



STAR-ORION SOUTH DIAMOND PROJECT
ENVIRONMENTAL IMPACT ASSESSMENT

APPENDIX 7-B

Hazardous Materials Management Plan

1.1.1 Hazardous Materials Management Plan

1.1.1.1 Introduction

This Management Plan outlines the hazardous substances and waste dangerous goods (HSWDG) that are expected to be handled on Site. It outlines proper storage and disposal locations, waste products generated, and a general description of fuel storage areas. This plan also contains an updated spill contingency plan, outlining detailed information on the risk and hazard analysis, safety considerations, initial spill response, and documentation and reporting protocol. The step by step procedures for initial spill response and reporting requirements were developed during exploration for employees and contractors to reference in the event of a spill. This plan was developed to educate employees/contractors to promote spill prevention and minimize spill occurrences. As the project develops and the site layout and storage facilities are finalized and constructed, this plan will be updated to reflect the current conditions and to address the current risk factors associated with the project.

As part of the Shore Gold staff and contractor orientation, all employees will be required to review the *HSWDG Storage and Handling Work Instruction* which will describe in detail how to handle, transport and dispose of each HSWDG material. This work instruction will also be available to all employees and will be placed in strategic areas such as at storage locations to act as a reference for employees. This will ensure that all HSWDG will be properly handled while on Site and will also be properly disposed of. Daily inspections of the Site will also be completed to ensure the management plan is being adhered to and to enforce disciplinary recourse for acts of non-compliance. All HSWDG storage, handling and disposal sites will be part of these inspections.

The HSWDG plan incorporates the principles of reduce, reuse, recycle, and recover. Decreasing the volume of waste generated on Site will increase cost efficiency and reduce the project's environmental impacts.

As the project develops, revisions to the *HSWDG Management Plan* will be ongoing to ensure any different or new wastes and materials are included and to indicate any updates to storage and disposal facilities. The plan will be reviewed and updated annually or when the need for revisions is warranted.

1.1.1.2 Transport

All employees and contractors must know which substances they handle are classified as HSWDG. Hazardous wastes are substances which can cause illness, disease, or death to unprotected people. The dangers of hazardous materials can come from explosion, fire, skin contact, inhalation, and consumption. A list of all the HSWDG shipped to the Site will be kept with the Shore safety department, along with the appropriate WHMIS (Workplace Hazardous Materials Information System) information associated with each product. The location where it is kept will be well known and available for employees to view.

It is important to be aware of the characteristics of the HSWDG being handled and the associated hazards of the HSWDG. Workers can protect themselves from hazardous materials by reviewing the Material Safety Data Sheets (MSDS) to learn about the precautions and proper handling techniques. A MSDS binder for all products on Site will be located in accessible and known locations and will also be available for all employees. An electronic MSDS binder will also be kept in the administration building.

The appropriate PPE must be worn at all times while handling the hazardous substance. All employees and contractors working on Site will complete the Workplace Hazardous Materials Information System (WHMIS) course through the Saskatchewan Construction Safety Association (SCSA) WHMIS Training Program. WHMIS provides workers with training and the safe handling of hazardous materials to ensure their own safety and the safe of others in the workplace. It is everyone's responsibility on Site to ensure that hazardous materials are properly labeled and handled in a safe manner.

1.1.1.3 Hazardous Materials Storage

All hazardous substances and waste will be stored in accordance with *The Hazardous Substances and Waste Dangerous Goods Regulations* and permit conditions if applicable. This is to prevent waste material from entering the environment in the occurrence of a spill.

Secondary containment will be used where necessary and will be impermeable (leak tight) and constructed of a material compatible with the waste being stored. Frequent inspections will be conducted to ensure the secondary containment is free of accumulations of rain, snow, and debris. All HSWDG containers and storage areas will be properly labeled to identify the hazardous substances.

Work areas such as the processing plant, drilling rigs, and workshops may temporarily store HSWDG waste materials in containers with an appropriate means of secondary containment. Once the waste storage containers are full they will be transferred and disposed in appropriate containers in a centralized HSWDG Storage Facility or Facilities. All aspects of the Management Plan will be in compliance with *The Hazardous Substances and Waste Dangerous Goods Regulations*.

There will be numerous HSWDG Storage Facilities in many locations around the Site. Each Facility will be marked with signage, well known, introduced during orientation and will also be part of regular inspections. There will be storage facilities dedicated to virgin materials and other separate facilities for contaminated material awaiting disposal off site. Landfills in the area (Nipawin, Prince Albert, etc.) will be utilized for any materials which are not recyclable or suitable for the incinerator (used oil, contaminated soil, hydrocarbon contaminated absorbents, etc).

Detailed work instructions will be developed and distributed to employees. These will provide employees with guidance on the proper handling, storage and disposal procedures and locations for:

- Waste oil and hydrocarbons
- Empty 45 gallon drums
- Empty 5 gallon pails
- Contaminated soils
- Used Batteries
- Hydrocarbon contaminated materials (rags, cardboard, booms, etc)
- Oil filters
- Used antifreeze
- Paint and associated containers
- Fluorescent lights
- Virgin HSWDG Materials
- Any other material which is a HSWDG and is on site

It is expected that a fuel tank farm will be established near the administration buildings to provide the necessary fuel needs. All fuel storage facilities will be installed, maintained, and decommissioned according to the *Hazardous Substances and Waste Dangerous Goods Regulations*. All tanks will be double-walled and will be inspected by a certified contractor prior to use. A visual inspection will also be conducted on a daily basis to check the tanks for deficiencies and leaks. Regular reconciliation of delivered and used volumes of fuel will also be completed.

When necessary, decommissioning of petroleum storage facilities will be performed by qualified personnel, pursuant to the *Hazardous Substances and Waste Dangerous Goods Regulations*. An application to decommission petroleum storage facilities will be submitted to MOE prior to commencing decommissioning activities. A closure report will be submitted to MOE following decommissioning which will outline any required remedial activities.

1.1.1.4 Record Keeping

Up to date records will be kept of the locations and materials kept in each HSWDG storage facility. Detailed records of the contents of each facility will also be kept at each facility where the contents regularly change (i.e. HSWDG contaminated and used hydrocarbon storage facility).

Documentation of incidents is also extremely important and will be initiated early in the response and maintained throughout the event. The first responder to a spill will collect the following information to forward on the Environment Department:

- Date and time of the release
- Location point of the release

- Volume and type of substance
- Cause of the release
- Initial response activities

All spills must be immediately reported to the designated department, regardless of substance or volume, who will determine if the spill is reportable by comparing the quantity spilled with reportable quantities presented in the provincial *Environmental Spill Control Regulations*.

If the spill is reportable then the MOE Spill Control Centre (1-800-667-7525) will be immediately notified of the spill, followed by a verbally notification to the MOE Project Officer, or their designate. Since the MOE Spill Control Centre will also notify the MOE Project Officer, leaving a voice message at the MOE office is acceptable. The following information will be provided:

- Location and time of spill;
- Type and quantity of material spilled;
- A description of the location of the spill and immediate surrounding area
- Details of action taken and proposed to be taken at the spill-site to meet the requirements to prevent further discharge, contain the spill, minimize the effects and restore the area affected
- Details of investigation into the spill.

Within 7 days of verbal notification, a written report including cover letter will be submitted to the MOE Project Officer. The report should include the following information:

- Location and time of spill;
- Type and quantity of material spilled;
- A description of the spill site area, including proximity to potential receptors;
- Names of all personnel notified of the spill;
- The cause and effects of the spill;
- Remedial action taken;
- Further action being considered; and
- Measures being considered to reduce the potential for recurrence.

A copy of the *Written Spill Report Form* to the government and all other correspondence concerning the incident will be kept as a record.

1.1.1.5 Inspection Program

Daily inspections will be conducted by the Environment Department throughout the Site. Inspections will be conducted to check for the neatness of work areas, condition of pipes,

hoses, connectors on equipment and facilities, surficial staining of soil, leaking containers/equipment, and appropriate storage containers. Any deficiencies found during the daily inspection will be promptly addressed. Detailed records of each inspection will be kept and any deficiencies will be logged as well. Any spills of HSWDG will result in an environmental incident report and investigation being completed. A plan will be put into place with the responsible persons to ensure the deficiency is not repeated.

Work areas that contain the potential risk for a release of a hazardous substance will be identified and precautionary protocols will be in place and well known. Fuel storage and fueling stations will be identified as a risk for substance release. Spill kits will be placed at all fueling stations and any other areas where there is a significant risk of substance release such as the HSWDG storage and disposal areas. Placing materials/substances in the proper locations within the designated storage facilities and maintaining good housekeeping will minimize the risk of spills.

1.1.1.6 Spill Contingency Plan

Shore is committed to promoting spill prevention and enforcing spill response procedures through employee training and awareness. This disciplined approach to spill response was developed during exploration to enforce safety, minimize property damage, and minimize negative impacts to the environment. This approach will continue and will be built upon during construction and operations.

Hazardous material spills present a number of common issues that can be managed to avoid impact to people, property, and/or the environment. It is important to know the characteristics of the spilled product and identify physical hazards to safely assess the site and develop a response strategy that doesn't compromise safety.

Personnel will be aware of the properties of the products that they handle and have access to *Material Safety Data Sheets* (MSDS). MSDS binders containing all the products used on Site will be located in easily accessible areas such as the main office and warehouse. The proper *Personnel Protective Equipment* (PPE) will be worn at all times. The goal of having PPE is to prevent exposure to toxicity entering the body by inhalation, ingestion, and skin absorption.

In some situations, signs and/ or barricades may need to be used to ensure the safety of the public and keep non-essential personnel out of the hazard area.

Hydrocarbons such as gasoline and diesel fuel are substances with a high spill potential due to frequency of transportation and use and abundant storage on Site. Hydrocarbon spills present the following hazards:

- The vapors from flammable liquids will ignite in the presence of sufficient oxygen and an ignition source.
- Flammable vapors from a spill can migrate off-site, creating a hazard area that extends beyond the obvious spill perimeter.

- Uncontrolled ignition of vapors is a concern and can lead to explosions when confined spaces are involved and/or a flash back to the vapor source.
- During the normal weathering process of spilled hydrocarbon, light ends will be released at varying rates. Fire and explosion hazards are most prevalent during the early stages of a spill, but may exist during the entire clean up period.
- Direct contact with hydrocarbons may cause severe eye and skin irritation that can be accelerated if the person has a pre-existing medical condition.

Hydrocarbon spills can have an adverse affect on the environment. Spills that migrate into the surface water and have the potential to contaminate the water supplies, damage shorelines, and pose undesirable affect on the aquatic organisms and wildlife. Land based spills can penetrate into the soils and effect soil structure, vegetation, and have the potential of contaminating groundwater resources and water wells.

A detailed and site specific Spill Contingency Plan will be developed and reviewed and will be designed based on the current layout of the site. In general, all spills that are discovered will be immediately reported to Shore's Environment Department.

There are three initial steps which will be completed when responding to a spill.

Identification – Find out the substance that was released and assess any potential hazards associated with that substance. Is the substance a hazardous waste? What PPE is required? The spilled material should be correctly identified prior to handling the substance.

Containment – Once you have identified all potential hazards and are equipped with the proper PPE, stop the source of leakage. For example, close the valve or plug the leaking hose. The substance must be isolated and contained to keep it from spreading. Materials from the spill kits should be utilized to help contain the substance.

Recovery/Cleanup/Disposal – If possible the substance should be collected from the ground surface as soon as possible. A sorbent pad can soak up the substance from the ground for small spills. The Environment Department will develop a plan of action to properly clean-up spill areas and disposal of the released substances.

It is important to recognize that not all spills are the same and spill response plans and clean-up activities are situation specific. Here are some general rules that apply to almost all containment and recovery operations for land-based spills:

- Minimize the use of heavy equipment where possible and avoid excessive surface disturbance.
- Remove as much free liquid from the surface as quickly as possible.
- Prevent surface water from entering the spill site.
- Salvage topsoil.
- Never bury hydrocarbon or contaminated soil.

- Avoid unnecessary damage to vegetation.
- Consider all options to remove contaminants and be prepared for changes to occur.
- A thorough initial cleanup will reduce reclamation time and rehabilitation costs.

There are various common techniques used for containment and recovery of spills. Spill barriers such as dams, dykes, and berms can be used to block existing drainage systems and redirect spilled product. In situations where the substance was released onto water, trenches and bell holes can be dug and used in conjunction with a skimmer to collect spilled products off the water surface. Sorbent pads and booms are ideal for small spills and can be utilized to absorb the spilled product. Vacuum trucks can be used to remove spilled materials from soil and water.

Spill kits will be placed around all fueling stations and other work areas with the potential for a substance release. The spill kits will contain sorbent pads, sorbent socks, plastic sheeting, safety glasses, nitrile gloves, etc. The sorbent pads can be used to absorb the released substance from the ground surface and the sorbent booms can be used to contain the substance. Nitrile gloves and safety glasses should be worn when handling any released substance.

In addition to the Spill Contingency Plan, there will also be an Environmental Emergency aspect to the Emergency Response Plan which will indicate, in detail, which actions to perform in what order when an environmental emergency takes place. This plan will also describe which person(s) is (are) responsible for what action upon finding the Environmental Emergency.