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**Kaius Resources**

**Standard Operating Procedure – Hazardous Substances**

Reference: SOP-005

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# Purpose

This Standard Operating Procedure outlines the requirements for the management of hazardous substances including selection, purchase, storage, use, and disposal.

# Scope

This Standard Operating Procedure (SOP) applies to all activities at sites operated and/or under the control of Kaius Pty Ltd and its subsidiaries. It applies to all persons working on the site including exploration personnel, permanent, temporary and contract employees. This SOP forms a key part of the Kaius Safety & Health Management System which has been established to manage risk to an acceptable level and in accordance with all relevant legislation.

# Authority

This procedure can only be altered with the approval of the Site Senior Executive (SSE).

# Responsibilities

**Site Senior Executive (SSE)**

Site Senior Executive shall ensure:

* That all of the provisions of this SOP are implemented, and that compliance is achieved.
* Adequate resources are provided to maintain compliance with the requirements of this SOP, and
* The application and requirements of this SOP are periodically audited and reviewed.

**Supervisors**

Supervisors shall ensure:

* That the requirements of this SOP are implemented.
* That workers, including contractors, are trained in the requirements of this SOP.
* All work undertaken within their area of responsibility is conducted in accordance with the requirements of this SOP.
* They monitor compliance with this SOP.
* This Standard is readily available to all workers and contractors.

**Mine Workers**

Mine Workers shall:

* Undertake the training and assessment provided by the SSE.
* Act in accordance with this SOP, and
* Not undertake any tasks for which they are unable to safely complete.

# Definitions and Abbreviations

The following definitions and abbreviations are used in this procedure.

|  |  |
| --- | --- |
| ADG Code | Australian Dangerous Goods Code |
| CARD | Contain, Absorb, Report, Dispose |
| MQSHA | Mining and Quarrying Safety and Health Act (1999) |
| MQSHR | Mining and Quarrying Safety and Health Regulations (2017) |
| Competent Person | A person who has the necessary training, skills and capability to carry out the task. |
| GHS | Globally Harmonised System is used to classify and communicate hazards using internationally consistent terms and information on chemical labels and Safety Data Sheets. |
| Hazardous Substances | Designated hazardous substance in National Occupational Health and Safety Commission document “List of Designated Hazardous Substances [NOHSC:10005], or Meeting the criteria stated in NOHSC’s document ‘Approved Criteria for Classifying Hazardous Substances [NOHSC:1008]. |
| JSEA | Job Safety and Environmental Analysis |
| MOP | Mine Operating Procedure |
| PPE | Personal Protective Equipment |
| SDS | Safety Data Sheet contains details of the hazards associated with a chemical and gives information on its safe use. |
| Shall | Indicates that a statement is mandatory. |
| Should | Indicates a recommendation. |
| SOP | Standard Operating Procedure |
| SSE | Site Senior Executive |
| TARP | Trigger Action Response Plan |
| WTC | Waste Transport Certificate |
| ADG Code | Australian Dangerous Goods Code |
| CARD | Contain, Absorb, Report, Dispose |
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| JSEA | Job Safety and Environmental Analysis |
| MOP | Mine Operating Procedure |
| PPE | Personal Protective Equipment |
| SDS | Safety Data Sheet contains details of the hazards associated with a chemical and gives information on its safe use. |
| Shall | Indicates that a statement is mandatory. |
| Should | Indicates a recommendation. |
| SOP | Standard Operating Procedure |
| SSE | Site Senior Executive |
| TARP | Trigger Action Response Plan |
| WTC | Waste Transport Certificate |
| KRES | Kaius Resources Mine |

# Procedure

## Location of Storage Facilities

The storage of fuels, chemicals, wastes and other potentially environmentally hazardous substances are to be stored:

* In a bunded facility or within a raised barrier, resistant to normal flood events,
* Minimum 200m away from watercourses,
* Minimum 100m from any habitat,

## Register and Coordination

SDS shall be easily accessible to all mine workers to allow the identification of appropriate controls when handling chemicals. A register of all chemicals shall be kept on site.

REG-031 Approved Hazardous Substance Register captures hazardous substances that are approved for use at KRES.

## Purchasing and Selecting Hazardous Substances

Prior to purchasing or introducing any hazardous substance to site, the chemical shall be approved for use on site.

If the hazardous substance has not been approved for use, the steps specified in Section 6.3 shall be followed.

## Introduction of New Substance to Site

When considering the need to introduce a new substance to site, first ensure that a substance that will do the same job is not already approved for site.

If an alternate, current product is not available on the chemical register (refer to REG-031), add the new product to the register.

All chemical substances brought to site shall be supplied with a current safety data sheet, and a risk assessment shall be submitted for hazardous substances and dangerous goods.

Substances being added to REG-031 shall be approved by the SSE or delegate prior to the introduction of the new substance to site.

Purchasing arrangements shall take into account manufacturer’s requirements for transport and storage.

## Stock Control

All substances received onto site shall be checked by the person receiving the goods to ensure that they are:

* Labelled with the substance name.
* The substance appears in the site chemical register as approved for use.
* Stored in the correct area, and
* Clearly marked with a use by date.

## Storing Hazardous Substances

The storing of hazardous substances shall be in accordance with relevant Legislation (Acts, Regulations and Codes), Australian Standards, and guidelines on the SDS.

Store Hazardous Substances in designated locations to ensure there is minimal risk of accidental release to land. These should be in areas that are not subject to adverse weather conditions (i.e. subsidence, flooding or bushfire) or in environmentally or culturally significant areas.

Storage facilities may be permanent (i.e. tank farms, fixed single tanks, workshop stores and warehouses) or non-permanent (i.e. skid mounted tanks, portable chemical storage cabinets and hazardous chemicals stored in IBC’s or on pallets.

Ensure access to and from storage facilities is maintained at all times including sufficient access for vehicles

Ensure labelling and signage complies with the requirements of the specific Australian / New Zealand Standard

Ensure operation of the storage facility comply with the requirements of the specific Australian / New Zealand Standard applicable to the class of substance stored

Ensure adequate maintenance of storage vessels, bunding and ancillary equipment. Storage tanks for diesel will comply with the requirements listed in AS1692-2006 Steel Tanks for Flammable and Combustible Liquids.

Oils will be stored in above ground tanks and will be fully bunded. Activities involving oils will be undertaken on a hard stand area, and drip trays will be provided during transfer operations. Controls and management procedures will be adopted for servicing of machinery.

Design, construct and procure secondary containment bunds in accordance with the requirements of the specific Australian / New Zealand Standard

Provide adequate segregation of between potentially incompatible Dangerous Goods/ Hazardous Chemicals.

Ensure separation and segregation distances comply with the requirements of the: specific Australian / New Zealand Standard applicable to the class of material stored.

Refer to Appendix A: Chemical Storage Compatibility Chart for further information.

### Storage of Gas Cylinders

The storage of gases is to be in accordance with the provision of AS 1596: LP Gas - Storage and handling and AS 4332: Storage of gas cylinders. In particular:

* Full cylinders are to be stored in a secure, upright manner, segregated by class, free from contact with greases, oils or water, and separated from empty cylinders.
* Cylinders are to be restrained to prevent falling or being knocked over.
* Storage facilities are to be:
	+ Constructed of fire rated material and have a firm, level floor.
	+ Away from occupied workplaces and thoroughfares.
	+ Well ventilated and provided with basic weather protection.
	+ Free from fire risk.
	+ Designated as a NO SMOKING, NO NAKED FLAME area.
	+ Clearly marked as a gas with HAZCHEM labelling, and
	+ Provided with appropriate safety/emergency equipment (e.g. fire extinguishers).

Separation/ segregation distances are maintained in accordance with the AS 1596: LP Gas - Storage and Handling

* All cylinders are to be treated as full unless valve stems have been removed.

### Flammable and Combustible Liquids

All flammable liquids shall be stored appropriately at each site.

Flammable liquids are to be stored to comply with the AS 1940: The Storage and Handling of Flammable and Combustible Materials.

The storage area containment material must be impervious to the materials stored and managed to prevent the release of liquids to waters or land. Where no relevant Australian standard exists, such materials must be stored within an effective on-site containment system.

Storm water shall be diverted around contaminated areas and facilities used for the storage of chemicals and flammable or combustible liquids to minimise the potential for contamination.

## Placarding and Labelling

Placarding for storage of hazardous substances in the workplace is prescribed in s349, s350 and Schedules 11 and 13 of the Work Health and Safety Regulation 2011. Class labels from the ADG Code shall be used for the purpose of identifying hazardous chemical storages.

* Placard types include: Outer warning placard (HAZCHEM sign) for the entrance to the workplace.
* Information placards for hazardous chemicals in bulk (i.e. tanks and stockpiles).
* Information placards for hazardous chemicals in packages.

### HAZCHEM Codes

The HAZCHEM Code consists of a numeral followed by one or two letters. Some letters may be presented in a dark rectangle to indicate a special application of personal protective equipment.

The numeral indicates the equipment suitable for firefighting and, where appropriate, for dispensing spillage as follows:

1 – Water jets

2 – Water fog (if unavailable fine water sprays may be used)

3 – Foam

4 – Dry agent (for substances where contact with water is hazardous)

The first letter indicates as follows:

|  |  |  |  |
| --- | --- | --- | --- |
| Letter | Danger of Violent Reaction or Explosion | Protective Clothing and Breathing Apparatus | Appropriate Measures |
| P | Yes | Full protective clothing including breathing apparatus | Dilute |
| R | No | Full protective clothing including breathing apparatus | Dilute |
| S | Yes | Breathing Apparatus | Dilute |
| S | Yes | Breathing Apparatus for fire only | Dilute |
| T | No | Breathing Apparatus | Dilute |
| T | No | Breathing Apparatus for fire only | Dilute |
| W | Yes | Full protective clothing including breathing apparatus | Contain |
| X | No | Full protective clothing including breathing apparatus | Contain |
| Y | Yes | Breathing Apparatus | Contain |
| Y | Yes | Breathing Apparatus for fire only | Contain |
| Z | No | Breathing Apparatus  | Contain |
| Z | No | Breathing Apparatus for fire only | Contain |

**Note:**

* Where breathing apparatus is indicated, protective gloves shall also be worn.
* “Dilute” indicates that the substance may be washed away with large quantities of water.
* “Contain” indicates the need to prevent any spillage from entering drains or water courses.
* The letter “E” is added when evacuation of people from the area of an incident should be considered by the emergency service. Actual evacuation is a matter of decision after taking into account all relevant factors.

### Labelling

All hazardous substances shall be classified and labelled according to the GHS with the following information:

* Product identifier
* Shipping name and UN number, if the chemical is dangerous goods.
* Contact details of manufacturer or importer.
* Identity and proportion of each ingredient.
* GHS standard hazard pictogram, or dangerous goods class label for transport.
* Hazard statement, signal work and precautionary statement.
* Information about the hazards, first aid and emergency procedures, and
* Expiry date.

## Use and Handling

The safe handling and precautions for use of hazardous substances are described in the relevant SDS. Prior to using the chemical, the employee shall understand and adhere to the requirements contained in the relevant safety data sheets.

* Hazardous substances shall be used in accordance with the manufacturer’s instructions.
* Hazardous substances shall not be mixed or combined with other substances unless this is part of the approved process for use of the product.
* Employees shall wear all the PPE as stated on the SDS for use and clean-up of the hazardous substance.
* Eating or drinking while using hazardous substances is forbidden.
* Persons not involved in the work should be excluded from the work area.
* Replace lids on containers immediately after use.
* Clean up the work area on completion of use to ensure there is no spillage or excess that could harm others.
* Hazardous substances that are passed their storage life or use-by-date shall not be used. They are to be isolated and disposed of as per the SDS instructions.
* Flammable substances shall not be used near any ignition source. An exclusion zone should be established,
* Where appropriate, personnel shall wash themselves and their clothing thoroughly after completing tasks involving handling of chemicals and other hazardous substances.

Take 5, JSEA or higher-level risk assessments shall be used as necessary to identify, assess and control hazardous substance risks.

## Movement of Hazardous Substances

Deliveries of hazardous substances to and from the Kaius Resources Mine is only to be undertaken by licensed transport companies.

All hazardous substances are to be delivered to a secure store by the supplier or their agent.

There should be no unnecessary movement of hazardous substances. Where there is the requirement for movement of hazardous substances, this shall be controlled as described in the Australian Dangerous Goods Code and SDS.

## Spillage of Hazardous Substances

In the event of a spillage of a hazardous substance, refer to the Spill Response Procedure and relevant SDS.

Spillages must be prevented from entering and drains or water courses. Absorbent material shall be placed on spillages which will then be collected for disposal and any contaminated soil removed for treatment and disposal.

Contaminated soil material shall either be stockpiled and bio-remediated or disposed of as a regulated waste.

DEHP will be notified of diesel spills as required under the Environmental Authority conditions.

## Decanting

Decanting of hazardous substances should be restricted to instances where there is no alternative and it is absolutely necessary.

Before a substance is decanted into another container, the new container shall be:

* Suitable to handle the material, and
* Labelled with the substance name and class (from the original label).

The label shall remain on the container until the container has been thoroughly cleaned and is free of contamination.

The left over or contaminated residue of decanted substances, including containers, shall be disposed of correctly.

All processes involving the transfer of flammable or combustible liquids shall be completed in accordance with AS 1940 - The Storage use and handling of flammable and combustible liquids.

## Disposal of Hazardous Substances

All hazardous substances shall be disposed of in appropriate containers and in accordance with the SDS. Hazardous substances are not to be mixed for disposal.

Where disposal is to occur, it is to be supervised by the Site Manager to ensure it is in accordance with safe disposal practices. No hazardous substances are to be disposed of at the site either by burning or burying.

Movement of hazardous substances off site for disposal shall be done with licensed contractors only. A waste transport certificate (WTC) shall be completed for regulated waste and a register maintained. For a complete list of regulated wastes refer to Environmental Protection Regulation 2008, Schedule 2E.

## First Aid

Any person affected by a hazardous substance shall have appropriate first aid or medical treatment as per MOP 008 First Aid. Initial response and first aid treatment details are provided on the relevant SDS.

Incidents involving persons affected (injury or illness) by hazardous substances shall be reported and investigated in line with the Kaius Resources Mine Incident Investigation, Corrective and Preventative Action Standard.

# Review Criteria

This document shall be reviewed:

* Every three years
* When there is a change of method and/or technology that may affect the accuracy of this document.
* When a significant incident has occurred that is relevant to this document and its subject matter.
* Where legal requirements change as a result of changing legislation etc.
* In response to any adopted recommendations arising from internal/ external Audits

# Safety and Environment

Safety and Environment are covered in the body of this procedure.

# Attachments, References and Related Documents

## References and Related Documents

Australian Dangerous Goods Code 2015

Mining and Quarrying Safety and Health Act 1999

Mining and Quarrying Safety and Health Regulation 2017

DNRM Hazard Database

Explosives Act 1999

Environmental Protection Regulation 2008, Schedule 2E

Work Health and Safety Regulation 2011

AS 1319: Safety Signs for the Occupational Environment

AS 1596: LP Gas - Storage and Handling

AS 1614: The Design and use of Reflectorised Signs for Mines and Tunnels

AS 1940: The Storage and Handling of Flammable and Combustible Liquids

AS 2030: Gas Cylinders Code

AS 2714: The Storage and Handling of Hazardous Chemical Materials Class 5.2 Substance – Organic Peroxides

AS 3780.8: Storage and Handling of Hazardous Chemical Materials Class 8 Substances – Corrosives

AS 4332: Storage of gas cylinders

National Occupational Health and Safety Commission (Safe Work Australia) publications:

* Guidance Note for Emergency Service Manifests
* Model Code of Practice: Labelling of Workplace Hazardous Chemicals Globally Harmonised System of Classification and Labelling of Chemicals
* Code of Practice for the Managing Risks of Hazardous Chemicals in the Workplace
* Code of Practice for the Preparation of Safety Data Sheets for Hazardous Chemicals
* Placarding for Storage of Hazardous Chemicals

Kaius Resources Mine Environmental Management Plan

Kaius Resources Mine Chemical Risk Assessment

Kaius Resources Mine Principal Hazard Management Plan

MOP 008 - First Aid

Kaius Resources Mine Spill Response TARP

Kaius Resources Mine Contractor Management System Register

SOP RSK 005 - Hazardous Substances Risk Assessment

# Appendix A Chemical Storage Compatibility Chart



NB: A greater segregation distance may be required where chemicals are stored in bulk or in tanks. Always consult the SDS and complete a risk assessment as required.

# Appendix 02 Exploration Sites

Additional requirements for exploration sites include:

**Fire prevention**

* Long grass shall be slashed or graded for a 20m radius (40m x 40m work area) around the exploration site down to the soil, and
* Fire extinguishers are to be removed from their travel position on drill sites and placed in an at-ready position, on the ground.

**Bush fire**

If a ‘grassfire’ is identified within the tenement boundary, notify the site manager and prepare to move to a safe area. Fight the fire, only if safe to do so. If a ‘bushfire’ is identified in the vicinity immediately shutdown the rig, evacuate to a safe area, and notify the site manager.

**Exclusion zone**

A 20-metre radius (40m x 40m work area) exclusion zone is to be established around each operating drill rig for the prevention and control of fires. Smoking is not permitted within the exclusion zone. Flammable materials (paper, rags) and cigarette butts should be disposed of in a container as required and removed as soon as possible.

**Emergency egress**

A minimum of two vehicle emergency egress options shall be made available for each site to assist in the evacuation of personnel. The emergency egresses shall be communicated to personnel by the Site Manager and documented in the emergency response plan.