

Environmental Chemical and Hydrocarbon Management

Territory Generation Procedure

CONTROLLED DOCUMENT

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1 Purpose

The purpose of this procedure is to define specifically the environmental requirements for the handling and storage of chemicals and hydrocarbons by Territory Generation's (TGen's) employees.

2 Scope

The scope of this procedure includes all hazardous chemicals and hydrocarbons that are environmental pollutants and used by TGen's employees, apprentices, contractors and suppliers. The materials covered by this procedure include but are not limited to:

- Diesel, gasoline and other fuels
- Oil, grease
- Cleaning agents, detergents
- Coolants
- Solvents
- Paints
- Mercury
- Other chemicals

3 Potential Impacts

Chemicals and hydrocarbons are utilised in a wide variety of TGen's activities. Incorrect handling, use and storage of chemicals and hydrocarbons can result in impacts to the environment due to leaks and spills. The impacts will depend on where the chemical or hydrocarbon is released, how much is released and the properties of the chemical or hydrocarbon itself.

4 Environmental Risk Assessment

A risk assessment covering the storage and handling of chemicals and hydrocarbons will be conducted by TGen teams prior to use to determine the appropriate safeguards required to appropriately manage chemicals and hydrocarbons. The risk assessment will take into account the:

- Types of chemicals and hydrocarbons being used or stored
- Segregation of incompatible chemicals
- Potential impact on the environment
- Volumes being used or stored
- Ability to prevent spills or leaks

- Duration of storage – long term or temporary
- Sensitivity of the surrounding receiving environment
- Type of facility – storage facilities, processing areas
- Drainage at a site or facility
- Weather associated risks

4.1 Operational Environmental Risk Assessment

TGen maintains a master operational risk register, within which the environmental risks and control measures are identified for all operational activities. This register is available on the intranet (Services & IT>Risk & Compliance>Risk Management).

Teams will consult the risk register to determine the current levels of risk associated with chemical and hydrocarbon management, and to inform development of specific operational Work Instructions and or management plans. Where environmental risks are identified in the risk register as Very High or above a management plan aimed at reducing the weed risk must be developed and implemented.

4.2 Project Environmental Risk Assessment

For projects, teams must contact the Environment Team during the design phase and provide details of the proposed works. The Environment Team will assess the potential level of impact and whether any additional controls are required to manage impacts, including the development of project specific management plans (refer to the Environmental Project Risk Management Procedure).

4.3 Management Plans

Management plans must consider specific issues relevant to a site and/or project and implement control measures to either avoid or minimise the impact to soil, air and water (where appropriate). The Environment Team can be engaged to assist with the development of management plans if required. The Environment Team must review all environmental management plans developed. Generic information for typical management plans is provided below.

Management plans and strategies will include at a minimum:

- A brief description of the project(s) or facility and the existing environment including, where relevant, location and proximity to sensitive receptors such as residences and water bodies, local topography, and geology;
- SDS of the chemical or hydrocarbon detailing potential environmental impacts;
- Identification of incompatible chemicals and appropriate storage arrangements;

- Information regarding the activities for which the chemical or hydrocarbon is used (including handling between delivery, storage areas and final use location);
- Management and control measures to mitigate the impacts to the environment as a result of chemical or hydrocarbon storage, handling or use;
- Emergency response procedure including emergency contact details;
- Monitoring requirements to confirm that the measures being implemented are effective in avoiding or reducing the impact, and that there is no ongoing risk to the environment as a result of the management.

5 Training and Competency

Relevant operational employees must become familiar with the operational environmental risks relevant to their area of operations, including risks associated with chemical or hydrocarbon management. Employees must, in particular, familiarise themselves with the risk register (available on the intranet at Services & IT>Risk & Compliance>Risk Management).

Employees (where relevant to their core duties) will be trained in the requirements of this Environmental Chemical and Hydrocarbon Management Procedure and/or the associated operational work instructions or applicable standard operating procedures.

Where the risk assessment process determines there is the potential for impacts as a result of chemical or hydrocarbon management during projects or operations, employee inductions are to include measures in place to manage the impacts from chemicals or hydrocarbons.

For projects, induct all TGen employees, apprentices, contractors and suppliers entering the project area on the measures in place for managing chemicals and hydrocarbons, including the requirements of any management plans or work instructions, where relevant. The induction will focus on the location of SDS's for the chemicals and hydrocarbons at the site, spill kits and fire-fighting equipment. The induction will also cover general issues such as maintaining good housekeeping and locations of bins and skips for disposal.

6 Management and Control Measures

6.1 General

The following general mitigation measures must be implemented (at a minimum) to minimise the potential impact to the environment as a result of chemical and hydrocarbon storage, handling and use.

- Ensure relevant employees and contractors are trained appropriately in the proper handling and use of chemicals and hydrocarbons;

- Store, label and handle chemicals and hydrocarbons to comply with the requirements of the WHS Regulations and the relevant SDS;
- Maintain vehicles and plant/equipment in accordance with manufacturer's specifications and undertake regular checks to minimise the potential for leaks;
- Use engineering controls to minimise the risk or potential impacts of spills, for example:
 - Use bunds.
 - Design storage units to prevent vehicles or fork-lifts puncturing tanks.
 - Install oil/water separators.
- Store chemicals and hydrocarbons in a location where the potential for environmental impact from leaks or spills is minimised. Do not store in the following areas:
 - Within 50 metres of stormwater, drainage lines or creeks.
 - Adjacent to fence lines.
 - Flood prone areas.
 - On slopes steeper than 1:10.
- Store fluorescent, mercury vapour and high pressure sodium lamp/tubes in a manner that will prevent the accidental breakage of the bulbs. New lamps must be stored flat and in the shipping materials supplied by the manufacturer;
- Store incompatible chemicals in the appropriate manner;
- Minimise the volume of chemicals and hydrocarbons stored on site where possible, giving consideration to climatic patterns and transport schedules;
- Provide spill kits on all sites suitable for the type and volume of chemicals/hydrocarbons stored;
- Ensure that the appropriate type and quantity of chemical neutralising agent is available where applicable;
- Where possible, maintain a stock of spare spill containment materials to ensure timely re-filling of kits post spill;
- Do not dispose of unused/unsuitable chemicals/hydrocarbons down stormwater drains or on land;
- Use licenced waste management contractors for the removal and disposal of chemicals and hydrocarbons, and used spill containment materials, where applicable.

Recommendations

- Use preventative maintenance;
- Where practical, order infrequently used chemicals and hydrocarbons just prior to use;
- Use LED lighting as an alternative to mercury containing fluorescent lamps.

6.2 Bunding

Bunding is used to prevent chemicals or hydrocarbons escaping into the environment. Bunds are used to contain spills and leaks from:

- Drums (temporary or permanent)
- Packaged fuel
- Transformers in storage
- Storage tanks

Where bunding is required as identified in the environmental risk assessment (refer to Section 4), the following mitigation measures must be implemented:

- Design bunds to AS 1940-2004 The Storage and Handling of Flammable and Combustible Liquids and/or AS 3780-2008 The Storage and Handling of Corrosive Substances;
- Design and locate banded areas to prevent potential impact to sensitive receptors (i.e.: aquifers or groundwater, etc.);
- Ensure there are appropriate storage arrangements for small amounts of chemicals or hydrocarbons (e.g. 110 litre drums or smaller) including:
 - Stored on sealed surface within a small portable bund away from drains.
 - Appropriate spill kits (type and size) are in place.
- Where more than one drum or container is stored in a banded area, the net capacity of the banded area must be:
 - The entire contents of the largest drum/container; plus
 - 25% of the total volume of stored products up to 10,000 litres; plus
 - The volume of any fire water over a 20 minute period.
- For bulk fuel storage bunds , the net capacity of the banded area must be:
 - The entire contents of the largest tank; plus
 - The volume of any fire water over a 20 minute period.
- Install temporary bunding on flat ground;
- Inspect and drain bunds after rainfall:
 - Drain clean rainwater to stormwater.
 - Do not drain water to stormwater if there is evidence of contamination (for example where there is a sheen on the surface).
 - Drain residue (contaminated water) to oil/water separator if available.
 - CLOSE drainage valve once rainwater has been emptied.
- Conduct regular bund inspections:
 - Check drainage valve is in the closed position.
 - Check for gaps/cracking in concrete and block bunds.

- Check for damage to chemical resistant linings.

Recommendations

Where appropriate and practical, consider:

- Covering bunded areas (where it does not interfere with access to equipment) to prevent rainwater collecting in the bund;
- Using drum bund covers to prevent rainwater collecting in bunded pallets;
- Alternative containment systems to traditional bunding such as:
 - Plastic liner bund kits.
 - Transformer containment bags.
 - Modified freight containers with suitable ventilation and spill containment.

6.3 Spill Response

The following are actions that must be taken in the event of a chemical or hydrocarbon spill:

Control

- Determine whether the affected area is safe to enter;
- Eliminate all ignition sources (e.g. open flames, internal combustion engines, etc.);
- Establish the appropriate restricted area based on the nature of the spill, volatility, temperature, etc.;
- Restrict public access to the affected area by using temporary barriers and/or warning signs. Do not remove warning measures until there is no potential risk to human health or the environment;
- Be aware that flammable/explosive vapours may accumulate in poorly ventilated areas or confined spaces. Do not place self or others at risk of inhaling vapours. Where safe to do so, increase natural ventilation to area (e.g. by opening doors, enclosures, etc.)
- Assess the situation and identify the:
 - Source of the spill.
 - Volume, extent and size of the spill.
 - Type of chemical or hydrocarbon involved in the spill. Refer to the SDS to determine appropriate spill response requirements.
 - Potential impact on people and the environment.
 - Additional resources or assistance required to contain and treat the cause of the spill (e.g. emergency services or contractors).
- Contact your Line Manager/Supervisor immediately to report the spill. For more guidance on reporting, refer to Section 7.3;

- Initiate the site Emergency Response Procedure (TGen intranet>Operations>Emergency management) in the event of major spill incidents (>1,500L);
- In the event of a major chemical or hydrocarbon spill the Chief Warden shall notify Emergency Services if:
 - The spill has spread, or has the potential to spread, beyond the boundary of the site.
 - It is beyond the resources of the site to clean up the spill effectively or safely.
 - The protective equipment is inadequate for dealing with the situation.
 - Employees are not experienced in dealing with the situation.
 - Employees and the public are or could potentially be put at risk.

Contain

- Prevent the spill from entering drains, cable ducts or unsealed areas using but not limited to:
 - Sand bagging or blocking of drains and use of temporary weirs or bunds.
 - Use of absorbent pads or material in a down-slope position.
 - Oil/water separators (for major spills).
- Surround the spill with absorbent booms or banks of sand to prevent the spill from further impacting the environment.
- Review the product Safety Data Sheet (see Chemalert database) for spill clean-up advice and commence spill clean-up immediately after containment.

Clean up

- Ensure personal protective equipment is available and worn as appropriate including safety glasses, gloves and any additional PPE specified in the product safety data sheet (SDS) and JSEA;
- For major spills (>1,500L) specific clean up techniques may be recommended. Contact The Environment Team for advice in these instances;
- For minor (few litres) or moderate spills (<1,500L), soak up as much of the spill as practicable:
 - For spills on sealed surfaces (e.g. concrete) it is recommended that absorbent pads, and/or sand be used.
 - For spills on unsealed surfaces (e.g. soil) that have pooled it is recommended that appropriate absorbent materials are used (e.g. sand or spill kit materials) and the soil either removed and treated or treated in situ.
 - For spills on water it is recommended that floating booms and a skimmer be used.
- Place clean up materials in a robust plastic bag or drum;

- Remove material protecting drains or unsealed areas once spill has been cleaned up. If this material has been contaminated, place in a robust plastic bag or drum;
- Wipe any excess spill from the outside of the bags or drums, placing rags etc. inside the bag/drum before sealing;
- Clearly label bags and drums containing contaminated materials to indicate contents;
- Dispose of bags and/or drums containing chemical/hydrocarbon waste via a waste disposal company. In centres where there are no specialised waste disposal services, transfer waste to the local landfill;
- Service oil water separator using a licenced contractor.

7 Monitoring and Reporting

7.1 Monitoring

TGen is to monitor and report on site works or works at facilities to confirm works are being undertaken in accordance with this procedure.

Monitoring activities could include:

- Reporting and investigating incidents in accordance with the Environmental Incident Reporting and Investigation Procedure.
- Workplace inspections.
- Identifying non-conformance and taking corrective and preventive actions.
- Conducting periodic internal audits.
- Managing records.

7.2 Non-conformance/Non-compliance

Non-conformances with this procedure must be reported (and investigated if required) in accordance with the Environmental Incident Reporting and Investigation Procedure. All corrective and/or preventive actions shall be recorded in the Incident Management System in accordance with Environmental Incident Reporting and Investigation Procedure.

Substantial financial penalties (for individual people and/or the corporation) may be applied as a result of non-compliance with legislation.

7.3 Reporting and Records

Reporting guidelines:

Spill amount	Spill contained i.e. into a bund	Spill to ground, unsealed surfaces, water, drains etc.
Minor (few litres)	No report required Depending on circumstances may be reported to Line Manager/Supervisor	Report to Line Manager/Supervisor Depending on circumstances may be reported into the Incident Management System
Moderate (<1,500L)	Report to Line Manager/Supervisor Report in the Incident Management System	Report to Line Manager/Supervisor Report in the Incident Management System Report to NT EPA
Major (>1,500L)	Report to Line Manager/Supervisor Report in the Incident Management System Report to NT EPA if there is a potential threat to cause pollution resulting in environmental harm	Report to Line Manager/Supervisor Report in the Incident Management System Report to NT EPA

Under the NT Waste Management and Pollution Control Act, there is a duty to notify the NT EPA (formerly known as NRETAS) of any an incident where it causes or there is threat to cause pollution resulting in environmental harm. In the event of a serious environmental pollution incident the NT EPA must be informed as soon as practicable after the incident and in any case within 24 hours of the incident occurring.

Any chemical or hydrocarbon (oils/fuels etc.) spill that occurs in a banded area that has not entered a drain or unsealed area and has been fully contained and cleaned up does not need to be reported to NT EPA.

All other chemical or hydrocarbon spills including uncontained chemical or hydrocarbon spills to ground or water must be reported to NT EPA.

In all instances if there is uncertainty as to if a spill is reportable to NT EPA – It should be reported.

On being made aware of an environmental incident senior site Managers/Coordinators are to assess and report the incident to NT EPA, where applicable.

Reporting can be done using the Pollution Hotline number 1800 064 567 (available 24hrs) which will register the incident on the NT EPA system.

Information requested by NT EPA may include:

- a. Details of the incident (how the pollution occurred/or may occur)
- b. The place where it occurred and date/ time of the incident
- c. The attempts made to prevent, reduce, control rectify or clean up the pollution or resultant environmental harm caused or threatening to be caused by the incident
- d. Details of the person reporting.

The NT EPA may also request the completion of an official report form covering the above information in the event of a serious incident. In this instance the report must be saved in Records Manager (RM8) and fully referenced in the associated Incident Management System incident report.

Teams will keep records of monitoring activities such as site inspections and internal audit, and make them available to the Environment Team on request.

All environmental incidents (including near misses and hazards) must be reported in the Incident Management System in accordance with the Environmental Incident Reporting and Investigation Procedure.

8 Roles and Responsibilities

Role / Title	Responsibility
Chief Executive Officer	<ul style="list-style-type: none"> • Ensure that all personnel are aware of requirements of this procedure and its management in sites under Territory Generation control. • Initiate procedure review as required.
All Managers/Site Coordinators	<ul style="list-style-type: none"> • Ensure that this procedure is put in place at all Territory Generation controlled power stations sites. • Ensure that personnel are advised and trained as necessary in the procedure to be followed. • Ensure that contractors are informed of and follow the

Role / Title	Responsibility
	procedure, where applicable. <ul style="list-style-type: none"> Contribute to procedure reviews.
Project Officers/Contract Managers	<ul style="list-style-type: none"> Ensure that contractors under their control are informed of and follow the procedure, where applicable. Contribute to procedure reviews.
All Personnel	<ul style="list-style-type: none"> Ensure that this procedure is followed personally and by contractors/visitors under their control, where applicable. Contribute to procedure reviews.
Document Owner	<ul style="list-style-type: none"> The position responsible for the preparation, review and accuracy of this document.
Document Sponsor	<ul style="list-style-type: none"> The position responsible for the approval and use of this document

9 References

9.1 Legislation and Regulatory Obligations

Legislation and guidelines relevant to chemical and hydrocarbon management in the Northern Territory (NT) include the following:

Dangerous Goods Act (NT)

Under the Dangerous Goods Act (NT) ('Part 3: General duties and offences in relation to dangerous goods'), TGen has legislative obligations and requirements to correctly use and manage chemicals and hydrocarbons in the workplace.

Waste Management and Pollution Control Act (NT)

The Waste Management and Pollution Control Act (NT) (WMPC Act) makes it a legal obligation on a person undertaking an activity that causes or is likely to cause pollution resulting in environmental harm to take all measures that are reasonable and practicable to prevent or minimise the pollution or environmental harm.

Water Act (NT)

Under the Water Act (NT) it is an offence to cause waste to come into contact with water; or water to be polluted. It is also an offence to interfere with a waterway and/or to obstruct

the flow of water in a waterway without permission. The Act is administered by the Water Resources Division of the Department of Land Resource Management (DLRM) who is also responsible for the administration of permits and licences (eg water extraction licence) under the Act. DLRM is also responsible for the development of Beneficial Uses under Section 22A of the Act. Part 7 of the Act relates to Water Quality. Part 7, Section 74 (granting of waste discharge licences) is administered by the Northern Territory Environment Protection Authority.

Work Health and Safety (National Uniform Legislation) Act (NT)

The Work Health and Safety (National Uniform Legislation) Act (NT) (WHS Act) and Work Health and Safety (National Uniform Legislation) Regulations (NT) (WHS Regulations) apply to the management of chemicals and hydrocarbons (hazardous chemicals) and specify requirements for labelling, signage, storing and recording of hazardous chemicals within a business. The Regulations also requires those responsible for chemical and hydrocarbon management to make provision for the containment of spills and the response to, and clean-up of, any spills that may occur.

Other legislation and guidelines relevant to chemical and hydrocarbon management in the NT includes the following:

- National Standard for the Storage and Handling of Dangerous Goods (National Occupational Health and Safety Commission (NOHSC)):1015 (2001)
- National Code of Practice for the Control of Workplace Hazardous Substances (NOHSC:2007 (1994))
- National Code of Practice for Storage and Handling of Workplace Dangerous Goods (NOHSC:2017 (2001))
- Australian Standards

9.2 TGen Corporate Documents

- Control of TGen Corporate Documents Procedure
- Control of Corporate Documents Process Diagram

9.3 Other Environmental Procedures

TGen procedures that must be referred to when addressing risks associated with chemical and hydrocarbon management include:

- Environmental Waste Management Procedure
- Environmental Soil and Water Management Procedure
- Environmental Incident Reporting and Investigation Procedure

10 Definitions

Where terms or words are not included in the definitions section, refer to Territory Generations Glossary for clarification. The glossary is available on Territory Generation intranet.

Term	Definition
Chemical	<p>A distinct compound or substance, especially one which has been artificially prepared or purified.</p> <p>In the context of this procedure, chemicals are substances:</p> <ul style="list-style-type: none"> • with the potential to cause environmental harm • that are hazardous substances • that are dangerous goods <p>The procedure does not include radiation material (within the meaning of the Radioactive Ores and Concentrates (Packaging and Transport) Act (NT)), asbestos, or explosives (Class 1 Dangerous Goods under the Dangerous Goods Regulations (NT)).</p>
Chemical management folder	A folder containing Safety Data Sheets of chemicals stored and used within each area.
Dangerous goods	Substances or things declared under the Dangerous Goods Act (NT) or prescribed by the Dangerous Goods Regulations (NT). They may be corrosive, flammable, explosive, oxidising, or reactive with water.
Employee	A worker employed by TGen.
Environmental incident	A sequence of events of any degree or duration which causes or has the potential to cause environmental harm or nuisance.
Hazardous substances	A solid, liquid or gas or any mixture capable of injuring a person, compromising the health or safety of a person or damaging property or the environment. They may be solvents, pesticides, paints, adhesives, petroleum products, heavy metals or any other substance that is hazardous to health and is used or produced at work.
Hydrocarbon	In the context of this procedure, hydrocarbon refers to petroleum hydrocarbons such as oil, gasoline, diesel and a

Term	Definition
	variety of solvents.
Projects	Works undertaken to create a new asset or space, or to change the use, function or layout of an existing asset or space. Can vary with financial cost and complexity.
SDS (Safety Data Sheet)	A document provided by the manufacturer regarding the identity of the chemical, health and physiochemical hazards, safe handling and storage procedures, emergency procedures including first aid response, and disposal considerations.
Worst case	The worst of the possible foreseeable circumstances.
Shall	Means a mandatory requirement
Should	Means an advisory requirement

11 Records

Information from this procedure is captured, stored and managed in the TGen Electronic Document and Records Management System (RM8) and controlled in the Controlled Document Register (RM8).

12 Review

This procedure will be reviewed, at a minimum, every three years or in the event of any significant change in system or process.

13 Document History

Date of Issue	Version	Prepared By	Description of Changes
05/06/2017	1.0	Tanya Carriere	Final

14 Further Information and Assistance

Further information and assistance can be obtained from TGen's Environment Team at environment@territorygeneration.com.au.