

# Chemical storage and spill response guideline

March 2023



# Acknowledgement of Country

Transport for NSW acknowledges the traditional custodians of the land on which we work and live.

We pay our respects to Elders past and present and celebrate the diversity of Aboriginal people and their ongoing cultures and connections to the lands and waters of NSW.

Many of the transport routes we use today – from rail lines, to roads, to water crossings – follow the traditional Songlines, trade routes and ceremonial paths in Country that our nation's First Peoples followed for tens of thousands of years.

Transport for NSW is committed to honouring Aboriginal peoples' cultural and spiritual connections to the land, waters and seas and their rich contribution to society.



## Document control

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## Versions

Version	Date	Amendment notes
1.0	Jun 2011	To provide guidance to those with management control of TP sites regarding chemical storage and spill management requirements.
2.0	Apr 2012	Updated to reflect Transport Projects transition.
3.0	Apr 2015	Updated to be published to Transport for NSW's website.
4.0	Apr 2016	Document updated to reflect changes in organisation structure.
5.0	Nov 2018	Rebranded to IP.
5.1	Aug 2019	DMS Update.
6.0	Dec 2019	Updated AS-1940-2004 to AS-1940-2017.
7.0	Nov 2022	Updated and rebranded to Environment and Sustainability.

## Related policy and supporting information

- [Transport Environment and Sustainability Policy](#)
- [Environment & Sustainability Management Framework](#)
- [EMF-EM-PR-0001 Environmental Incident Procedure](#)
- [EMF-WA-GD-0101 Water Discharge and Reuse Guideline](#)
- [Australian Code for the Transport of Dangerous Goods by Road and Rail 2018](#)
- [SafeWork NSW Code of Practice for the Storage and Handling of Dangerous Goods](#)
- [NSW EPA Storing and handling liquids: Environmental Protection – Participant's Manual \(2007\)](#)
- [NSW EPA Environmental Compliance Report- Liquid Chemical Storage, Handling and Spill Management Part B \(Review of Best Practice and Regulation 2005\)](#)
- [AS 1940:2017 – The storage and handling of flammable and combustible liquids](#)
- [AS 2714:2008 – The storage and handling of hazardous chemical material – Class 5.2 substances \(organic peroxides\)](#)
- [AS 3833:2007 – The storage and handling of mixed classes of dangerous goods in packages and intermediate bulk containers](#)
- [AS 3780:2008 – The storage and handling of corrosive substances](#)

# Table of contents

- 1. Purpose and scope..... 5
- 2. Legislative requirements and due diligence..... 6
- 3. Site management..... 8
- 4. Chemical storage..... 9
  - 4.1 Types of chemical storage.....9
  - 4.2 Locating chemical storage and handling areas .....9
  - 4.3 Management and mitigation measures..... 10
  - 4.4 Additional mitigation measures ..... 11
- 5. Incident management and spill response .....13
  - 5.1 Incident response.....13
  - 5.2 Incident reporting .....13
- 6. Definitions.....14
- Appendix A - Site chemical and waste storage checklist .....15

# 1. Purpose and scope

The purpose of this guideline is to provide guidance with regard to chemical storage and spill management on Rail Development and Delivery (RDD) sites. The storage and/or use of liquid substances poses a potential risk of environmental harm if not managed appropriately. Establishing and maintaining designated chemical storage and handling areas minimises the risk of pollution to land and waters.

This guideline applies to all types of chemical storage onsite including, but not limited to, designated bulk fuel or chemical storage, diesel generators, gas cylinders, temporary fuel containers for mobile plant and any areas onsite where chemicals may be used.

This guideline includes references to some of the relevant legislative and regulatory requirements but is not intended to replace them. It is not intended to replace any requirements identified as part of the EIA process.

Contractors are required to follow this document, where this guideline forms a part of their contract.



## 2. Legislative requirements and due diligence

The *Protection of the Environment Operations Act 1997* (POEO Act) is the principal statute for protection of the environment and regulation of pollution. The *Contaminated Land Management Act 1997* (CLM Act) regulates the investigation and clean-up of land contamination.

When using and storing liquid chemicals (including fuel), contractors must be aware of their obligations to:

- Store, handle, manage and use liquid chemicals in accordance with applicable legislative requirements, Australian/ISO Standards, and relevant guidelines ensuring that water and land does not become contaminated/polluted.
- Prevent spills and leaks to the environment.
- Dispose of waters appropriately.
- Notify the regulatory authority, local council, or NSW Environment Protection Authority (EPA), if material harm to the environment occurs or if contaminated land poses a significant risk of harm.

Legislation and regulations relevant to the storage and handling of chemicals and waste are presented in Table 1. Significant penalties exist for breaches of the legislation/regulations. This can be in the form of notices for cessations of work, remediation of contamination, monetary fines, prosecutions and imprisonment.

**Table 1: Regulations and Guidelines of Chemical Storage in NSW**

Substances	Relevant Regulation
Dangerous goods	<ul style="list-style-type: none"> <li>• Dangerous goods are regulated under the <i>Work Health and Safety Act 2011</i> and the <i>Work Health and Safety Regulation 2017</i>.</li> <li>• EPA regulates transport of dangerous goods on public roads (<i>Dangerous Goods (Road and Rail Transport) Act 2008</i>, which applies the Australian Code for the Transport of Dangerous Goods by Road and Rail to NSW</li> <li>• SafeWork NSW Code of Practice for the Storage and Handling of Dangerous Goods</li> <li>• Sample of Australian Standards <ul style="list-style-type: none"> <li>– AS 1940- The storage and handling of flammable and combustible liquids</li> <li>– AS 2714- The storage and handling of hazardous chemical material- Class 5.2 substances (organic peroxides)</li> <li>– AS 3833- The <i>storage and handling of mixed classes of dangerous goods in packages and intermediate bulk containers</i></li> <li>– AS 3780- The storage and handling of corrosive substances</li> </ul> </li> </ul>
Hazardous substances	<ul style="list-style-type: none"> <li>• SafeWork NSW has a range of publications relating to the occupational health and safety of hazardous substances</li> <li>• Refer to Dangerous Goods Australian Standards</li> </ul>
Underground petroleum storage system	<ul style="list-style-type: none"> <li>• EPA – underground storage tanks are required to comply with the Australian Institute of Petroleum's <i>Code of Practice: The Design, Installation and Operations of Underground Petroleum Storage Systems: CP4-2002</i></li> </ul>
Group A liquid wastes (as defined in Division 2 of Schedule 1 of the POEO Act)	<ul style="list-style-type: none"> <li>• EPA- transport, tracking and disposal under the <i>Protection of the Environment Operations (Waste) Regulation 2014</i></li> </ul>

Substances	Relevant Regulation
Pesticides	<ul style="list-style-type: none"> <li>EPA enforces proper use of pesticides (<i>Pesticides Act 1999</i> and <i>Pesticides Regulation 2017</i>)</li> <li>SafeWork NSW has occupational health and safety requirements for the use of pesticides and where they are classified as dangerous goods, regulates their storage and handling</li> </ul>
Liquid chemicals	<ul style="list-style-type: none"> <li>EPA's Storing and handling liquids: Environmental Protection – Participant's Manual (2007)</li> <li>EPA's Environmental Compliance Report – Liquid Chemical Storage, Handling and Spill Management Part B (Review of Best Practice and Regulation 2005)</li> </ul>
Substances that harm or are likely to harm the environment	<ul style="list-style-type: none"> <li>Under Section 116 of the <i>POEO Act</i>, it is an offence if a person wilfully or negligently causes a substance to leak, spill or otherwise escape in a manner that harms or is likely to harm the environment. In such circumstances, a person may be potentially subject to a Tier 1 prosecution by the EPA. Tier 1 offences can attract penalties of up to \$5 million for corporations, and up to \$1 million and/or 7 years imprisonment for individuals.</li> </ul>

### 3. Site management

The inappropriate/inadequate storage and handling of any liquid chemical has the potential to lead to spills or leaks to the environment and result in pollution of water and/or land. In addition, inappropriate/inadequate storage and handling of volatile liquids can lead to air pollution. The legal requirements and site management principles are the same whether liquid substances are being used or stored at a single location or as part of a mobile service.

Site management should be undertaken in accordance with the following guiding principles:

- For projects/sites with an Environment Protection licence, prepare and implement a pollution incident response management plan (PIRMP) in accordance with section 153A of the POEO Act.
- Provide training and information to all personnel, and particularly those handling chemicals, on how to prevent spills or leaks and how to respond to spills or leaks.
- Establish designated locations for storing and handling chemicals to reduce the risk of pollution as well as the cost of preventing and cleaning up pollution should a spill occur.
- Ensure that spill response materials and resources are available at site to respond quickly in the event of a spill.
- Regularly inspect storage and handling areas.
- A site chemical checklist should be developed and documented and included as part of the regular internal environmental site inspections or as a separate inspection such as the Site Chemical and Waste Storage Checklist (Appendix A).
- Ensure pre-start checks and regular maintenance of equipment is undertaken.

Chemical management procedures should be incorporated into the Construction Environmental Management Plan (CEMP).



## 4. Chemical storage

When storing any quantity of liquid substances onsite, contractors should consider:

- Type/s of storage to be established onsite.
- Locations of storage.
- Mitigation measures to be implemented to prevent pollution.
- Any additional requirements specific to the substance and quantity (e.g. AS-1940-2017 *Flammable Liquids Storage & Handling* applies to the storage of Class 3 flammable liquid).

### 4.1 Types of chemical storage

#### 4.1.1 Bulk storage

Bulk storages are very large volumes (i.e. >1000 litres) of liquid chemicals used as raw material or manufactured as products at chemical plants. This type of chemical storage is generally not required on RDD sites.

#### 4.1.2 Packaged storage

Liquid chemicals used on project sites are routinely delivered and stored in packages ranging from a few litres' containers to 200 litres drums, and intermediate bulk containers can have a holding capacity of up to 1000 litres.

#### 4.1.3 Waste storage

Liquid chemical wastes from paints and plant maintenance are generally stored in tanks or drums and need to be assessed and classified in accordance with the POEO Act and the NSW EPA Waste Classification Guidelines (2014) before disposal. Liquid waste can contain corrosive materials, oil and grease, nutrients and heavy metals.

#### 4.1.4 Other liquid chemicals

Liquid chemicals used in the maintenance, repair and operation of mobile plant and equipment, such as fuels, lubricating oils, hydraulic oils and cleaning agents are delivered to site as packaged items.

#### 4.1.5 Used packages

Used packages are partially used fuel cans, drums and paint containers onsite. They are commonly used for mobile plant maintenance and refuelling.

#### 4.1.6 Gas cylinder storage

Gas cylinders can be hazardous due to both physical and chemical properties of the compressed gases. Onsite gas cylinder storage may include flammable gas, toxic gas, oxidizing gas and non-flammable/toxic gas.

### 4.2 Locating chemical storage and handling areas

Chemical storage and handling should be undertaken in designated areas that are located to minimise the potential for land and/or water pollution to occur, preferably within site compounds.

1. **Locations with a high risk of water and/or land pollution (to be avoided):**
  - areas adjacent to water courses, stormwater drainage systems or other immediate pathway to sensitive environments
  - above waterways or sensitive environments (e.g. bridges, culverts, piers and wharves)

- areas with sloping surfaces or flow paths (e.g. drainage lines) that lead to waterways, sensitive environments or offsite
- areas prone to receiving upstream runoff, flooding or inundation during heavy rainfall
- areas with high groundwater levels or aquifers
- areas adjacent to vegetation
- bare ground or unsealed/pervious surfaces (note: crushed concrete, gravel, Densely Graded Base (DGB) surfaces are not considered to be impervious).

**2. Locations with a low risk of water and/or land pollution:**

- inside a designated building/structure that can serve as a secondary containment area so that spills can be contained
- on sealed/impervious surfaces with suitable secondary containment measures and covered roofing to exclude rainwater
- on level ground at least 50m from any waterway, aquatic habitat or sensitive environment.

## 4.3 Management and mitigation measures

The following mitigation measures are designed to prevent, reduce or eliminate the discharge of chemicals to the environment.

### 4.3.1 Secondary containment

Chemicals and other hazardous liquids should be stored in areas or containers with secondary containment measures. Secondary containment refers to any means used to contain liquids in the event that the primary container (liquid storage container) or transfer mechanism fails, or spills/leaks from any other cause. Secondary containment can include:

- Bunding – raised, impermeable barriers forming the perimeter of secondary containment areas (walls, speed humps, guttering, curbing, rubber barriers).
- Encasement – bulk fuel container, flammable liquid cabinet and diesel generator with built in secondary containment.
- Grading of sealed surface areas to form a contained area.
- Other requirements identified by the relevant guidelines or Safety Data Sheet (SDS).

Chemicals, fuels and dangerous goods should be stored in securely bunded areas with appropriate signage. They should be stored inside impervious bunds of sufficient capacity to contain 110% of the stored volume and should have sufficient cover to prevent ingress of rain.

An area is not a secondary containment area if there are any drains or the area is permeable and it allows liquid to potentially escape from the contained area.

### 4.3.2 Spill response materials

Spill response materials are designed to absorb or direct the flow of liquids that have spilt onto land or into water. Spill response materials must be available and readily accessible in the event of a spill and should be:

- Appropriate to the type of chemical and the environment (e.g. must be hydrophobic for use in water).
- Sufficient to contain the spill or to direct the spill away from waters, land, sensitive environments or drains.

Other resources that may be required in the event of a spill should also be considered, such as plant to create earth embankments and pumping and containment equipment.

### 4.3.3 Water management

Storage areas should be roofed where possible to prevent rainwater entering the secondary containment area. If this is not possible mitigation measures should be implemented to minimise the accumulation of rainwater inside the secondary containment.

Surface stormwater should be diverted away from storage and handling areas. If this is not possible, any stormwater and/or rainwater entering such areas must be collected, monitored and tested for applicable quality parameters before appropriate discharge or disposal (refer to [EMF-WA-GD-0101 Water Discharge and Reuse Guideline](#)).

### 4.3.4 General

Accessibility and appropriate security measures should be considered to prevent unauthorised access by the public and non-authorised personnel.

Storage and handling areas should be clearly identified with appropriate signage, including instructions for delivery personnel.

Storage and handling areas should be regularly checked for any signs of spills and to ensure the capacity of secondary containment is maintained.

## 4.4 Additional mitigation measures

In addition to the general mitigation measures identified above, specific measures should be considered for particular areas, activities and chemical types.

### 4.4.1 Packaged material storage

- Packaged material storage should be located with adequate separation from site boundaries and ignition sources. Drums and other containers are to be stored (stacked) in such manner that if the drums or other containers rupture or topple, the content will not spill outside the secondary containment.
- All products should be sorted, labelled and the SDS should be available near the storage area. Products that are potentially dangerous when combined or mixed should not be stored in close proximity to each other.

### 4.4.2 Used package and waste storage

- Used packages (drums and containers) and containers storing waste liquids must be sealed.
- Labels of containers must be retained until the containers are washed, rinsed or removed from site. Any rinsing should be managed in accordance with the EMF-WA-GD-0101 Water Reuse and Disposal Guideline.
- Accurate records of all wastes stored are to be kept ensuring early disposal where expiry dates are being reached.

### 4.4.3 Site liquid handling and refuelling

- Mobile liquid transfer points should be provided with suitable containment (bunding, drip trays) and spill response materials.
- All nozzles and valves used during the transfer of liquid between bulk fuel transport vehicle and storage containers must be fitted with shut-off valves to prevent overflow.
- Transfer pumps must be provided with emergency shut-down devices.
- All hoses must be purged before uncoupling.
- Overfill protection devices must be regularly inspected.

#### 4.4.4 Gas cylinders storage and handling

- SDS must be available onsite and used to identify chemical and physical hazards and the required management measures.
- A risk assessment must be carried out and recorded to identify hazards and the need for any additional control measures.
- Relevant site personnel, including all sub-contractors need to be given information, and training about the hazards from gas cylinders and safe storage and handling.
- Objects must not be stored on top of gas cylinders.
- Full and empty cylinders are to be stored separately and clearly marked.
- Gas cylinders must be stored in an upright position.
- Ensure gas cylinders are prevented from falling or being knocked over by securing cylinders using a racking system or using a non-abrasive coated chain.
- Ensure gas cylinders are stored at least three metres away from combustible materials and sources of ignition.
- Gas cylinder stores must be located outdoors in a secure cage protected from sunlight.

## 5. Incident management and spill response

Incidents resulting from the storage and handling of chemicals may include leaks, spills, fires, explosions and the release of vapours. Their scale ranges from minor localised events (small scale spills and leaks which can be dealt with by site personnel using spill management procedures) to significant events (site emergencies which require an urgent response and may involve the emergency services).

Procedures for responding to and managing chemical spills should be documented in the CEMP and PIRMP or its equivalent. The plan should include:

- Procedures for dealing with fire/spills/containment.
- Diagram showing locations of chemical storage and emergency response equipment, location of nearby drainage lines / waterways and sensitive environmental areas.
- Contact details of responsible personnel.
- Contact details for emergency services.

### 5.1 Incident response

The following is a general procedure for managing a chemical spill:

- Report the spill incident immediately to site supervisor, Transport for NSW (Transport) Health and Safety Partner, Transport Project Manager and the Transport RDD's Environment and Sustainability Representative.
- Implement Transport's Environmental Incident Procedure (EMF-EM-PR-0001) and notify the relevant authorities in accordance with the procedure.
- If safe, stop the spill at the source as a first priority.
- If the spill is not contained, apply spill response materials to contain and absorb the spill and to direct away from waters, drainage lines or sensitive environments. Flow paths should be blocked and the spill contained within the site boundaries.
- Chemical spills should never be hosed by water, and any water that comes into contact with the spill should be treated as contaminated wastewater.
- Where possible, areas contaminated by spill should be covered during rainfall to the extent that it does not compromise clean-up activities.
- Ensure that any contaminated soil, water and used spill response materials (contaminated waste) are disposed appropriately.
- Investigate the cause of each spill to determine and implement preventative actions to reduce the risk of a similar incident occurring.

### 5.2 Incident reporting

Transport considers any chemical discharge to soil, air or water to be an environmental incident that requires reporting to Transport as per [EMF-EM-PR-0001 Environmental Incident Procedure](#).

## 6. Definitions

Term	Definition
AS	Australian Standards
CEMP	Construction environmental management plan
CLM Act	<i>Contaminated Land Management Act 1997</i>
EIA	Environmental impact assessment
Environment Manager	The Contractor's Environment Manager
EPA	New South Wales Environment Protection Authority
MSDS	Material Safety Data Sheet
PIRMP	Pollution incident response management plan
POEO Act	<i>Protection of the Environment Operations Act 1997</i>
RDD	Rail Development and Delivery
Transport	Transport for New South Wales
Transport RDD's Environment and Sustainability Representative	This includes: <ul style="list-style-type: none"> <li>• Environment and Sustainability Officer</li> <li>• Senior Environment and Sustainability Officer</li> <li>• Environment and Sustainability Manager</li> <li>• Senior Manager Environment and Sustainability Within Rail Development and Delivery Projects.</li> </ul>
TSR	Transport for NSW's Standard Requirement



## Appendix A - Site chemical and waste storage checklist

Daily checklist	Tick
Check all site chemicals are stored correctly in bunded area, including used chemical containers for refuelling.	<input type="checkbox"/>
Check all storage containers for leaks, ensure all lids are on properly and that containers are stable.	<input type="checkbox"/>
Check all secondary containment (permanent/mobile) for leaks, spills or rainwater build up.	<input type="checkbox"/>
Check that waste storage area has not overfilled and that wastes have been stored correctly.	<input type="checkbox"/>
Check all floor areas for spills or staining.	<input type="checkbox"/>

Weekly checklist	Tick
Check all spill kits are in good condition and have sufficient material for spill response.	<input type="checkbox"/>
Check labels on all chemical storage containers, update and replace if necessary.	<input type="checkbox"/>
Check all signage onsite is intact.	<input type="checkbox"/>
Maintain chemical SDSs.	<input type="checkbox"/>
Review chemical storage register and update if necessary.	<input type="checkbox"/>
Consider if site chemicals are still required and safely dispose of any chemicals no longer required or out of date.	<input type="checkbox"/>
Manage any other sources of risk to storage site (such as machinery or ignition sources).	<input type="checkbox"/>
Check any fire-fighting equipment, make sure it has been tested recently and ensure suitable for chemical types onsite.	<input type="checkbox"/>

Comments:

Carried out by:

Position:

Signed:

Date

