums.

## Cause

The cause of the spill was the inadequate securing of lids on two drums of product.

## Consequences

The incident was given more attention than necessary as the product was incorrectly marked as radioactive dangerous goods and did not require such marking. There was no significant threat posed to the public.

**DGAT : W12/99**

**FILE No. : 133/99**

# Dangerous Goods Transport Accident Report

**Date** : 12 June 1999                      **Time** : 0945 hours

**Location** : Great Northern Hwy  
UPPER SWAN

**Dangerous Goods Involved** : **PETROL**

Class	3
Sub-Risk	-
UN No.	1203
Packing Group	II
Quantity Present	19 000 litres
Quantity Spilt	50 litres

## Incident

Prior to transferring petrol from a tanker at a service station, the driver failed to follow safe unloading procedures which resulted in approximately 50 litres of petrol being spilt onto the forecourt via the dip-point of the underground tank.

## Cause

From investigation, it appears that the incident was caused by the driver failing to attach vapour-recovery piping and to secure the tank's dip-point cap.

## Consequences

All parties involved in this incident have been made aware of their obligations and responsibilities relating to safe fuel-transfer operations. An article is to be included in the Division's *Explosay* newsletter to highlight the need for drivers to be adequately trained in, and to adhere to, safe product-transfer procedures.

**DGAT : W16/99**

**FILE No. : 184/99**

# Dangerous Goods Transport Accident Report

**Date** : 23 June 1999                      **Time** : 2330 hours

**Location** : Great Eastern Hwy  
SOUTHERN CROSS

**Dangerous Goods Involved** : **CORROSIVE LIQUID, N.O.S.**

Class	8
Sub-Risk	-
UN No.	1706
Packing Group	III
Quantity Present	800 litres
Quantity Spilt	200 litres

## Incident

The driver of a B-Double road vehicle combination, transporting 200-litre drums of corrosive liquids, took evasive action to avoid a truck travelling in the opposite direction on the wrong side of the road. The prime movers brushed against each other and the vehicle taking evasive action ended up off the road resulting in four of the drums falling from the vehicle. One of the plastic drums developed a leak as a result of the impact and corrosive liquid was spilt. Emergency services were notified and officers from the Fire and Emergency Services Authority recovered the spill.

## Cause

The cause of the incident was movement of the load as a result of the trucks brushing against each other and body-roll as the vehicle veered off the road.

## Consequences

There were no injuries sustained from the incident and all of the spilt product was cleaned up. It appears that the driver of the truck transporting dangerous goods took appropriate action to avoid a collision with the other vehicle and a potentially more serious outcome.

**DGAT : W14/99**

**FILE No. : 179/99**

# Dangerous Goods Transport Accident Report

**Date** : 30 July 1999                      **Time** : 2200 hours

**Location** : Albany Hwy  
KOJONUP

**Dangerous Goods Involved** : **SULFURIC ACID**

Class	8
Sub-Risk	-
UN No.	2796
Packing Group	II
Quantity Present	1 000 litres
Quantity Spilt	8 litres

## Incident

A 200-litre drum of sulfuric acid was apparently stolen from a trailer which had broken down and been temporarily left unattended at the gateway to a farm. The driver noticed that a drum was missing when he returned to repair the trailer but did not report the theft. Subsequently, the Fire and Emergency Services Authority was alerted to the presence of an abandoned, leaking drum of sulfuric acid in the Kojonup area, some 40 kilometres from the broken down trailer. Approximately 8 litres of spilt acid was recovered using sand and the punctured drum sealed prior to being transferred to the Shire depot.

## Cause

The incident appears to have been an act of sabotage as the drum had been removed from the trailer that had been left unattended when it had broken down en route from Perth to Albany.

## Consequences

From markings on the abandoned drum, the prime contractor was later identified and instructed to arrange collection of the drum and to pay recovery costs to the services that attended. He was also reminded of his obligation to notify the emergency services in such circumstances.

**DGAT : W17/99**

**FILE No. : 183/99**

# Dangerous Goods Transport Accident Report

**Date** : 8 August 1999                      **Time** : 1130 hours

**Location** : Eyre Hwy  
NORSEMAN

**Dangerous Goods Involved** : **PAINT AND PAINT RELATED MATERIAL**

Class	3
Sub-Risk	-
UN No.	1263
Packing Group	II
Quantity Present	3 480 litres
Quantity Spilt	3 480 litres

## Incident

An explosion occurred in a tautliner trailer transporting packaged paints and thinners together with other general freight. Whilst travelling from Melbourne to Perth, a distance of approximately 3 400 kilometres, the vehicle burst into flames just east of Norseman, approximately 815 kilometres short of its destination. Police, State Emergency Service and ambulance personnel attended the scene, but the prime mover and trailer, together with the entire load of freight, were completely destroyed. The driver was unhurt in the incident.

## Cause

The cause of the fire and explosion is unknown.

## Consequences

The incident has been thoroughly investigated and no breaches of the regulations were detected.

**DGAT : W15/99**

**FILE No. : 85/99**

# Dangerous Goods Transport Accident Report

**Date** : 27 August 1999      **Time** : 1140 hours

**Location** : York-Williams Rd  
BEVERLEY

**Dangerous Goods Involved** : **PETROLEUM FUEL**

Class	3
Sub-Risk	-
UN No.	1270
Packing Group	II
Quantity Present	33 000 litres
Quantity Spilt	3 550 litres

## Incident

The driver of a fuel tanker failed to stop at a railway crossing controlled only by stop signs and collided with the second wagon of a train, resulting in two empty grain rail wagons derailing and the tanker rolling onto its left side. The impact resulted in a spill of fuel when one of the fuel compartments on the tanker ruptured. The driver of the tanker escaped through a window and alerted the emergency services. The volunteer fire brigade contained the spill and sprayed the tanker with foam. Contractors then pumped product from the damaged tanker to a recovery tanker and Westrail arranged for the recovery of contaminated soil.

## Cause

Not expecting to see a train, the driver of the tanker did not allow enough distance to stop the vehicle before the rail crossing stop sign. Inattention may have also been a contributing factor because it was found that the brakes were not defective.

## Consequences

The driver of the vehicle sustained minor injuries and was briefly taken to the local hospital. The Western Australian Police Service took action against the driver for contravening a stop sign. The prime contractor also took disciplinary action against the driver for not following company safe-working procedures.

**DGAT : W18/99**

**FILE No. : 189/99**

# Dangerous Goods Transport Accident Report

**Date** : 10 September 1999      **Time** : 0445 hours

**Location** : Kambalda Rd  
KAMBALDA

**Dangerous Goods Involved** : **PETROLEUM GASES, LIQUEFIED**

Class	2.1
Sub-Risk	-
UN No.	1075
Packing Group	-
Quantity Present	7 874 litres
Quantity Spilt	Nil

## Incident

A rigid Liquid Petroleum Gas tanker travelling along Kambalda Road was unable to stop at a T-junction and so came to rest approximately 10 metres into the bush. No product was lost but extensive damage was caused to the tanker.

## Cause

Driver misjudgement, poor vehicle lighting and road conditions are considered to be factors that may have contributed to the accident.

## Consequences

Action has been taken to ensure that the consignor ensures that all drivers (employees and subcontractors) who transport their dangerous goods are given adequate, regular training in safe-driving practices.

# Dangerous Goods Transport Accident Report

**Date** : 4 October 1999      **Time** : 1000 hours

**Location** : South Western Hwy  
PINJARRA

**Dangerous Goods Involved** : **SULFURIC ACID**

Class	8
Sub-Risk	-
UN No.	1830
Packing Group	II
Quantity Present	14 130 litres
Quantity Spilt	0.2 litres

## Incident

The driver of a tanker containing 98 percent sulfuric acid was preparing to discharge his load into a refinery storage tank when he realised that an internal valve on the tanker had failed, which prevented transfer in the usual manner.

An external pump was sourced and connected for use, however it would not operate. As the driver was disconnecting the pressure line from the inoperable pump, approximately 0.2 litres of acid sprayed onto two employees. Medical attention was sought by one of the employees who suffered minor burns.

## Cause

The cause of the incident was the failure to follow basic transfer procedures, in that the line should have been depressurised prior to disconnection.

## Consequences

The consignor has been advised to ensure that all drivers are aware of the cause of this accident and that they are all given adequate and regular training in safe product-transfer procedures.

**DGAT : W20/99**

**FILE No. : 220/99**

# Dangerous Goods Transport Accident Report

**Date** : 8 October 1999                      **Time** : 1130 hours

**Location** : Cnr of Whitfords Av and Gibson St  
PADBURY

**Dangerous Goods Involved** : **CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.**

Class	8
Sub-Risk	-
UN No.	3265
Packing Group	II
Quantity Present	4 400 litres
Quantity Spilt	5 litres

## Incident

The driver of a rigid tray-top vehicle towing a trailer braked as he approached a traffic-light controlled intersection. The vehicle lost traction and jackknifed, causing the securing devices to break and the gates to collapse. Numerous drums fell onto the road and one drum was punctured. Approximately 5 litres of corrosive liquid spilt and emergency services performed the clean-up operation.

## Cause

The incident was caused by the combination of excessive vehicle speed and the wet weather conditions.

## Consequences

The transport company advised the driver to drive according to road conditions. Investigation of the load's securing mechanism confirmed that it met the legislative requirements.

**DGAT : W19/99**

**FILE No. : 219/99**

# Dangerous Goods Transport Accident Report

**Date** : 22 November 1999      **Time** : 1330 hours

**Location** : Mt Keith-Wiluna Rd  
WILUNA

**Dangerous Goods Involved** : **OXIDIZING LIQUID N.O.S.**

Class	5.1
Sub-Risk	-
UN No.	3139
Packing Group	II
Quantity Present	54 347 litres
Quantity Spilt	100 litres

## Incident

The rear tank-trailer of a triple road train rolled over onto its side after running over a deep pot-hole in the road, caused by heavy rains. The roll-over resulted in the loss of approximately 100 litres of emulsion precursor from the tank vent. The driver was able to stop the leak and contact the emergency services and the prime contractor.

The spilt product was recovered and transported to Kalgoorlie for disposal whilst the contents of the overturned tank-trailer were transferred into another tank vehicle.

## Cause

A deteriorated road surface and wet conditions were major contributing factors to the accident.

## Consequences

The manager of the transport company involved will hold a meeting to advise drivers of the need to ensure that they acknowledge the road conditions and drive accordingly.

**DGAT : W22/99**

**FILE No. : 253/99**

# Dangerous Goods Transport Accident Report

**Date** : 19 December 1999      **Time** : 1900 hours

**Location** : Forrestfield Marshalling Yard  
FORRESTFIELD

**Dangerous Goods Involved** : **AMMONIA, ANHYDROUS**

Class	2.3
Sub-Risk	8
UN No.	1005
Packing Group	-
Quantity Present	42 000 kg
Quantity Spilt	Undetermined

## Incident

On arrival at the Forrestfield Marshalling Yards, a rail tanker en route from Kwinana to Kalgoorlie was found to be leaking ammonia vapour. The ammonia was escaping at a slow rate from a flange on top of the tanker. Westrail staff contacted the consignor and emergency services and it was decided that product needed to be transferred to another rail tanker. Ammonia liquid was transferred and the remaining vapour was purged into a tanker containing water. The faulty tanker was then moved to a maintenance yard to determine the cause of the leak.

## Cause

Investigation revealed that the leak was caused by the use of an unsuitable ring-type gasket which was different to the spiral-wound gaskets that were originally specified for the ammonia tankers.

## Consequences

The consignors of the rail tankers have checked other ammonia rail tankers and have found similar leaks in the gaskets on the top flanges. The supplier of the gaskets has been made aware that the substitute ring gaskets are not suitable for ammonia tankers and the consignor has ensured that correct gaskets are supplied and fitted to all tankers.

**DGAT : W24/99**

**FILE No. : 260/99**

# Dangerous Goods Transport Accident Report

**Date** : 29 December 1999      **Time** : 2110 hours

**Location** : Marriott Rd  
KEMERTON

**Dangerous Goods Involved** : **SODIUM HYDROXIDE**

Class	8
Sub-Risk	-
UN No.	1824
Packing Group	II
Quantity Present	9 860 litres
Quantity Spilt	3 860 litres

## Incident

A road tanker was overfilled during a gantry loading operation leading to a spill of sodium hydroxide. Most of the spilt product ran into the site's effluent system where it was contained. However, some product also flowed into the stormwater system. Monitoring bores at the site have indicated a negligible rise in alkalinity as a result of product lost to the stormwater system.

## Cause

The overfilling of the road tanker was caused by the driver failing to open the balance valve between the two-tanker compartments and not remaining with the tanker during the filling operation. A plant operator also failed to advise the driver that he had started transferring product to the loading gantry.

## Consequences

The Division is investigating possible breaches of the regulations, especially with respect to failure to promptly report the incident, inadequate training of the driver and failure to comply with product-transfer requirements. The investigation is expected to be completed early in 2000 after which prosecution action will be considered. The prime contractor has indicated, as part of its investigation, the need for further driver-training together with specific instruction in the use of this particular tanker design.

**DGAT : W25/99**

**FILE No. : 263/99**

# APPENDIX 1

## ACCIDENT RECORDING POLICY

### Purpose

To stipulate the criteria upon which incidents involving explosives or dangerous goods reported to the Division are to be designated as Recorded Accidents.

### Scope

All incidents involving the transport, storage and handling of explosives and dangerous goods where such transport, storage or handling is within the scope of the *Explosives and Dangerous Goods Act 1961* and *Dangerous Goods (Transport) Act 1998*.

### Criteria

Respective Branch Managers shall assess each reported incident to determine whether they are **Recorded Accidents** according to the following criteria.

**Any incident involving explosives or dangerous goods that causes or presents a significant potential to cause injury to a person or harm to the environment or property.**

Examples of incidents **intended** to be classified as Recorded Accidents are:

1. Any unintentional fire or explosion (including sabotage) involving or impinging on explosives or dangerous goods containers or storage facilities.
2. Any uncontrolled release of explosives or dangerous goods:
  - from a bulk container or pipeline; or
  - that travels or impacts off the site where storage or handling occurs.
3. Any incident where explosives or dangerous goods containers can be shown to have fallen from a vehicle whilst it is in transit.
4. Any incident where a bulk container carrying explosives or dangerous good is subjected to impact; typically through roll-over or collision.

Examples of incidents **not intended** to be classified as Recorded Accidents are:

1. Packages falling from a forklift, sustaining damage and minor leakage with no subsequent injury, property damage or off-site effect.
2. Where small numbers of packages of dangerous goods are found on the roadside (with or without contents) and their origins remain undetermined.
3. Vehicle traffic accidents where the containers, their fittings and the dangerous goods remain intact and have not been subjected to impact.
4. An escape of dangerous goods that is expected during normal operations, maintenance or transfers.
5. Incidents that involve substances not classified as dangerous goods but are captured by WA Hazardous Materials Emergency Management Plan (HAZMAT).



**P Drygala**  
**Acting Director**  
**Explosives and Dangerous Goods Division**

6 April 2000