



JERICO DIAMOND PROJECT Contingency Plan

Tahera Diamond Corporation
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Prepared by:
Jericho Diamond Mine
Nunavut

April 2008

TAHERA DIAMOND CORPORATION

**JERICO DIAMOND MINE
CONTINGENCY PLAN**

Manual Number: 2-000

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PREAMBLE

The Contingency Plan is effective from start-up of mine construction and applies to the Jericho Diamond Mine (operated by Tahera Diamond Corporation at Carat Lake, Nunavut), all ancillary facilities including the mine and plant site, and all activities associated with the care and maintenance of the Mine including the winter resupply road. The mine is located approximately 420 km north-northeast of Yellowknife.

The following formal distribution has been made of this Plan:

Nunavut Water Board
PO. Box 119
Gjoa Haven, NT, X0E 1J0

Indian and Northern Affairs Canada
Building 918, P.O. Box 100
Iqaluit, NU, X0A 0H0

Nunavut Government, Department of Environment
Environmental Protection Service
P.O. Box 1000, Station 1360
Iqaluit, NU, X0A 0H0

Kitikmeot Inuit Association
P.O. Box 18
Cambridge Bay, NU, X0E 0C0

Additional copies and updates of this Plan may be obtained by writing to:

Tahera Diamond Corporation
Suite 1900, 130 Adelaide Street West
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Attn: Vice-President, Nunavut and Regulatory Affairs

As part of preparedness for spill all personell on the mine site are trained in spill response. The Mine Manager is responsible for activation of the spill response plan. The Mine Manager is familiar with the resources available to mobilize in the case of a specific incident, as well as the appropriate response for the emergency or product spilled.

Mine Coordinates: 65°59'50" N 111°28'30" W

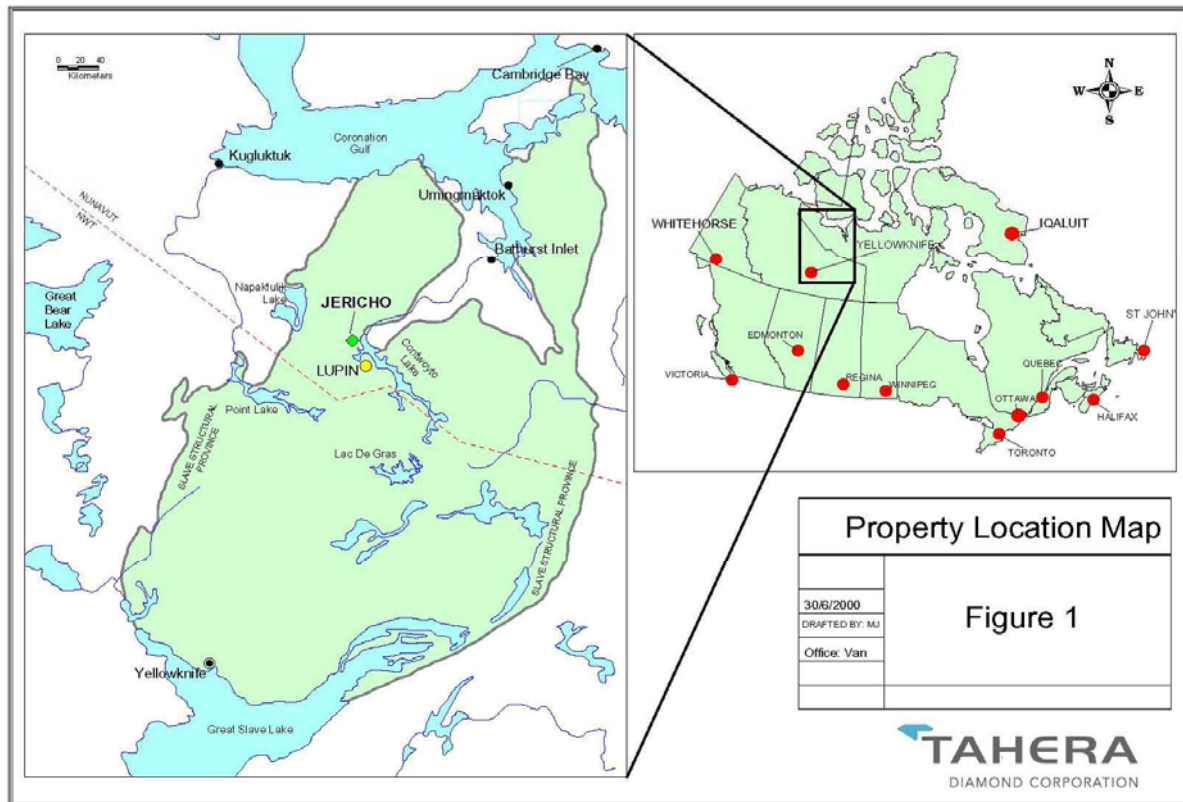


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A	Environmental Site Map
B	Emergency Specific Procedures
C	Industrial Emergency Response Guide
D	Radiation Safety Policy and Procedures Manual
E	Arctic Sunwest Charters Emergency Response Manual
F	MSDS
G	Toxicological Properties of Major and Minor Chemicals Stored at Jericho
H	Used Chemical Containers Handling and Disposal Procedure
I	Chemical Tracking Procedure

1 INTRODUCTION

This plan update is written to meet Tahera Diamond Corporation's (Tahera's) requirements for a contingency plan annual update for the Jericho Diamond Project (Jericho) Mine Site at Carat Lake, 420 km north northeast of Yellowknife, NWT pursuant to Water Licence 2AM-JER0410, Part J. It covers the following key areas:

- Tahera policy statement;
- purpose and scope of the plan;
- pre-emergency planning;
- emergency recognition, prevention and response;
- training and practice;
- plan evaluation; and
- plan updates.

The plan is updated annually if required. The plan is consistent with the requirements for spill response plans and reporting as set out in *Spill Contingency Planning and Reporting Regulations R-068-93*, April 1, 1999 and addresses the requirements as set out in NWT Water Board, *Guidelines for Contingency Planning*, January 1987. As well, this plan addresses the requirements as set out in Nunavut Environmental Protection Service, *Environmental Guidelines for General Management of Hazardous Waste*, January 2002, and Nunavut Environmental Protection Service, *Nunavut Hazardous Waste Disposal Manual*.

1.1 THE JERICO DIAMOND PROJECT

The Jericho Diamond Mine is an open pit diamond mine located near the north end of Contwoyto Lake approximately 420 km north northeast of Yellowknife in the Nunavut Territory. The operations of the Jericho Diamond Mine have been suspended and put on Care and Maintenance until such a time as restructuring or sale of assets allows other to assume responsibility. The main project components consist of:

- land-based open pit, secured to limit access;
- an idle diamond processing plant;
- explosives storage and emulsion plant empty of any product;
- waste rock and coarse processed kimberlite handling facilities;
- fine process kimberlite containment area;
- fuel farm;
- accommodations complex;
- power house;
- water intake;
- mine shop;
- airstrip; and

- connecting roads.

Appendix A, Figure 1 shows the site components listed above.

1.2 TAHERA'S ENVIRONMENTAL POLICY STATEMENT

It is Tahera's policy to achieve a high standard of environmental care in conducting its business as a resource company contributing to society's material needs. Tahera's approach to environmental management seeks continuous improvement in performance by taking account of evolving knowledge and community expectations.

Specifically, it is Tahera's policy to:

- Comply with all applicable laws, regulations and standards; uphold the spirit of the law; and where laws do not adequately protect the environment, apply standards that minimize any adverse environmental impacts resulting from its operations;
- Communicate openly with government and the community on environmental issues, and contribute to the development of policies, legislation and regulations that may affect Tahera;
- Ensure that its employees and suppliers of goods and services are informed about this policy and are aware of their environmental responsibilities in relation to Tahera's operations;
- Ensure that it has management systems to identify, control and monitor environmental risks arising from its operations and to prevent environmental impacts prior to their occurrence;
- Conduct research and establish programs to conserve resources, minimize wastes, improve processes and protect the environment;
- Take appropriate corrective actions should unexpected environmental impacts occur. Appropriate actions are taken to prevent reoccurrence of such unexpected impacts.

1.3 PURPOSE AND SCOPE OF THE PLAN

The purpose of this plan is threefold:

- to provide a practical source of information required to assess spill risks, develop an effective countermeasures program, and respond in a safe and effective manner to spill incidents;
- to set out procedures and processes to be followed in the event of an emergency at the mine site; and
- to provide procedures for handling hazardous materials.

The plan covers the care and maintenance of mining, processing, and ancillary operations (airstrip, sewage treatment plant, catering). It encompasses the activities of all Tahera and contractor employees as well as visitors to the mine site.

The main goals of the plan are:

- to provide education and training for staff at the Jericho Mine in emergency preparedness;
- to enable staff to respond to an emergency in a co-ordinated manner minimizing injury and loss of property;
- to allow the Jericho Mine to maintain operations at a level as close as possible to normal and restore normal operations quickly and efficiently; and
- to ensure the safe and efficient handling of hazardous materials.

The plan was specifically updated for the Jericho Mine Site care and maintenance operations and is not intended to be used, without careful assessment of applicability, by people trained in spill and emergency response at other facilities operated by Tahera or a third party.

1.4 PLAN USE AND DISTRIBUTION

The appropriate procedures in this plan are to be followed for handling hazardous materials, and in the case of any product spills or emergency, whether reportable to external authorities or not. The responsible supervisor will decide what further action is appropriate in each case.

All persons issued this plan must become familiar with its contents relevant to their responsibilities. It is important that you understand your area of responsibility and the appropriate actions to take in the case of a spill. If you do not understand a procedure, clarify the procedure with your supervisor.

This plan includes a discussion of general preventive measures that can be taken to ensure spills do not happen, that emergencies are handled effectively minimizing risk to responders and that hazardous materials are transported, stored and used correctly. Your participation in this activity is key to preventing accidents and injuries. You should:

- follow the suggestions contained in this plan where they apply; and
- inform your supervisor of any additional measures or better ways of handling emergencies and hazardous wastes and preventing spills.

1.5 UPDATE PROCEDURES AND SCHEDULE

This plan is reviewed for accuracy and completeness annually. Changes to procedures, or in chemicals/raw materials used and the locations used are incorporated as amendments to the plan.

1.6 METHODS FOR INTERNAL EVALUATION OF THE PLAN

The mine occupational health and safety committee is responsible for evaluation of the plan with direction from the Mine Manager. The continual improvement approach to evaluation is followed. Suggestions are solicited and welcomed from all employees. Emergency preparedness is formally evaluated by the occupational health and safety committee who will provide verbal and written reports immediately following the evaluation.

All emergency incidents are reviewed by the Mine Manager and the occupational health and safety committee immediately following the incident. Emergency response is reviewed for adequacy. Any deficiencies are addressed as a priority and the emergency response plan modified as appropriate.

1.7 REGULATORY FRAMEWORK

Regulatory requirements are outlined in this section. Regulations pertinent to emergency response are those governing mine health and safety and spill response. Regulations pertinent to hazardous substances and wastes are federal and territorial acts and regulations dealing with these substances.

1.7.1 Mine Safety

This plan conforms in general to requirements as set out in Nunavut/NWT legislation, specifically Part VIII, Division 3 of the *Nunavut/NWT Mine Health and Safety Regulations*, and includes the following:

- a list of the hazards;
- possible major consequences of each;
- required countermeasures;
- inventory of resources needed to carry out the planned actions; and
- provision for establishment of the necessary emergency organization and procedures.

Tahera Diamond Corporation will comply with provisions of the Act and Regulations in a proactive manner. Management and employees will evaluate previous accidents and the potential for serious accidents and injuries in assigning inspection frequencies beyond those mandated in the Act.

1.7.2 Spill/Emergency Response

Under the *Spill Contingency Planning and Reporting Regulations* of the *Environmental Protection Act*, storage of “contaminants”, by which is meant hazardous substances as defined by the *Transportation of Dangerous Goods Act*, requires preparation and filing of a spill contingency plan that meets the requirements of the *Regulation*, Section 4(2). Requirements of the *Regulation* are similar to those of the *Mine Health and Safety Act*.

Commercial carriers using the Tibbitt-Contwoyto winter road require approved spill plans to use the road. As a commercial user of the road, Tahera is issued updates of the spill plan as they are available.

1.7.3 Transportation and Handling of Hazardous Materials

Transportation of hazardous materials is governed by the federal *Transportation of Dangerous Goods Act (TDGA)* and *Regulation*. Mine personnel handling hazardous materials will receive TDG training. All mine employees have *Workplace Hazardous Materials Information System (WHMIS)* training which includes familiarization with Material Safety Data Sheets (MSDS) for materials they handle. Employees who handle hazardous materials are made familiar with the mine's Hazardous Materials Management Plan which sets out procedures for handling these materials and wastes that result from routine use.

1.7.4 Regulation of Toxic Substances

Toxicological impacts to the environment affecting other organisms are governed by Environment Canada and Fisheries and Oceans Canada through the *Canadian Environmental Protection Act*, the *Fisheries Act*, and the *CCME Canadian Soil Quality Guidelines*. Clean up of contaminated sites must meet the criteria as set out in the latter document, or be managed on a risk-based basis.

On lands within the jurisdiction of the Nunavut government (usually defined as Commissioner's Lands), Department of Environment, Environmental Protection Service is responsible for spills, contaminated sites and hazardous wastes.

On Inuit Owned Lands, the Kitikmeot Inuit Association has an interest in any contamination from accidental spills.

2 EMERGENCY RESPONSE ORGANIZATION

The Jericho Mine response organization is shown in Figure 2.1. The figure provides the chain of command in the upper five boxes and agencies that may require contacting in case of an emergency in the lower boxes.

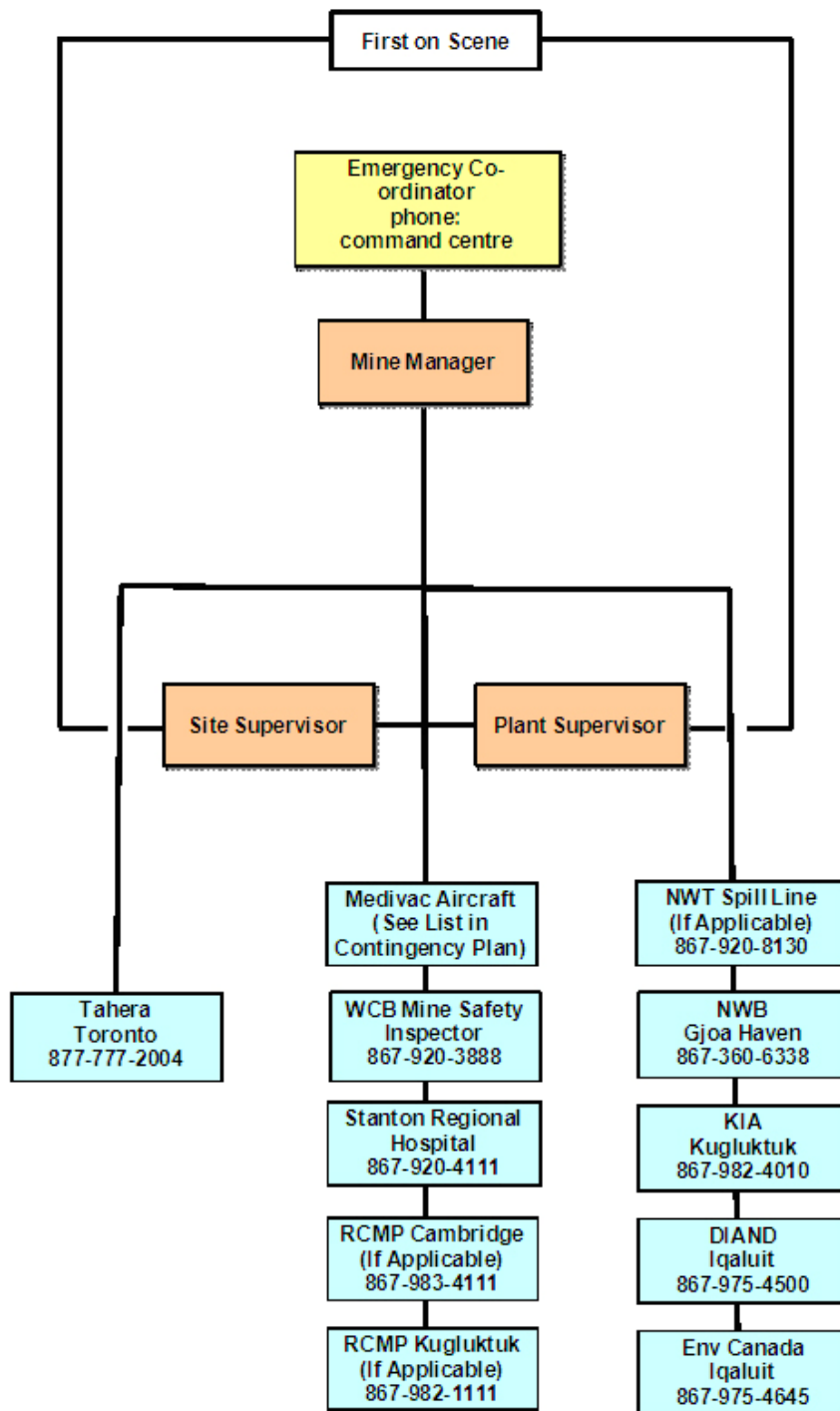
Tahera Diamond Corporation's senior executive in charge of the Jericho Diamond Mine and media contact is:

Mr. Mike Johnson
Director, Operations
Suite 1900, 130 Adelaide Street West
Toronto, Ontario, M5H 3P5
Tel. 780-644-9123 or 604-519-1977 ext 21

Tahera's on-site senior manager is:

Mine Manager: Harold Gates (24 hour on site coverage)
Tel: (780) 644-9120 Fax: (780) 644-9181

Figure 2.1: Spill Response Organization



3 COMMUNICATIONS

3.1 EMERGENCY ASSESSMENT AND RESPONSE

When an emergency is recognized the first step is to alert all potentially affected personnel by use of the fire alarm system, telephone and/or two-way radios as appropriate. The second step is to notify the supervisor or contact the emergency and spill co-ordinator who will assume charge of the emergency. It is the responsibility of all personnel to follow the instructions of the emergency and spill co-ordinator who will activate appropriate contingency plans in consultation with senior management.

All employees will record any information they receive as soon as they have an indication that an emergency may exist. The information is essentially the same as are gathered for the emergency assessment.

Details listed in Table 3.1 are provided. This information will always be taken before the details on the nature and extent of emergency, in case of interruption of call or the need to clarify the situation. Many emergencies are often initially overstated or understated, one of the most difficult tasks is to get a true appraisal of the situation. To this end all available resources must be used to get knowledgeable persons to the scene as quickly as possible.

Emergency-specific procedures for potential emergencies that could arise at the Jericho Mine are attached in Appendix B.

Table 3.1: Emergency Reporting Requirements

Who is reporting? How can they be contacted	Nature of Emergency
Date, time	Location
Person calling, title	Type of emergency
Telephone number (if applicable)	Spill of hazardous substance
	Fire
	Uncontrolled explosion
Who has been notified	Accident/medical emergency
(refer to ER Organization Chart)	Weather emergency
	Dam break
	Other
Who is in charge of the spill	Injury or death
Name	If yes, number, names
Phone number	If hazardous substance spill
	Type of container (if applicable)
	Material involved (if known)
	Leaking (if applicable)
	How quickly (if applicable)
	Volume/amount of release (if known)
	Contamination of soil
	Contamination of surface water
	Contamination of air
	Type of incident
	Other materials involved (if applicable)
	Wildlife or fish involved

3.2 EMERGENCY CONTACTS

Emergency response contact telephone numbers are listed in Tables 3.2 and 3.3. .

For emergency situations it is imperative that people who are responsible for responding, or will direct emergency operations, are notified as rapidly as possible. In addition there may be a requirement to notify people or organizations off the mine site.

3.2.1 Internal

For most emergency communications the site phone and two-way radio systems are used. Immediate evacuation alarms are incident-specific and are discussed briefly below. Emergencies called in by phone are relayed to appropriate emergency response personnel.

There is a 2 way radio system with emergency protocol in place.

All radios on site operate on the same frequency. There are 5 channels on the radio system.

1. Emergency
2. LAD (Truck channel for winter road)
3. Environment and Exploration
4. Site Services
5. Mine Operations

Radio protocols are in place and employees trained in proper use.

A pager system has been installed. It is used to notify ERT members of an emergency and will be activated by the site medic.

24-hour emergency phone and/or radio contacts are posted throughout the mine site. All employees must familiarize themselves with the locations of these notices in their work areas.

At the plant, accommodation complex, power house, waste water treatment plant, emulsion plant, and truck shops fire alarms are equipped with bells that will ring continuously when activated, until reset.

Intrinsically-safe two-way radios are employed in areas where there has been a spill of flammable/explosive substances.

3.2.2 External

External communications regarding Jericho Mine emergencies are principally of two types:

- those requesting aid or assistance; and
- those providing the outside world with information.

Requests for aid may be made by any employee, as appropriate, but should normally be channelled through the most senior on-site manager. Unless otherwise authorized by the Mine Manager, external communications providing information on Jericho Mine emergencies are handled by the Director, Operations for Tahera or the Mine Manager or designate.

Table 3.2: External Emergency Contact Numbers

Area code 867, or as indicated.

Stanton Regional Hospital	920-4111
Poison Control, Stanton Hospital	669-4100
Poison Centre	1-800-332-1414
Yellowknife RCMP	669-1111
Cambridge Bay RCMP	983-0123
Kugluktuk RCMP	982-1111
GNWT OH&S, Mine Safety Division	1-800-661-0792
GNWT WCB, Yellowknife	1-800-661-0792
GNWT, Forest Fire Reporting	920-6115
GN, Environmental Protection Service, Iqaluit	975-5900
Nunavut Water Board Inspector, Gjoa Haven	360-6338
Indian and Northern Affairs Canada, Iqaluit	975-4500
INAC Water Resources	975-4548
INAC Land Administration	975-4275
INAC Land Use Inspector	982-4306
Environment Canada, Environmental Protection Branch, Yellowknife	920-5131 Fax 873-8185
DFO, Area Manager Nunavut	975-8011
DFO, Habitat Coordinator	669-4911
DFO, Director, Conservation and Compliance	669-4903
RWED, Wildlife Emergency Department	873-7181
Nunavut Water Board, Gjoa Haven	360-6338
Emergency Measures Organization of the NWT, Yellowknife	873-7554
Fire Marshall's Office, Yellowknife	873-7944
Department of Environmental Health, Cambridge Bay	983-7328
Mackenzie Regional Health Services, Yellowknife	920-6592
Winter Road, RTL	873-6271
NWT/Nunavut Spill Hotline, 24 hr Emergency	920-8130
Canadian Nuclear Safety Commission 24 hr Duty Officer	1-613-995-0479
Stuart Hunt Associates Ltd.	1-800-661-4591

3.2.3 OTHER EMERGENCY CONTACTS

Additional emergency contact numbers are provided in Table 3.3, below.

Table 3.3: Additional Emergency Contacts

Area code 867, or as indicated.

CANUTEC (Spill Support Information)	613-996-6666
Charter Aircraft (for Evacuation)	
Air Tindi, Yellowknife	669-8200
First Air, Yellowknife	983-2077
Arctic Sun West, Yellowknife	873-4464
Nunasi Helicopters, Yellowknife	873-3306
Canadian Helicopters, Yellowknife	669-9604
Great Slave Helicopters, Yellowknife	873-2081
Adlair Aviation, Cambridge Bay	983-2569

4 RISK ASSESSMENT

4.1 HEALTH RISK

4.1.1 Hazard Identification

Health hazards of materials to be used at the Jericho mine are contained in the MSDS provided at the mine camp, mine offices and shops in conformance with Workplace Hazardous Materials Information System (WHMIS) guidelines.

4.1.2 Dose-Response

Dose-response information is provided in the MSDS.

4.1.3 Exposure Assessment

There are three principal routes of exposure:

- ingestion (unlikely in the work environment with adequate precaution in areas where food is processed and/or eaten);
- inhalation; and
- skin exposure.

While direct ingestion is unlikely, food should not be consumed while handling or near controlled products.

Exposure from inhalation will occur for spilled products that readily volatilize (form a gas or vapour) at ambient temperature and from products, such as fine dust, which readily become airborne.

Skin exposure is possible in handling other products without protective clothing.

The MSDS should be referred to for additional information.

4.2 QUALITATIVE RISK ASSESSMENT

A qualitative risk analysis was carried out for possible emergencies at Jericho Diamond Mine as outlined in Manitoba Industrial Accident Council (MIAC) (1996) (reproduced in full in Appendix C). Table 4.1 lists the results of this analysis (see the MIAC reference for the basis of the categories chosen).

Table 4.1: Risk Analysis Worksheet

Risk	Frequency	Consequences			Result (Freq X Conseq)
		Pers	Env	Fac	
Hazardous Substance Spill in excess of reportable quantities					
Fuel Farm	Possible	Negligible	Negligible	Negligible	Possible-negligible
Explosives Storage	Unlikely	Critical	Marginal	Marginal	Unlikely-critical
Diamond Plant	Unlikely	Marginal	Negligible	Negligible	Unlikely-marginal
Access Roads	Possible	Negligible	Marginal	Negligible	Possible-marginal
Open Pit	Possible	Marginal	Negligible	Negligible	Possible-marginal
Airstrip	Unlikely	Negligible	Marginal	Negligible	Unlikely-marginal
Power House	Possible	Marginal	Negligible	Negligible	Possible-marginal
Truck Shop	Possible	Marginal	Negligible	Negligible	Possible-marginal
Accommodation Complex	Unlikely	Marginal	Marginal	Marginal	Unlikely-marginal
Fire					
Accommodation Complex	Possible	High	Negligible	Critical	Possible-High
Diamond Plant	Unlikely	High	Negligible	High	Unlikely-High
Power House	Possible	Critical	Negligible	Critical	Possible-critical
Truck Shop	Possible	Marginal	Negligible	Marginal	Possible-marginal
Fuel Farm	Possible	High	Critical	Critical	Possible-High
Explosives Storage	Unlikely	High	Marginal	High	Unlikely-High
Vehicles	Unlikely	High	Marginal	Marginal	Unlikely-High
Sewage Treatment Plant	Unlikely	High	Marginal	Critical	Unlikely-High
Airstrip Terminal Building	Unlikely	High	Marginal	Marginal	Unlikely-High
Uncontrolled Explosion					
Explosives Storage	Unlikely	High	Negligible	High	Unlikely-High
Accommodation Complex (propane facilities)	Unlikely	High	Negligible	High	Unlikely-High
Fuel Farm	Unlikely	High	Negligible	Critical	Unlikely-High
Vehicle Refuelling	Unlikely	High	Negligible	Negligible	Unlikely-High
Medical Emergency	Highly Likely	Critical	Negligible	Negligible	Highly likely-critical
Extreme Weather	Likely	Critical	Negligible	Marginal	Likely-critical
Dam Failure	Unlikely	Marginal	High	Critical	Unlikely-High

Note: Result is frequency x the highest consequence category.

5 EMERGENCY RECOGNITION, PREVENTION AND RESPONSE

5.1 EMERGENCY RECOGNITION AND PREVENTION

Being aware of these potential situations is the first step in emergency recognition and prevention. All employees are made aware of potential emergencies at the Jericho Mine in their initial orientation training. Periodic emergency preparedness update training will also be provided to all employees at the mine and plant.

Most emergencies at industrial sites are due to worker injury caused by accidents. An effective safety and accident prevention program therefore is a key component of emergency prevention and was established at the Jericho Mine through the Occupational Health and Safety Plan. An effective safety program is also a necessary component of an emergency preparedness plan. Standard operating procedures (SOPs) have been established for work conducted at the Jericho Mine and incorporate safety as the number one consideration.

5.2 ACCOUNTING FOR EMPLOYEES

It is the Emergency and Spill Co-ordinator's responsibility to account for all personnel at the assembly points. If any are missing, the Emergency and Spill Co-ordinator must be notified immediately of the name and last known location. The Co-ordinator will then arrange with the emergency response team to locate the missing personnel consistent with their own personal safety. Employees are told not to try to re-enter the area until the all-clear signal is given by the Emergency and Spill Co-ordinator.

5.3 REMOVAL OF INJURED EMPLOYEES

If injured employees are found, they should be carefully moved out of the area of concern only by the emergency response team who must be wearing proper PPE. Depending on the injury it may be necessary to wait until an ambulance arrives. If the injury occurs as a result of a hazardous substance spill, the injured person(s) may require emergency decontamination which is to be carried out by trained First Responders.

5.4 ASSESSMENT OF EMERGENCY

The Emergency and Spill Co-ordinator will determine whether assistance is required to make an assessment of the emergency situation.

5.5 INITIAL CALLS TO OUTSIDE RESOURCES AND AGENCIES

If immediate assistance is needed, reference should be made to the Emergency Response Organization Chart (Figure 2.1). Communication was discussed in Section 3.

5.6 SHUT DOWN OF CERTAIN SERVICES AND UTILITIES

During an emergency it may be necessary to shut down services. The plant and site supervisors will make this decision with input from others, such as the catering department. Care must be taken to not shut down too much, as this may hamper resolution of the emergency.

5.7 POST INCIDENT REVIEW

The emergency co-ordinator or shift supervisor, management representatives, environmental/health/safety representatives, and agencies involved will hold a meeting after the

incident is over to discuss problems, assess responsiveness to the emergency, and suggest corrective measures to minimize future occurrence. Certain results of the meeting are related to the affected employees to help relieve anxiety.

5.8 ROUTINE INSPECTIONS AND PREPAREDNESS

A key part of preparedness for emergencies is to ensure that all preparations and emergency equipment are in place and functioning as intended. There are two aspects to this:

- routine site inspections; and.
- training updates (discussed in Section 13).

A building inspection form for monthly (or more frequent) inspections is provided in Schedule 1 and are amended if required annually. The mine compliance (regulatory and company policy) is tracked per Schedule 2.

5.9 PLAN ACTIVATION AND RESPONSE MOBILIZATION

The emergency plan activation and response mobilization will depend on the nature of the emergency and its location.

The plan activation and response mobilization will depend on the nature of the emergency or spill, substances involved, and the location. Plan activation is best handled by reduction of responses to scenarios and modification as required to suit the specific incident.

5.10 PERSONAL PROTECTION EQUIPMENT AVAILABILITY

The personal protection equipment available at the Jericho mine and location of equipment is shown in Table 5.1.

Table 5.1: Jericho Mine Site Personal Protective Equipment Inventory

Equipment	Mine Site	Diamond Plant	Sewage Treatment Plant	Accommodation	Mobile Equipment
slickers/coveralls	√	√	√	√	
goggles	√	√	√	√	
gloves	√	√	√	√	
respirators	√	√	√	√	
SCBA	√	√			
first aid kit	√	√	√	√	√
fire extinguisher	√	√	√	√	√

Personal protective equipment is inventoried and inspected on a regular basis (minimum monthly for all equipment; weekly for First Responders' equipment); worn or damaged equipment is replaced. Inventory and inspection records are kept by the Health and Safety personnel. Use of self contained breathing apparatus (SCBA) is by trained personnel only. Any personnel (employees and contractors) who require use of respirators are fit tested per WCB requirements. The location of fire extinguishers is clearly marked at the mine and use is part of initial orientation for mine employees.

6 SPILL PREVENTION, COUNTERMEASURES AND CONTROL

Substance-specific spill response procedures for major hazardous substances handled at Jericho Mine are provided in Appendix D.

6.1 IDENTIFICATION OF POTENTIAL FAILURES CAUSING SPILLS

Table 6.1 summarizes major products that are used at the Jericho Mine and diamond processing plant. The list includes all major materials required for operation. Quantities listed are on-hand storage amounts at the time of completion of this plan; any changes are noted in updates of this plan. Products that have a spill potential are listed. Table 6.2 lists credible potential situations that could result in spills.

Table 6.1: List of Products and On-Hand Quantities

Substance	Estimates of On-Hand Quantities	Risk of Spill	Comments
Diesel	3 million litres	low	In fuel farm with containment berm
Nitric Acid	1,100 kg	moderate	77 kg bags, 100% contained
Citric Acid	7 gallons	low	10 gallon pail
Soda Ash	5 gallons	low	10 gallon pail
Hydraulic Oil	2 – 1,100 L cubes	low	Stored in covered warehouse in silled area
Motor Oil	12 – 1,100 L cubes	low	In mine shop or lined containment area
Jet Fuel (Jet B)	– 205 L barrels	low	Stored at airstrip, no proximity to water
Jet Fuel (Jet A)	60,000 L	low	Stored at airstrip in bermed tank, no proximity to water
Gasoline	14 – 205 L barrels	low	In fuel farm with containment berm
Petroleum Grease	2 – 1,100 L cubes	nil	In mine shop or cold storage containers
Transmission Oil	4 – 1,100 L cubes	low	In mine shop or lined containment area
Ethylene glycol (vehicle antifreeze)	4 – 1,100 L cubes	low	In mine shop in silled area
Ethylene glycol (heating system)	not applicable	very low	In pipes in heating system
Ferrosilicon	98 tonnes		non hazardous
Hydrochloric Acid	14 – 4 L jugs	low	In controlled area of the plant
Nitric Acid	68 – 2.5 L jugs	low	In fume cupboard in plant
Potassium Nitrate	3.5 – 10 kg containers	low	In pellet form in controlled drainage area
Sodium Hydroxide	22 – 50 kg bags	low	In pellet form, in lab in plant; in controlled drainage area
Sodium Hydroxide	6 – 20 L barrels	Low	Liquid form in controlled drainage area
Sodium Hydroxide	5 – 20 L containers	low	Solution, in controlled drainage area
Flocculent – Magniflox 156, or equivalent	14,000 kg	low	In plant in controlled drainage area
Floor Dry	6 - 50 kg	nil	In the accommodation complex and mine shop

Table 6.2: Potential Hazardous Substances Spill Locations at Jericho

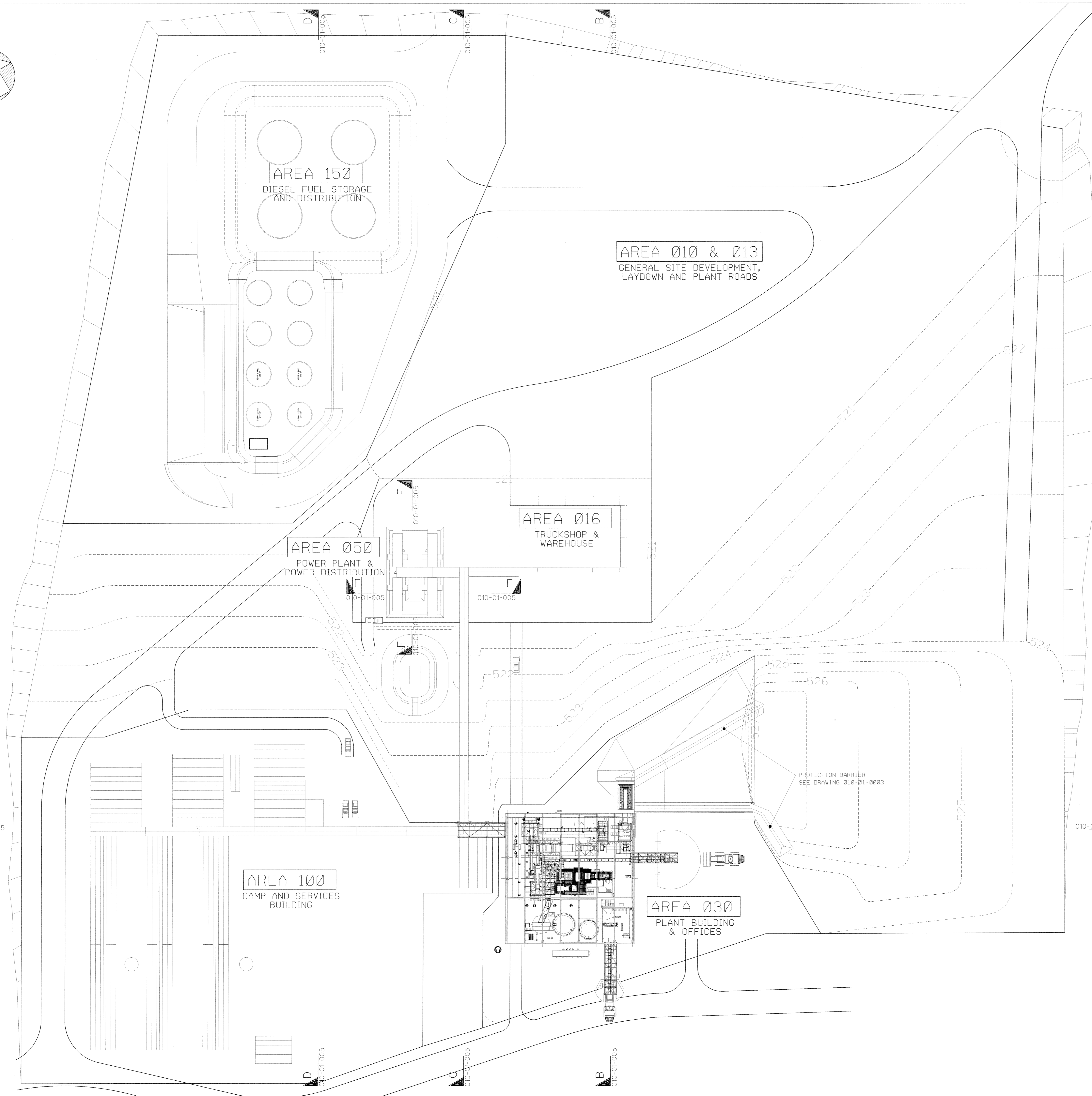
Substance	Location	Potential Spill Quantity
Diesel	Fuel farm – 100% contained Generator supply tank Truck shop Vehicle fuel leak – any road on the mine site Waste Transfer Area	500,000 L -1 bulk tank 62,000 L, lined bermed tank 15,000 L, double walled tank 150 L 62,000 L, 1 tank, lined berm
Gasoline Jet Fuel (B) Jet Fuel (A) Waste Oil Other hazardous substances	Snowmobile refuelling, general accommodations area Airstrip and helipad Airstrip – accidental spill Waste transfer area See Table 6.1	20 L at refuelling site; 205 L within fuel farm 205 L, 1 barrel 62,000 L, 1 tank, lined berm 62,000 L, 1 tank, lined berm Size of one container (see Table 6.1)

6.1.1 Petroleum Products

Fuel tanks at the fuel farm are behind an impermeable berm capable of holding a minimum of 110% of the capacity of the largest tank. Small fuel tanks (not including 205 L barrels) required for refuelling also have either a containment berm, a silled concrete containment area, or are double-walled construction. Spills could occur from a tank rupture (unlikely), from leaks at pipe joints, or from refilling accidents. All areas where petroleum products are stored or handled have spill kits in clearly visible areas. Figure 6.1 (from the Jericho Fuel Farm Design Plan submitted to and approved by NWB) shows the location and size of tanks within this facility. Spill kit barrels are bright yellow; locations are shown in Appendix A.

6.1.2 Explosives

There will be no explosives stored on site during care and maintenance.

[illegible]

6.1.3 Miscellaneous Fuels and Lubricants

Ethylene glycol will also be used (stored on 205 L barrels) at the truck shop. Barrels are stored in a silled area. Large spills are pumped back into barrels for reuse. Small spills are absorbed with absorbent, stored with hazardous wastes at the mine (in a dedicated sea container) and shipped to a contaminant disposal contractor on the winter supply haul.

Gasoline (for snowmobiles and other small gasoline-powered equipment) is stored at the fuel farm and in portable containers (typically ≤ 20 L) at the sites required. Lubricants are stored in bulk (205 L barrels) at the fuel farm and used principally at the truck shop. Small spills are cleaned up immediately using spill kits or on-hand absorbents. Contaminated absorbents are placed in containers, e.g., empty 205 L barrels or waste oil cubes, for backhaul to a contaminants disposal contractor as previously described.

6.1.4 Slaked Lime

Slaked lime is stored at the diamond plant in a silled area. Spills are entirely within the plant and are cleaned up immediately by plant personnel wearing appropriate protective equipment (per MSDS). The slaked lime is reused if feasible or disposed of as hazardous waste as previously discussed.

6.1.5 Laboratory Chemicals

Small quantities (see Table 6.1) of acids (nitric, hydrochloric, sulphuric), sodium hydroxide and potassium nitrate are kept at the lab in a fume cupboard. Chemicals are only be handled by qualified lab personnel and any spills cleaned up immediately.

6.2 ESTIMATION OF POTENTIAL QUANTITIES OF MATERIALS RELEASED

Potential quantities of products released are determined by the size of containers. Table 6.1 lists the size of on hand containers; this quantity sets the limit of spill volumes for a single container leak or failure. Where secondary containment is provided, this is listed in the tables.

6.3 REPORTING

The following reporting procedure is used when a spill of any size has been discovered:

1. The person finding the spill must report the spill to:

The site supervisor for mine area spills and the plant supervisor for plant area spills.
The appropriate supervisor will assume the responsibilities of the on site spill coordinator.

2. The On Site Spill Coordinator will report the spill to the following:

If the spill is of reportable size, to the GNWT 24-hour spill line

(867) 920-8130

and to KIA, Kugluktuk: (867) 982-4010, fax: (867)982-3310

Tahera's Director, Operations at 1-780-644-9123.




Other Important Phone Numbers are listed in Table 3.2.

6.3.1 Spill Report

A Nunavut Spill Report Form will be completed. A copy of the form is shown in Figure 6.2.

A copy of the Nunavut Spill Report is filed with Tahera's Director of Operations. The Mine Manager will retain a copy on site.

Figure 6.2: Nunavut Spill Report Form

  		NT-NU SPILL REPORT OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS		NT-NU 24-HOUR SPILL REPORT LINE TEL: (867) 920-8130 FAX: (867) 873-6924 EMAIL: spills@gov.nt.ca	
REPORT LINE USE ONLY					
A	REPORT DATE: MONTH – DAY – YEAR		REPORT TIME		<input type="checkbox"/> ORIGINAL SPILL REPORT, OR <input type="checkbox"/> UPDATE # _____ TO THE ORIGINAL SPILL REPORT
B	OCCURRENCE DATE: MONTH – DAY – YEAR		OCCURRENCE TIME		
C	LAND USE PERMIT NUMBER (IF APPLICABLE)			WATER LICENCE NUMBER (IF APPLICABLE)	
D	GEOGRAPHIC PLACE NAME OR DISTANCE AND DIRECTION FROM NAMED LOCATION			REGION <input type="checkbox"/> NWT <input type="checkbox"/> NUNAVUT <input type="checkbox"/> ADJACENT JURISDICTION OR OCEAN	
E	LATITUDE DEGREES MINUTES SECONDS			LONGITUDE DEGREES MINUTES SECONDS	
F	RESPONSIBLE PARTY OR VESSEL NAME		RESPONSIBLE PARTY ADDRESS OR OFFICE LOCATION		
G	ANY CONTRACTOR INVOLVED		CONTRACTOR ADDRESS OR OFFICE LOCATION		
H	PRODUCT SPILLED		QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES		U.N. NUMBER
H	SECOND PRODUCT SPILLED (IF APPLICABLE)		QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES		U.N. NUMBER
I	SPILL SOURCE		SPILL CAUSE		AREA OF CONTAMINATION IN SQUARE METRES
J	FACTORS AFFECTING SPILL OR RECOVERY		DESCRIBE ANY ASSISTANCE REQUIRED		HAZARDS TO PERSONS, PROPERTY OR EQUIPMENT
K	ADDITIONAL INFORMATION, COMMENTS, ACTIONS PROPOSED OR TAKEN TO CONTAIN, RECOVER OR DISPOSE OF SPILLED PRODUCT AND CONTAMINATED MATERIALS				
L	REPORTED TO SPILL LINE BY	POSITION	EMPLOYER	LOCATION CALLING FROM	TELEPHONE
M	ANY ALTERNATE CONTACT	POSITION	EMPLOYER	ALTERNATE CONTACT LOCATION	ALTERNATE TELEPHONE
REPORT LINE USE ONLY					
N	RECEIVED AT SPILL LINE BY	POSITION STATION OPERATOR	EMPLOYER	LOCATION CALLED YELLOWKNIFE, NT	REPORT LINE NUMBER (867) 920-8130
LEAD AGENCY <input type="checkbox"/> EC <input type="checkbox"/> CCG <input type="checkbox"/> GNWT <input type="checkbox"/> GN <input type="checkbox"/> ILA <input type="checkbox"/> INAC <input type="checkbox"/> NEB <input type="checkbox"/> TC			SIGNIFICANCE <input type="checkbox"/> MINOR <input type="checkbox"/> MAJOR <input type="checkbox"/> UNKNOWN		FILE STATUS <input type="checkbox"/> OPEN <input type="checkbox"/> CLOSED
AGENCY		CONTACT NAME	CONTACT TIME	REMARKS	
LEAD AGENCY					
FIRST SUPPORT AGENCY					
SECOND SUPPORT AGENCY					
THIRD SUPPORT AGENCY					

Spill Reporting Quantities

Quantities that must be reported under the *Spill Contingency Planning and Reporting Regulations, Schedule B* are listed in Table 6.3.

Table 6.3: Spill Reporting Quantities

Substance	TDGA Class	Reportable Amount
Explosives	1	Any amount
Compressed gas (flammable)	2.1	Any amount of gas from containers with a capacity greater than 100 L
Compressed gas (non-corrosive, non flammable)	2.2	Any amount of gas from containers with a capacity greater than 100 L
Compressed gas (toxic)	2.3	Any amount
Compressed gas (corrosive)	2.4	Any amount
Flammable liquid	3.1, 3.2, 3.3	100 L
Flammable solid	4.1	25 kg
Spontaneously combustible solids	4.2	25 kg
Water reactant solids	4.3	25 kg
Oxidizing substances	5.1	50 L or 50 kg
Organic Peroxides	5.2	1 L or 1 kg
Poisonous substances	6.1	5 L or 5 kg
Infectious substances	6.2	Any amount
Radioactive	7	Any amount
Corrosive substances	8	5 L or 5 kg
Miscellaneous products or substances excluding PCB mixtures	9.1 (part)	50 L or 50 kg
Environmentally hazardous	9.2	1 L or 1 kg
Dangerous wastes	9.3	5 L or 5 kg
PCB mixtures of 5 or more parts per million	9.1 (part)	0.5 L or 0.5 kg
Other contaminants	None	100 L or 100 kg

A log is kept of all spills by the Health, Safety, Environment Department for inspection by NWB inspectors. A copy of the log for the previous month is included in monthly reports to NWB, INAC and KIA.

6.4 PETROLEUM SPILL CLEANUP

6.4.1 General

The first priority in an effective control program is to make all possible efforts to limit the spread of the oil/petroleum mass. Proper response and speed of response are indispensable elements of effective control of an oil spill. Petroleum spills within contained areas can be cleaned up as personnel are available; other spills are cleaned up immediately.

6.4.2 Water-Based Spills

Water-based spills at Jericho Mine are a remote possibility:

- Bulk fuel is delivered during winter when water surfaces are frozen.
- The fuel farm is behind a berm.
- Fuel is delivered by contractor's truck to the fuel tanks.
- Fuel transfer operations at the mine site are away from waterbodies.

In the event of a spill on the winter road, all assistance possible would be provided by Jericho Mine personnel, if the spill occurred proximate to the facility or assistance is requested by the winter road Spill Coordinator.

Clean Up Equipment and Supplies

Some, or all, of the following are available, either through the fuel supply contractor, or at the Jericho Mine:

- booms for containment of oil on water;
- hand tools as appropriate for clean up; and
- sorbent materials of sufficient quantity to absorb the petroleum product.

Spill Response

Clean up will involve either or both water contained within the containment booms and the lake shoreline or stream bank. Clean up of water and materials contained within booms should not result in the spread of oil pollution outside the containment zone. The method of disposal of oil-contaminated absorbent materials and oil-water mixtures are acceptable to and approved by NWB, Environment Canada and/or INAC.

Shoreline cleanup is usually most efficiently completed with small teams equipped with hand equipment: shovels, buckets, portable burners and incinerators. The most important factor for shoreline cleanup decisions is the identification of the coastal land form, beach type and shoreline processes. The following procedures are applicable to Jericho Mine:

Shoreline	Manual Removal	Mechanical Removal	Burning	Chemical Dispersants ¹	Mixing	Sorbents ²
Gravel	Recommended	Recommended	Applicable	Applicable	Applicable	Applicable
Sand	Recommended	Recommended	Applicable	Applicable	Applicable	Not Applicable

¹ Use of chemical dispersants along shorelines requires government permission.

² Sorbents should only be used as a final touch up during cleanup operations.

Manual Removal

- utilize small teams of people, buckets and shovels;
- tend to cause the least impact on the shoreline;

- recommended for sand and gravel beaches.

Mechanical Removal

- applicable to sandy beaches; not recommended for cobble or boulder beaches;
- use front end loaders;
- carefully control heavy equipment; excessive removal of material may disrupt normal beach processes.

Burning

- can be effective cleanup method on substrates where most petroleum remains on the surface;
- slick thicknesses must be two to three millimetres and the slick relatively fresh;
- burning is not necessarily a cleanup technique, but rather a stabilizing factor, i.e., the toxic light ends are burned, leaving a heavy residue;
- can cause air pollution and enables various components of the oil to penetrate into substrates other than ice as burning progresses;
- leaves the contaminated shoreline less sensitive to birds.

Various portable incinerators have been constructed to burn oil-soaked debris.

Chemical Dispersants

Chemical dispersant use requires government approval and detailed plans for use. The decision to use dispersants will likely have to be made on site by government regulators.

Mixing

Mixing the polluted surface sediments with rakes and harrows will increase weathering processes and speed up the natural degradation of oil. This method is most effective with low viscosity oils that contain a high proportion of volatile components, e.g. diesel.

Sorbents

- have been used with some success on gravel beaches and mud flats;

-
- include natural organic sorbents (e.g. peat moss, straw, hay, sawdust); mineral based sorbents (e.g. vermiculite, volcanic ash, perlite); and synthetic organic sorbents (e.g. foam, polystyrene, polyester, rubber).

6.4.3 Spills on Ice

- Spills on ice proximate to the Jericho mine site: clean up are coordinated by the mine and a spill coordinator appointed by the mine.
- Spills distant from the mine site: clean up would be coordinated by the winter road Spill Coordinator. Mine personnel will provide all assistance requested and ensure the spill is adequately cleaned up.

Spill Response

- Collect petroleum contaminated ice and disposed of at an approved treatment facility on land, depending on the volume, within the hazardous waste containment area at the mine (see Appendix A).
- Melted ice may be amenable to treatment in an oil-water separator to reduce concentrations to levels acceptable for discharge.
- Alternately, separate the petroleum product from the water and incinerate in an approved facility.

A recognized stabilization procedure on ice is burning and would be considered pursuant to INAC and Environment Canada approval.

6.4.4 Land-Based Spills

Containment

Containment is achieved by using one or more of the following:

- diking;
- trenching;
- ditches and small streams;
- weir;
- dams; and
- culvert weir.

The containment method used may entirely depend on circumstances and materials at hand. The primary aim, after safety and rapid containment, is to prevent (where possible) loss of the spilled material(s) to the environment.

Diking

- use commercially available units or soil;
- use construction equipment as appropriate;
- if flammable products are handled, take care to prevent ignition from electrical components and moving parts of equipment;
- construct the dikes a safe distance away from the leading edge of a flammable product;
- aim to refine the dike construction, as circumstances permit, e.g., increasing the amount of material in a dike, adding an impermeable layer (i.e. geomembrane), and constructing secondary barriers.

Once the product is contained, implement immediate procedures for recovery. Dike soil will likely be contaminated and require treatment to decontaminate.

Trenching

- The exact method of construction and maintenance of trenches depends on soil porosity, product solubility, etc.
- The most effective method of preventing diesel oil permeating a trench bottom is to allow a certain amount of water to enter the trench.
- If water is not available, then an alternative is to totally line the trench.
- In the event that liner material is not available, trenches can be lined with absorbent booms.
- Interceptor trenches and dikes may still be useful for nonsoluble products and those with a relative density greater than water, but effectiveness are significantly reduced.
- Once trenches are constructed, monitoring is required to prevent overtopping.

Ditches

Spills may collect in pre-constructed ditches. In such circumstances, the primary aim is to control movement of product along the ditch, without hindering the movement of water. This is accomplished by the construction of dams or weir-type arrangements at strategic points.

Culvert Weir

If a ditch or stream passes through a culvert an effective weir can be constructed from plywood or similar materials.

6.4.5 Small Spill from Equipment

- If the spill occurs on concrete surfaced areas clean up using sorbent to soak up the spill and disposal of the sorbent as a hazardous waste through a contractor. Final cleanup are with solvent such as Varsol™ and sorbent.
- If the spill occurs on soil, remove the soil down to a clean surface and place in the hazardous waste containment area; alternately ship off site with sorbents.

6.4.6 Recovery of Land-Based Spills

Recovery of land-based spills is usually two phased: re-containment of spilled product and cleaning or removal of contaminated substrate (soil, concrete, asphalt, etc.). Re-contained product may be used for its intended purpose or disposed of.

Disposal

- The product is a hazardous substance under the *Transportation of Dangerous Goods Regulation* (which is indicated on the MSDS).
- Disposal must be through a contract service licensed to handle hazardous wastes.
- Jericho Mine will verify that the disposal site is licensed by the Territory to handle wastes of the type being removed from the spill site.

6.4.7 Temporary Storage

Drums

- Drums can be used for small volumes of product.
- The spill coordinator will ensure that the drums to be used for storage are compatible with the recovered product.
- To use, the drum lid must be removed, or commercial drums with removable lids kept on site. Such drums, either plastic or metal, are standard parts of commercially available spill kits.

Lugger Boxes

- Lugger boxes are available from waste management companies.
- Lugger boxes are bigger than drums (205 L barrels) which may make locating the boxes in proximity to the spill difficult.
- Lugger boxes are frequently used to transport drums that have been physically altered or damaged.

Portable Tanks

Portable tanks vary from 1895 to 37,900 L (500 to 10,000 gallons) capacity. Construction is either bladder or frame and liner. When using portable tanks the user will:

- Never exceed the tank's rated capacity.
- Ensure that the liner material is compatible with the product to be recovered.
- Remove stones, sticks and any other protuberances from the area where the tank are sited to avoid the risk of tank puncture.
- Keep one person at the tank at all times to monitor the liquid level.

Spills Involving Drums and Cylinders

Drums

All drums that contain hazardous materials require safety marks to be applied. These marks are dictated by Canadian statutes, and are designed to indicate the hazardous nature of the drum contents. Both *Transportation of Dangerous Goods Regulation* and WHMIS/Right to Know labels may be affixed.

Drum cache locations are clearly marked with stakes at the mine site making them visible throughout the year. Most drum caches during operations are small (less than 20 drums). Larger caches are inspected daily by the Health, Safety, Environment Department; smaller caches are inspected weekly. An inspection log is kept for review by an NWB inspector.

Spill Prevention

Large drum caches would be kept within a bermed area, e.g., the Fuel Farm or the contaminated waste storage area. Caches are protected from collision and inspected as indicated above.

Spill Response

- Approach the spill site and determine clearly the contents of each drum: note which drums are leaking. If the shipping document is available, try to compare it to the drums found.
- Consult appropriate technical data (MSDS) to assess the potential for reactivity (this should be done by all employees handling chemicals, for the chemicals under their responsibility, **prior** to an incident).
- Re-enter the site and stabilize any leaking units by repositioning if possible. That is, if a drum is holed and the hole is at ground level, attempt to rotate it until the hole is adjacent to the vapour space.

Temporary Repair

Several alternatives are available; the one chosen will depend on the circumstances:

- Transfer the contents of the damaged drum to a sound drum
- Patch the damaged drum and over pack for transfer to a site where the drum contents can be handled. Where drum repair is attempted, one of several commercially available kits designed specifically for these techniques are used. Additionally, various types of chemical patch kits are available. These either require the mixing of two chemicals to form a malleable material that sets hard, or a single malleable material that sets hard upon exposure to air.

Cylinders

Cylinders containing compressed gases are usually not safe to handle until the gas has escaped.

- Evacuate the area and notify your supervisor.
- Once the gas has escaped and vapour is no longer explosive or at toxic levels (refer to MSDS), the cylinder can be handled.

6.4.8 Spills on Wetlands/Muskeg

Spills on wetlands or muskeg are similar to both land and water spills. Spills of petroleum products on wetlands/muskeg are unlikely because of the limited exposure of wetlands to potential spills¹.

Spill Response

- Spills during the winter resupply would be treated in a manner similar to spills on snow or ice: the contaminated snow or ice would be removed and placed in the facility designated for contaminated snow, currently the Waste Transfer area.
- Treatment of spills during the open water season would depend on the amount of standing water (if any) present in the wetland. Sorbent booms may be deployed; if running water is present a coffer dam may need to be built. Contaminated water would be treated as discussed in Section 6.4.6 and contaminated soil and vegetation as discussed in Section 6.4.7.

6.5 PROCESSED KIMBERLITE

This plan is confined to a discussion of emergency response to a dam break, and risk assessment (Section 4). The PKCA Management Plan contains further information on dam safety, inspection and maintenance. An operation and maintenance manual specific to the Jericho PKCA was prepared as part of detailed design of the dams consistent with specifications in the Canadian Dam Safety Guidelines.

6.5.1 PKCA Dam Failure

Spills of processed kimberlite (due, e.g., to dam failure) are a special case of hazardous substance spills. Both water (PK supernatant) and solids (PK slimes) could be released due to dam failure. Typical tailings dam failures could result in up to 25% of the impoundment tailings being spilled. The volume at Jericho would depend on the stage of mining when the dam failure occurred. However, because of the nature of the impoundment basin (long and narrow) likely less than 25% of the PK fines would be released. The largest release of slurry would likely occur with a break in the divider dike separating the east and west cells of the PKCA.

Reference to Appendix A shows the following:

- failure of the East or Southeast dams could result in slurry inundating adjacent land areas;
- failure of the west dam would result in release of water only;
- failure of the internal dike would result in slurry flowing into the west cell of the PKCA but no release to the environment.

¹ During the open water season small areas along the airstrip road. Spill sensitive areas are mapped on Figure 1, Appendix A

If liquid only is released it is possible the front of the release would reach a receiving lake prior to a coffer dam being constructed.

Spill Response

- Immediately report the spill to the Mine Manager, Plant Supervisor and Environment and Safety Department. The Mine Manager will report the spill on the Spill Line. Tahera's corporate office will also be notified.
- An emergency and spill co-ordinator will be immediately assigned by the Mine Manager; in absence of this assignment, the Plant Supervisor will assume this responsibility.
- Mobilize a crawler tractor and, if feasible, a rubber-tired front end loader down slope of the spill as quickly as possible to construct a coffer dam across the drainage path of the released PK. A coffer dam may not be effective in preventing down slope flow of water.
- Because the coffer dam likely will not be completely effective in preventing water loss down slope, pump any water upstream of the dam into an unaffected cell of the PKCA, East Sump, Open Pit (only if necessary) or other temporary containment area.
- Effect repairs of the subject PKC dam.
- Pump any slurry upstream of the coffer dam back into the PKCA after dam repairs have been completed. If pumping is not feasible, use a front end loader or transport slurry back to the PKCA. Recovery of slurry is directed by the Emergency and spill co-ordinator in consultation with the Mine Manager and Environment and Safety Department to minimize site damage while ensuring further down slope migration of slurry is prevented to the extent possible.

Very limited water would be released from any but a West Dam failure because the other dams will have solids spiggotted against the upstream face. Water released to the west (from the PK west pond) would first enter the unnamed lake west of the West Dam. If of sufficient volume, water from this lake would be released into Stream C3 where it would flow to Lake C3. Natural decontamination is the only possible remediation for loss of water from the PKCA west cell.

A worst-case spill of PK slurry to the east would inundate the area immediately east of the dam but could not reach the west side of unnamed lake due to topographic constraints. A failure of the Southeast Dam would have the same effect. A failure of the North Dam would result in very little slurry release since the dam is at a relatively high elevation.

Follow Up Monitoring

Water quality monitoring is required subsequent to a spill to delimit the extent of environmental impacts if water bodies are potentially affected by the spill. The following procedure is carried out:

- Immediately following PK slurry or supernatant water release, collect water samples in down stream water bodies immediately below the dam break or below any coffer dams constructed to contain slurry or water.

- Collect water samples at 100 m intervals to a minimum of twice the distance downstream the contaminants are considered to have travelled for measurement of the suite of chemical analyses required by the water licence.
- Collect a sample of water from the first fish-bearing water body down stream for acute toxicity testing (rainbow trout and *Daphnia*).
- As soon as possible arrange for shipment of samples to qualified laboratories. Ensure chain of custody forms are used to track sample shipments. Request the laboratories to conduct tests on a priority basis.
- Repeat the sampling weekly, extending downstream if required to where background concentrations are reached. Continue sampling until the mine water license discharge criteria are met at the closest sampling point to the dam break.
- If less than 100% survival results from toxicity testing, collect additional water samples for toxicity testing downstream from the first fish-bearing water body as appropriate and in consultation with NWB.
- Collect daily turbidity readings downstream of the spill containment structure (coffer dam or natural topography).
- Take secchi disk readings daily if visible suspended sediment is present in lakes.
- If fish-bearing water bodies are potentially affected, at the first opportunity, conduct a survey of impacts to fish and fish habitat. The survey should be conducted by a qualified fisheries biologist and would have to be undertaken during the open water season.

Wildlife, except rodents, are unlikely to be directly affected by a PK slurry or water release because birds and larger mammals have the ability to escape any inundation. Some rodents could be smothered by PK slurry and ground-nesting birds' nests could also be smothered. If wildlife habitat were visibly affected, a contract wildlife biologist should be engaged to provide the mine with an independent assessment.

6.6 RAW SEWAGE LOSS

Sewage is normally treated by the mine's sewage treatment plant. A contingency plan for temporary loss of function of the plant was included in the operations and maintenance manual for the plant.

Sewage lines from various areas in the accommodation complex are connected to common routing point and thence pumped to the treatment plant in a heat traced, insulated line. Line breaks could occur anywhere in the system but loss can be stopped with shutoff valves throughout the system and alternate facilities used until repairs are effected. A break in one of the sewage treatment plant tanks would result in loss of more or less treated sewage to the floor

of the plant and to the crushed rock pad the plant is founded on. Any break in the outfall pipe from the sewage treatment plant would result in sewage flowing by gravity to the PKCA.

A malfunction could also occur with the sewage treatment plant and raw sewage would then have to be pumped directly to the PKCA until repairs were completed.

6.7 OTHER PRODUCTS

Relatively small quantities of other products are on hand at the Jericho Mine. Chemical handlers are familiar with procedures listed on MSDS for spill clean up and these procedures are used. A spill report form will be completed.

6.8 DECONTAMINATION PROCEDURES

A decision as to whether the spill warrants decontamination procedures are based on the following. If the answer is yes to one, or all of the following, decontamination procedures will be followed.

A DON'T KNOW ANSWER MUST BE TREATED AS A YES.

Is the product at IDLH (Immediately Dangerous to Life and Health) concentration?

Does the product constitute a Hazardous Waste? Potentially any substance covered under the *Transportation of Dangerous Goods Regulation* (e.g. diesel or gasoline), if spilled, could be considered a hazardous waste.

Would spread of even a small amount of the product lead to health or environmental risks?

6.9 CONTAMINANT AND DEBRIS DISPOSAL

6.9.1 Storage of Contaminants

Contaminants from the cleanup site are stored in a secured area and appropriately labelled.

Materials are considered to be hazardous, unless confirmed otherwise.

If contaminants are a hazardous substance or waste, removal and disposal are carried out by carriers licensed to carry and dispose of hazardous wastes. Contractors should have pre-designated waste handling facilities for the types of waste generated by the spill.

Contaminated soils are incinerated or placed in the PKCA. Contaminated snow and ice are placed in the Waste Transfer bermed area and allowed to melt and evaporate. Most spills should be able to be contained before the spill reaches surface water bodies. Any contaminated sorbent material on site are collected in garbage bags, used oil cubes, or other suitable container and removed from the Jericho site by a licensed contractor. Removal would normally occur during the winter resupply. Contaminated sorbents would be stored in the hazardous waste compound and shipped out on the winter resupply; contaminated soil would be placed in the PKCA.

6.9.2 Decontamination of Equipment

The most likely contaminant requiring equipment decontamination would be petroleum hydrocarbons but any hazardous substance contamination will need to be addressed.

Procedures

- All equipment used in handling an incident must be properly decontaminated and passed as fit for reuse prior to final storage.
- The methods of cleaning are dictated by the contaminant, but could include solvent washing, detergent washing, rinsing, drying and finally wipe testing.
- All decontamination must be undertaken in a containment area with access restricted to personnel directly involved in decontamination. Care must be taken to ensure contamination is not accidentally transported by personnel outside the decontamination zone. Measures will depend on the contaminant and the extent of contamination, but could include clothes changes, boot solvent washes and so forth. Contaminated clothing may be washed or discarded as appropriate.
- All decontaminant personnel must be equipped with appropriate personal protective equipment to the contaminant being handled.
- All equipment that cannot be properly cleaned must be disposed of as contaminated material, i.e. containerised and shipped off site during the winter backhaul or incinerated if applicable.
- Pass wash water through an oil-water separator, if the contaminant is petroleum, and discharge to the PKCA; treat other contaminated wash water as appropriate to the contaminant.
- Dispose of solvents and other cleaning agents as contaminated material.
- Damaged equipment must be decontaminated prior to disposal.

Site Inspection

If soil contamination has occurred, once contaminated soil has been removed, the soil surfaces remaining are tested for contamination. Once the soil is clean, as defined by the *Canadian Soil Quality Guidelines* (CCME 2003) for industrial sites, clean fill can be placed at the site.

7 FIRE

7.1 POTENTIAL LOCATIONS

Fire could occur at the Jericho Mine site at a number of locations listed in Table 7.1.

Table 7.1: Possible Fire Locations at Jericho Mine

Location	Precautions
Accommodation Complex	Fire mains with hose stations as primary system, sprinkler system, fire extinguishers, fire alarms
Diamond Plant	Fire mains with hose stations as primary system, sprinkler system, fire extinguishers, fire alarms
Power House	Dry or CO ₂ extinguisher system, fire extinguishers
Truck Shop	Fire mains with hose stations as primary system, sprinkler system, fire extinguishers
Fuel Farm	Fire extinguishers, fire hose connected to water supply
Vehicles	Fire extinguishers
Sewage Treatment Plant	Fire extinguishers, fire alarms
Airstrip Storage Sheds	Fire extinguishers

All precautions possible are taken to prevent fires at the site, because of the difficulty in effectively fighting fires at this remote location, especially during winter. Fire drills are held on a periodic basis to check personnel preparedness. Locations of fire alarms and evacuation routes (if not obvious, e.g. only one door) are posted in all work areas; fire alarms, fire extinguishers, and fire hoses are clearly marked in an approved manner.

7.2 RESPONSE

On discovering a fire, carry out the following steps immediately.

- sound the alarm by triggering a fire alarm bell in buildings so equipped or using the radio;
- remain calm;
- report the fire to your Supervisor immediately (let them know who is calling, what is on fire, the size of the fire, and the location of fire);
- call out to people in your area to warn them of the danger;
- evacuate all persons to the muster point;
- do not pass through smoke;
- feel all doors before you open them - if they are hot use another route. If no other route is available, return to the closest safe place and close the door;
- go to the window and open it to get fresh air and call for help;
- close (but do not lock) all doors behind you, as you leave the area;

- report to the muster point;
- hold a roll call and confirm everyone is accounted for;
- assign/designate a response captain;
- locate any missing people;
- organize rescue for any missing or injured people;
- obtain permission from your Supervisor before you leave the muster point; and
- try to put out the fire if you have appropriate training and can do it safely.

If you are unable to put out the fire, call for help on the radio and report all details. Do not put yourself at risk to fight the fire.

If you are able to put the fire out yourself, make sure the fire is completely out before leaving the scene. Use the radio to inform the site responsible person and inform them of the details. If you must leave the scene of the fire, make sure you or someone trained in fire fighting returns to the fire location to make sure it has not restarted. Maintain a fire watch until there is no chance that the fire will restart.

Once all persons are accounted for, arrange for their temporary shelter if required. The temporary shelter should be in a suitable place of refuge, separate from and away from the facilities involved, where there are emergency rations, blankets, a method of heating the shelter, and where there are also sufficient seats for everybody and an emergency means of communication to the outside world.

No one may re-enter a facility evacuated as a result of fire until the Mine Manager, or his designate, gives the "All Clear" signal. He will ensure the building has been checked out to verify adequate ventilation has been restored and the structural integrity of the building was not compromised.

7.3 FIRE INVOLVING RADIOACTIVE DEVICES

In the case of a diamond plant fire there is a risk of exposure to a radioactive prescribed substance in the density meters located in the DMS plant and on the tailings line thickener underflow. The gauges are both Cs-137 with sealed sources. The primary unit for the diamond process plant is manufactured by Ronan Engineering (Model SA-1). Gauge #1 has 370GBq and #2 37kBq. The decay mode is Beta and the radiation source used for gauging is gamma. A Ludlum Instruments 01-5196 radiation meter are used for checking sources.

In the case of emergency that may have damaged the meters containing the radioactive sources, the following steps must be taken:

- Cease work immediately.
- If the gauge has been partially damaged or destroyed, keep people at least 5 m away until the source is replaced or shielded, or until radiation levels are known to be safe.

- If possible, shutters on the sources in the density meters must be closed and the meters removed from danger of fire exposure if time permits. These procedures must be carried out by personnel trained in the safe use of radioactive prescribed substances.
- Have leak test performed after any incident that may result in source damage.
- In case of an accident or fire, do not use the gauge until any danger from, or damage to, the source is assessed.
- In the case of damage to meters, notify the Atomic Energy Control Board within 24 hours and file a report in accordance with licence conditions. The report, if required, will be prepared by the plant manager or designate.

A radiation policy and procedures manual was developed by Stuart Hunt & Associates Ltd. as a licensing requirement. A copy is attached in Appendix E.

8 UNCONTROLLED EXPLOSION

8.1 POTENTIAL LOCATIONS

Controlled explosions (blasting) are part of the mining process and are undertaken by qualified personnel only. At this time, there will be no blasting material on site during care and maintenance. As well, any flammable liquids or gases (diesel, gasoline, propane) at concentrations between the lower and upper explosives limits could potentially explode. From these considerations, there are a limited number of areas where uncontrolled explosions have any risk of occurrence. These include:

- accommodation complex kitchen;
- fuel farm;
- power house;
- airstrip power generator; and
- vehicle refuelling.

8.2 RESPONSE

8.2.1 Explosions Involving Flammable Substances

Explosions involving flammable substances have a high likelihood of also resulting in fire.

- The first person on the scene must notify the Mine Manager and safety officer who will dispatch the fire crew and ambulance, if required.
- Put out the fire only if it is safe to do so and there is no further risk of explosion (see response to fires in Section 7).
- When safe to do so, determine whether there are any injuries or deaths. Do not move injured people; wait for medical personnel to arrive. If qualified, apply first aid as appropriate.
- Once the emergency is over, complete an incident report. The Mine Manager will report the incident to the Mines Inspector, the RCMP (if appropriate) and Tahera's head office.
- The Mine Manager will initiate a full inquiry into the cause(s) of the explosion which are conducted by the Safety, Health and Environment Department.

9 MEDICAL EMERGENCY

Medical emergencies can occur at any time due to accidents or ill health. Medical evacuations are accomplished by means of fixed wing medivac to Yellowknife. Emergency Medical Technicians are on staff full time at the mine and are able to provide first aid and to fully treat more minor injuries. A satellite phone system is installed at the Jericho Mine and will provide reliable telephone communications in the event of a medical emergency requiring consultation with outside medical help and/or requesting a plane for medivac. Mine medical staff will determine whether evacuation is necessary.

Medical emergencies arising from accidents are discussed in Section 10. Accidents in active mining areas are covered by mine rescue procedures involving specially trained personnel. Mine rescue is taught by an instructor qualified by WCB. The British Columbia mine rescue training manual is used for the course.

10 ACCIDENTS

10.1 VEHICLE ACCIDENT

Safe driving and speed limits on mine roads are part of initial orientation of mine employees and contractors who operate vehicles at the Jericho Mine. Procedures to be followed when meeting heavy equipment are included. All heavy equipment operators are trained and certified prior to operating heavy equipment at the mine.

For mishaps involving other vehicles or stationary objects company procedures are followed for insurance purposes. Vehicle impacts with wildlife have additional criteria. Wildlife encounters may occur at any time and it is everyone's responsibility to ensure the safety of people and animals on site. Wildlife has the right of way at the Jericho Mine.

10.1.1 General

Accidents involving vehicles have the potential to trigger fire or explosion if a fuel leak results; fuel leaks also have the potential to cause environmental damage. Follow these procedures in the case of a vehicle accident:

- If the accident has not caused personal injury, the operator or driver of the collision vehicle must immediately contact the Environment and Safety Department and report the incident. Report the location, nature of the accident, whether a fire or spill of fuel or other materials has occurred.
- If a fire has resulted, attempt to extinguish the fire if safe to do so; if not stand well clear of the vehicle because of the risk of explosion.
- If fuel has spilled, spill containment materials are present and it is safe to do so, attempt to contain the spill (refer to spill response in Section 6). The spill will be logged and if the Environment and Safety Department suspects the quantity may be near or above the reporting quantity, the Mine Manager, or designate will report the spill on the Spill Report Line per requirements discussed in Section 6.
- If the accident has caused personal injury, the driver or first person on the scene must contact the safety officer who will dispatch an ambulance and fire truck if required. Do not attempt to move an injured person unless their life is in danger.
- If you are the first person on the scene, have first aid training and it is safe to do so, apply first aid appropriate to the situation until the ambulance arrives. Do not put yourself at risk in responding to an accident.

10.1.2 Accidents Involving Wildlife

Procedures if there is a collision with any wildlife are as follows:

- The driver of the collision vehicle must immediately contact the Environment and Safety Department.
- If the vehicle has killed the animal, remove it from the roadway until it can be picked up.

- If the animal has been badly hurt but not killed it must be killed as quickly as possible to avoid suffering. This is the responsibility of the Environment and Safety Department. Remember that hurt animals can be dangerous so do not put yourself in harms way by attempting to handle a wounded animal.
- The Nunavut Department of the Environment (Cambridge Bay) must be informed immediately and ask direction on proper disposal.

10.2 EQUIPMENT OR PEOPLE FALLING THROUGH ICE

Other than winter road use, there is no need at the Jericho Mine to cross lakes on ice. Other travel and equipment use over frozen lakes will normally be limited to environmental personnel collecting winter samples and using snowmobiles. Travel on lake ice will only be undertaken when ice thickness is determined to be safe. For the winter road, a contractor is in charge of construction of the extension from Contwoyto Lake to Jericho. Only experienced contract personnel will complete the road construction.

If accidents happen the following procedure is a guide to response:

- First, ensure the safety and well being of personnel involved;
- Note that ice tends to fracture for a considerable distance away from any hole, and a ladder or long plank may be required to spread the weight of any rescuers over a wide area;
- Any person(s) attempting to rescue any other persons who have fallen through the ice must be secured by a rope to a point well removed from the hole, so that they can be hauled to safety if necessary;
- Use a rope to assist anybody in the water to get out. It is difficult to climb onto ice from water in the extreme cold in wet clothes;
- Any persons who have fallen through the ice must be removed from the ice and water and immediately treated for hypothermia as follows:
 - Move them as soon as possible out of the wind.
 - Get dry clothes on the person.
 - If dry clothing is not available, remove wet clothing and place the chilled person in a sleeping bag.
 - Use a second warm person to provide body heat within the sleeping bag to help warm up the chilled person if necessary.
 - Arrange for medical attention as soon as possible.
- Where equipment had fallen through the ice, if it is still accessible, arrange for it to be lifted or towed out as soon as possible.

- Ensure that leaks of fuel or engine oils are minimized wherever possible by pumping the fuel from tanks into other containers where this can be safely done without danger of a spill.

Where a vehicle has gone completely through the ice and is submerged, contact the appropriate government spills hot line and ask for advice. Where possible, also contact a specialist contractor to assist or to undertake the recovery of the submerged vehicle.

10.3 WINTER ROAD ACCIDENT

Accidents involving transport trucks may occur on the winter road. Traffic on the road is coordinated by RTL, Yellowknife. In the event of an accident the traffic coordinator will organize response. Jericho Mine will be available to respond with men and equipment if requested. Any accident close to the mine would be responded to as a matter of course by the mine. RTL have a radio channel that is used to maintain contact between the mines and truckers.

10.4 MISSING OR OVERDUE AIRCRAFT, AND AIRCRAFT ACCIDENT

Although most of the supply and re-supply are by winter road, there are a large number of flights into the site carrying personnel and small cargo. Helicopter exploration flights may also use the site as a base.

Every aircraft transportation company has procedures for tracking overdue and lost aircraft. Jericho Mine has integrated Arctic Sunwest Charters, the company servicing Jericho Diamond Mine, procedures into the mine's response. Arctic Sunwest's procedures are attached in Appendix F.

When an air charter company does not have established procedures the Jericho Mine will initiate the following procedures.

10.4.1 Helicopters

Because of fuel load, helicopters are working within approximately 2 hours of the site.

- For helicopters using the mine as a base the pilot will file a flight plan with the mine.
- If the helicopter is making short exploration flights to a number of areas then the pilot will radio to the mine on a predetermined schedule as this will allow a faster response if an incident occurs.
- If there is no contact from the pilot at the predetermined time then the person responsible for air traffic coordination will attempt to contact the helicopter on the active frequency. Radio contact will be attempted every few minutes until 30 minutes has passed.
- If, after 30 minutes has passed, no contact has been established then the site person will call the helicopter company base to inform them and to ascertain whether they have heard from the pilot on another frequency. If other air aircraft are in the area they can be asked to attempt to contact the missing aircraft. If the pilot or crew is carrying a satellite phone then this should be used to attempt contact.
- When all attempts at contact are negative and the helicopter has been over due for 30 minutes the person responsible for air traffic coordination will inform the Mine Manager and the helicopter company that a search should be initiated.

- The aircraft company will then use its standard operating procedures for overdue aircraft with the full cooperation and resources of Jericho Mine. During this procedure the Jericho Mine will continue to attempt contact with the aircraft.

10.4.2 Fixed Wing Aircraft

For the most part the fixed wing aircraft coming to site are carrying people or supplies. These flights are on prescribed schedule and have a defined flight plan filed with the originating airport. The person responsible for air traffic coordination and the site Supervisor will always know when an aircraft is scheduled to land. This is necessary to make sure that the landing area is free of debris and animals.

The following procedure is to be used for overdue regular and extra ordinary fixed wing flights:

- After 30 minutes after scheduled arrival time with no contact from the aircraft and no information available the person responsible for air traffic coordination will contact the aircraft company and the originating airport to advise them that the aircraft is overdue.
- If the site has the correct frequencies the mine will attempt to contact the overdue aircraft and will continue until the aircraft company initiates their search procedure or the authorities take over the communications and the search.
- If there are other aircraft available on site these are made available immediately to the organized search.
- Site personnel are made available to the aircraft company as necessary for the search.
- The person responsible for air traffic coordination will inform the Mine Manager as soon as the aircraft is deemed to be overdue.
- All queries from third parties will be referred to the aircraft company or the authorities.

11 EXTREME WEATHER

Weather extremes include blizzards in winter from snow storms and flooding in summer from rain storms. Extreme cold is a normal part of Arctic winter and the Jericho operation is designed to operate in this environment; thus cold extremes are considered to have a very low risk of resulting in an emergency situation and will not be considered further.

Blizzards may become problematic under extreme conditions. However, the plant and the accommodation complex are connected by an Arctic corridor and thus weather extremes will not prevent movement between the accommodations and the processing plant. Supervisory personnel are experienced in the Arctic and are able to judge when conditions deteriorate to the extent that work should cease and crews return to the accommodation complex. Radio contact is available throughout the mine and thus senior supervisory personnel can be advised at any time of deteriorating weather situations and the status of crews working outside.

Floods are likely to be less of a problem at Jericho as the climate is relatively dry. Water handling structures at Jericho are designed to handle flood conditions. Should extreme rainfall, possibly combined with snow melt, result in flooding, the first steps to be taken are to ensure the integrity of dams, dikes and ditches. Well in advance of overtopping of water management facilities, emergency pumps will be employed to route water to holding structures with excess storage capacity, e.g., the PKCA.

Overtopping of water management structures and uncontrolled release of water to the environment is considered a spill by government regulators and must be reported on the Spill Line.

12 RESOURCE INVENTORY

12.1 EMERGENCY EQUIPMENT LOCATIONS

Automatic fire suppression equipment (automatic ceiling sprinklers) are in place in all buildings occupied by personnel. Fire extinguishers are located in clearly marked locations in accommodations, shops, fuelling stations, the cold storage warehouse, the airstrip generator building, helicopter pad and other areas where flammable substances are stored and/or handled. Spill kits are located at the fuel farm, fuelling stations, airstrip, helicopter pad and other locations where spills of hazardous substances could occur.

12.2 EMERGENCY RESPONSE SITE RESOURCE INVENTORY

Tahera's emergency response resource inventory is listed in Table 12.1.

Table 12.1: Jericho Mine Site Resource Inventory

24 HOUR RESPONSE EQUIPMENT	Number	Location
Front End Loaders	3	Mine, or shop when not in use
Tractor Dozers / Snow Plough	1	Mine, or shop when not in use
Excavators	1	Mine, or shop when not in use
Tandem Axle Trucks	1	Mine, or shop when not in use
Single Axle Truck	1	Mine, or shop when not in use
¾ Ton Trucks	9	Mine or east of office if not in use
Vac Truck	1	Mine, or shop when not in use
Aluminum Boats	3	Old exploration camp area; PKCA west end
SMI Firemaster Foam Boss Airport Crash Truck Carries 1000 gallons of water and 160 gallons of foam.	1	Airport or shop when not in use
Ambulance	1	East of the office if not on an emergency
SPILL EQUIPMENT		
Fuel Detention Boom	21	Adjacent to truck shop in a sea container and at fuel station
Pads (Universal)	13 bundles	Sea container at truck shop,
Portable Pumps/Hoses	3/ various	
Shop Vac	1	
Ice Auger	1	
Tiger Torch	1	
Hand Tools (shovels, rakes)	Various	
Spill Kits (205 L overpack drum type)	6	Fuel farm dispensing module, fuel farm off load/transfer module

13 SAFE DISTANCES AND PLACES OF REFUGE

13.1 SAFE DISTANCES

Safe distances are entirely situation dependent. Safe distances for a mine emergency will be determined by the emergency and spill co-ordinator, or designate. If in doubt, ask your supervisor. The emergency and spill co-ordinator will set up exclusion zones if required for the emergency or spill. All personnel, without exception, not directly involved in the emergency response are to remain outside the exclusion zone, unless authorized to enter by the emergency and spill co-ordinator or his designate.

The emergency and spill co-ordinator will decide when it is safe to enter the exclusion zone, i.e., when it may be removed. All employees on site will be notified when the emergency exclusion zone is once again safe to enter.

As a rough guide in the absence of instruction the distances in Table 13.1 provide minimum safe distances.

Table 13.1: Minimum Distance Guide for Non-Emergency Response Personnel

Emergency	Nature	Airborne Contaminants	Minimum Distance
Hazardous substance spill	Liquid Spill, no danger of fire	None	Outside the spill area
	Liquid spill, no danger of fire	Visible or probable (see MSDS)	Outside of the confined space or upwind if outside
	Liquid spill, flammable	None	Outside the spill area if no immediate danger of combustion; combustion greater than 25 m; explosion greater than 500 m.
Fire	Flammable substance, no danger of explosion	Visible or probable	Outside of confined space or upwind at least 50 m if outside
	Flammable substance, danger of explosion		Evacuate a minimum area of 500 m
	Building		Evacuate the building and maintain a minimum distance of the building height plus 10 m.
Explosion	No danger of further explosion or collapse of structures		Beyond the impact area
	No danger of further explosion but structures could collapse		Beyond the periphery of where collapse could impact
	Danger of further explosion		Evacuate a minimum distance of 500 m
Medical Emergency			Not applicable

Emergency	Nature	Airborne Contaminants	Minimum Distance
Weather Emergency			Not applicable
Dam Break			Evacuate any area downslope of the affected dam

13.2 REFUGES

Identified refuges include the following:

- main bullpen at the accommodation complex if there is a fire in the complex;
- if the fire spreads toward the bullpen, the truck shop will be used as a backup;
- main bullpen for a fire in the truck shop or power house.

As a general rule, any building that is heated (optional in summer) can be used as a refuge if it is at least the minimum required distance from an emergency site. The truck shop could be used as the main muster station in the event of an accommodations complex fire.

Site Security and Control

During an emergency, proper security measures are established to limit the movement of unauthorized personnel not involved in the response into the incident site. The emergency and spill co-ordinator are primarily responsible for establishing a security zone. The co-ordinator is authorized to employ whatever resources are necessary to establish and police the zone. The nature of the zone and methods of exclusion will depend on the emergency and are at the discretion of the co-ordinator, in consultation with the Mine Manager. All employees will be informed of the situation through their supervisors in order to facilitate understanding and compliance with the emergency security measures.

It is the sole discretion of the co-ordinator as to when security may be relaxed or removed. The primary consideration is safety of personnel, limiting to the greatest extent possible any negative environmental impacts, and effective control and elimination of the emergency conditions as quickly as possible.

In the case of a police investigation, these decisions are made by the investigating police officer in charge. All personnel are expected to extend full co-operation to police in their investigation.

Exclusion zones will normally be established at the safe distance line from the emergency. Where appropriate, and always in the case of spills of hazardous substances, the emergency site will be divided into three areas:

- exclusion zone;
- contamination reduction zone; and
- support zone.

Only necessary rescue and response personnel will be allowed into the exclusion zone. A check point or check points will be established through which all personnel entering or exiting the emergency site must pass. Check point information will include:

- name (position at Jericho Mine or affiliation);
- time of entry/exit;
- zone(s) or areas to be entered;
- tasks to be performed; and
- protective equipment worn and air time remaining (if Self Contained Breathing Apparatus [SCBA] required).

Only personnel trained in SCBA use will be issued this equipment. Whenever SCBA equipment is required a buddy system must be established, whereby a suitably trained person (equivalent or better training than the responder) must remain in a safe location as a standby to assist in emergency rescue and decontamination, if necessary. Radio or visual contact will be maintained between buddies at all times.

14 EVACUATION ROUTES AND PROCEDURES

There are a several levels of evacuation that may be required at the Jericho Mine site, depending on the emergency:

- building evacuation;
- area evacuation;
- mine site evacuation; and
- Carat Lake site evacuation.

Building evacuation may be required in the case of fire or spill of a hazardous substance. Emergency exit doors are clearly marked with an illuminated "Exit" sign on all buildings. Employees working in buildings are made aware of building exits as part of job training; as well, periodic evacuation drills are conducted to test emergency preparedness. Response is recorded and the Occupational Health and Safety Committee will evaluate with respect to adequacy of drills and improvement required.

If outside areas of the mine become unsafe due to ground instability, flooding, or other natural cause, or if a hazardous substance spill occurs, evacuation from the affected area may be required. This determination will be made by the shift supervisor, but if any employee feels a work area is unsafe they may refuse to work in the area without penalty and report the unsafe condition to the Occupational Health and Safety Committee and/or the Mine Manager. Evacuation from outside areas will normally be by existing access roads (see Appendix A, Figure 1). In the event evacuation by that route is cut off, personnel may be required to walk to an alternate exit route or await rescue, e.g., by heavy equipment clearing a normal access route.

If the immediate area of the mine and/or plant become unsafe, it may be necessary to evacuate personnel to refuge sites until normal conditions can be restored. The Emergency and Spill Co-ordinator will establish headquarters at the refuge site (alternatives previously discussed) and direct emergency operations from that location, if appropriate. Under exceptional circumstances it may be necessary to evacuate the entire Carat Lake area of all personnel. This evacuation would be co-ordinated by the Mine Manager, or their designate, and would require aircraft support from Yellowknife or Cambridge Bay where air charter companies are headquartered. Likely civil defence, police, and possibly medical organizations would need to be enlisted to provide support.

This last evacuation scenario is extremely unlikely as the mine site is self supporting over extended periods (weeks to a month or more) if required.

15 ENVIRONMENTAL MAPPING

Contaminated materials from spills are placed in suitable containers and removed from the site. All buildings housing personnel or where personnel work are equipped with automatic fire suppression systems (wet or dry). The accommodations complex meets current fire protection regulations including required sensors, sprinklers and separation halls and doors.

15.1 SITE GENERAL ARRANGEMENT

Appendix A contains an environmental map for the Jericho Mine. Spill clean up materials are kept at all facilities where spills could occur and were discussed in Section 12. Surficial geology is included on the environmental map and areas sensitive to spills identified. Hazardous substances are stored in the locations listed in Table 6.1 (refer to Appendix A, Figure 1, for a map of locations).

15.2 EMERGENCY EVACUATION ROUTE

In the event of a fire at the mine accommodation, the truck shop would be used as emergency shelter, pending removal of personnel (if required) and repair or replacement of facilities. All mine roads are shown on Figure 1, Appendix A. All buildings at the mine site are connected by roads that are kept passable year round and thus provide escape routes in case of an emergency.

16 HAZARDOUS MATERIALS MANAGEMENT PLAN

16.1 PURPOSE AND SCOPE OF THE PLAN

The purpose of this plan is to provide a consolidated source of information on the safe and environmentally sound storage and handling of the major hazardous products used at the Jericho Diamond Mine. The Hazardous Materials Management Plan provides instruction on the handling and storage of hazardous materials used at the Jericho Diamond Mine together with guidelines for inventory management and records keeping.

Hazardous materials handling practices at the Jericho Mine complies with existing regulations to prevent, to the greatest extent possible, both accidental release of these substances to the environment and accidents resulting from mis-handling or mishap. Further, hazardous materials handling practices focus on prevention through inspection of facilities by Tahera Diamond Corporation, periodic drills to test systems, and a program of review and continual improvement combined with training and refresher courses for all employees.

All staff are required to report materials management concerns to their supervisors who may notify the Occupational Health and Safety Committee and senior site management. All staff are encouraged to participate in procedures improvements and to bring ideas and suggestions to the Occupational Health and Safety Committee so that they may be reviewed and incorporated into procedures revisions as appropriate.

16.2 HAZARDOUS SUBSTANCES INVENTORY

Table 16.1 lists major chemicals that are used at the Jericho Diamond Mine. The same table can be found in Section 6.1. Further information is contained in the MSDS (Appendix G). Toxicological properties of chemicals stored at Jericho are elaborated in Appendix H. Chemical handlers must familiarize themselves with the general toxicological properties of substances they handle. If you have questions or concerns, discuss them with your supervisor.

Table 16.1: Hazardous Substances Inventory - Jericho Mine Site

Substance	Estimates of On-Hand Quantities	Risk of Spill	Comments
Diesel	3 million litres	low	In fuel farm with containment berm
Nitric Acid	1,100 kg	moderate	50 kg bags, 100% contained
Citric Acid	7 gallons	low	10 gallon pail
Soda Ash	5 gallons	low	10 gallon pail
Hydraulic Oil	2 – 1,100 L cubes	low	Stored in covered warehouse in silled area
Motor Oil	12 – 1,100 L cubes	low	In mine shop or lined containment area
Jet Fuel (Jet A)	60,000 L	low	Stored at airstrip in bermed tank, no proximity to water
Gasoline	14 – 205 L barrels	low	In fuel farm with containment berm
Petroleum Grease	2 – 1,100 L cubes	nil	In mine shop or cold storage containers

Substance	Estimates of On-Hand Quantities	Risk of Spill	Comments
Transmission Oil	4 – 1,100 L cubes	low	In mine shop or lined containment area
Ethylene glycol (vehicle antifreeze)	4 – 1,100 L cubes	low	In mine shop in silled area
Ethylene glycol (heating system)	not applicable	very low	In pipes in heating system
Ferrosilicon	98 tonnes		non hazardous
Hydrochloric Acid	14 – 4 L jugs	low	In controlled area of the plant
Nitric Acid	68– 2.5 L jugs	low	In fume cupboard in plant
Potassium Nitrate	3.5– 10 kg containers	low	In pellet form in controlled drainage area
Sodium Hydroxide	22 – 50 kg bags	low	In pellet form, in lab in plant; in controlled drainage area
Sodium Hydroxide	6 – 20 barrel	Low	Liquid form in controlled drainage area
Sodium Hydroxide	5– 20 L containers	low	Solution, in controlled drainage area
Flocculent – Magniflox 156, or equivalent	14,000 kg	low	In plant in controlled drainage area
Floor Dry	6 - 50 kg	nil	In the accommodation complex and mine shop

The human health effects of chemicals handled at the Jericho Mine site are discussed in appropriate sections of the Material Safety Data Sheets (MSDSs) and are part of mandatory Work Place Hazardous Materials Information System (WHMIS) training. The MSDS, some of the background behind information in the MSDS, and definitions of exposure limits are attached in Appendix H. Appropriate personal protective equipment and procedures in handling hazardous substances are essential to prevent accidental exposure that may have short- or long-term health effects.

16.3 INSPECTION AND SAFE HANDLING PROCEDURES

Routine inspection is key to accident and emergency prevention and in handling hazardous substances. This section discusses inspection procedures for fuels and lubricants, fire fighting equipment, and emergency response equipment. Dam and dyke inspections are briefly summarized and are detailed in the PKCA Management Plan.

16.3.1 Fuels and Lubricants

The Mine Manager is ultimately responsible for petroleum storage inspection at the Jericho Diamond Mine. The Mine Manager, or designate, will co-ordinate with the plant supervisor, site supervisor and the catering manager with respect to any fuels or lubricants used in their areas of responsibility.

Potential Impact

Fuels and lubricants that will be stored and handled at the Jericho Diamond Mine and their storage locations are listed Table 17.1. Potential impacts from petroleum products if mis-handled include fire, explosion (volatile products—diesel, jet fuel, gasoline, propane), water and soil contamination.

An inspection procedure for petroleum storage containers is provided in Tables 17.2 and 17.3.

Inspection of Petroleum Storage Facilities

Table 16.2 lists the inspection schedule to be followed.

Table 16.2: Inspection Schedule for Petroleum Storage Sites

Fuel Tanks	Quarterly by the plant manager; annually by Tahera's Environmental Department
Diesel Generator Building	Monthly by the plant supervisor as part of internal environmental audit
Other Fuelling Stations	Weekly by the site supervisor, or designate, as part of internal environmental audit
Spill Kits	Quarterly by the plant supervisor or designate; annually by Tahera's Environmental Manager
Other hazardous materials storage	Monthly by the plant supervisor when materials are on site

All inspections are logged with the date and time of inspection, facility inspected, and the name of the person making the inspection.

Table 16.3 lists inspection procedures to be used for containment facilities.

Table 16.3: Inspection Procedures for Petroleum Storage Sites

Fuel Tanks	Repair leaks and report promptly. Inspections are reported and filed with the site or plant supervisor and the Environment and Safety Department.
Diesel Generator Building	Inspections are reported and filed as above.
Other Fuelling Stations	Inspections are reported and filed as above.

Any accidental damage to containment structures will be inspected immediately and appropriate repairs undertaken. The extent of damage will be reported in writing to the site and plant supervisor, or designate, as well as remedial repairs effected together with the date of repairs and any follow up inspection.

16.3.2 Safe Handling Procedures

Hazardous Materials

Table 16.4 lists safe handling procedures for the products listed in Table 17.1.

Table 16.4: Safe Handling Procedures for Hazardous Products

Product	Handling Procedures
Diesel	Do not get in eyes, on skin or on clothing. Avoid breathing vapours, mist, fume or dust. Do not swallow. May be aspirated into lungs. Wear protective equipment and/or garments if exposure conditions warrant. Wash thoroughly after handling. Launder contaminated clothing before reuse. Use with adequate ventilation. Keep away from heat, sparks, and flames. Store in a well-ventilated area. Store in a closed container. Bond and ground during transfer.
Ethylene Glycol	Use adequate ventilation, wear protective gloves and chemical safety goggles if possibility of eye contact.

Product	Handling Procedures
	Keep in tightly closed container, stored in a cool, dry, ventilated area. Separate from acids and oxidizing materials. Containers of this product may be hazardous when empty since they retain product residues (vapours; liquids).
Nitric Acid	Store in a cool place away from heated areas, sparks, and flame. Store in a well ventilated area. Store away from incompatible materials such as organics. Highly corrosive. Do not add any other material to the container. Do not wash down the drain. Do not breathe gas/fumes/vapour/spray. In case of insufficient ventilation, wear suitable respiratory equipment. Keep away from direct sunlight or strong incandescent light. Keep container tightly closed and dry. Manipulate under an adequate fume hood. Avoid contact with a combustible material (wood, paper, oil, clothing...). Empty containers may contain a hazardous residue. Handle and open container with care. Take off immediately all contaminated clothing. This product must be manipulated by qualified personnel. Do not get in eyes, on skin, or on clothing. Wash well after use. In accordance with good storage and handling practices. Do not allow smoking and food consumption while handling. In case of accident or if you feel unwell, seek medical advice immediately (show the label when possible.). Do not allow water to get inside container because of violent reaction. May catch fire in contact with combustible materials such as organics. May develop pressure; vent periodically.
Citric Acid	Use NIOSH approved chemical respirator with dust and mist filter while handling crystalline material and concentrated solutions. Ventilate the work area sufficiently to control dust. Wear standard work gloves and safety glasses. Avoid contact with skin, eyes, clothing and inhalation. Store in a dry area.
Soda Ash	Use dust respirators when dust excessive, plastic coated gloves and goggles. If dusty use an exhaust fan.
Motor Oil/Hydraulic Oil/Transmission Fluid	Wear protective clothing and impervious gloves when working with used oils and transmission fluids.
Jet Fuel (Jet B)	Avoid skin contact. Launder contaminated clothing before reuse. Store in a flammable liquids area. Store away from heat, ignition sources and open flames. Jet fuel will burn vigorously and can explode with the right fuel-air mixture (between LEL and UEL).
Jet Fuel (Jet A)	Use impervious gloves; wear splash-proof, dust-resistant SAF goggles. Wash thoroughly after handling; wash contaminated clothing.
Unleaded Gasoline	Avoid skin contact. Launder contaminated clothing before reuse. Store in a flammable liquids area. Store away from heat, ignition sources and open flames. Bond and ground during transfer. Gasoline will burn vigorously and can explode with the right fuel-air mixture (between LEL and UEL).
Petroleum Grease	Minimize breathing vapour, mist or fumes. Avoid prolonged or repeated contact with skin. Remove contaminated clothing; launder or dry-clean before re-use. Remove contaminated shoes and thoroughly clean before re-use; discard if oil-soaked. Cleanse skin thoroughly after contact, before breaks and

Product	Handling Procedures
	<p>meals, and at end of work period. Product is readily removed from skin by waterless hand cleaners followed by washing thoroughly with soap and water.</p> <p>To prevent fire or explosion risk from static accumulation and discharge, effectively ground product transfer system in accordance with the National Fire Code. Keep containers closed when not in use. Do not store near heat, sparks, flame or strong oxidants.</p>
Hydrochloric Acid	<p>Store in a cool, dry, ventilated storage area with acid resistant floors and good drainage. Protect from physical damage. Keep out of direct sunlight and away from heat, water, and incompatible materials. Do not wash out container and use it for other purposes. When diluting, the acid should always be added slowly to water and in small amounts. Never use hot water and never add water to the acid. Water added to acid can cause uncontrolled boiling and splashing. When opening metal containers, use non-sparking tools because of the possibility of hydrogen gas being present. Containers of this material may be hazardous when empty since they retain product residues (vapours, liquid); observe all warnings and precautions listed for the product.</p>
Potassium Nitrate	<p>Use NIOSH/MSHA approved dust type respirator, impervious butyl or rubber gloves and goggles. Use coveralls and impervious boots. Wash thoroughly after handling. Avoid prolonged or repeated contact with skin. Avoid contact with eyes.</p> <p>Stow away from reducing agents and liquids of low flash points.</p>
Sodium Hydroxide	<p>Store in a dry place indoors. Keep containers closed & labelled correctly when not in use. Wash thoroughly after handling. When handling, wear safety goggles & face shield, rubber gloves, rubber boots, rubber apron, polyvinyl chloride clothing and plastic hard hat. Wear NIOSH/MSHA approved, dust type respirator, where dust or mists may be generated. Never touch eyes or face with hands or gloves that may be contaminated with Caustic Soda.</p>
Magnaflox 156, or equiv. Flocculent	<p>Use with adequate ventilation, wear chemical resistant gloves and safety goggles.</p> <p>Store in a cool, dry place. Keep container tightly closed when not in use.</p>

Fuel Handling

A contract supplier will fill fuel tanks in the main fuel farm. Fuel transfer will take place inside the bermed area; general procedures to be followed are presented below. For fuelling station and power house tanks, similar procedures are followed:

1. Before fuel transfer verify that:
 - a. all fuel transfer hoses have been connected properly and couplings are tight;
 - b. transfer hoses are not obviously damaged;
 - c. fuel transfer personnel are familiar with procedures;
 - d. for fuelling stations and power house, personnel are located at both the fuel truck and fuel transfer tank(s) and have the ability to shut off fuel flow manually; and
 - e. a means of communication has been established between the two people transferring fuel.

A high liquid level shutoff device can be substituted for the person at the delivery tank. In which case operation of the shutoff should be verified each time it is used.

2. Transfer fuel as per established procedures of the fuelling contractor.
3. Contractor (or mine employee in the case of fuelling station tanks) will report any accidents or spills immediately to the Mine Manager; spills will be logged as previously discussed.

Used Petroleum Products

Used oil is a hazardous waste. All used petroleum products (excepting empty containers – see Appendix I) are collected in tanks marked “Waste Oil” and disposed of under the direction of the Site Superintendant. Empty petroleum containers will, unless otherwise directed, be stored on site in a designated area and returned to the supplier on back hauls during the winter resupply.

Jericho's hazardous waste generator number is NUG100017.

Procedures for Handling Empty Product Containers

Many chemical containers are not safe to dispose of directly and must be recycled, or require handling precautions identical to full containers. Appendix I contains a procedure for handling empty chemical containers. This information is supplemental to training given to chemical handlers through the *Workplace Hazardous Materials Information System*. Chemical users must be familiar with safe handling and storage procedures provided by manufacturers in Material Safety Data Sheets (MSDS). These procedures for the major products used at the Jericho Diamond Mine site are contained in this plan for reference.

Small Volume Hazardous Wastes

Table 16.5 lists expected small volume hazardous wastes, their temporary storage location and ultimate disposal.

Table 16.5: Small Volume Hazardous Waste Management

Waste	Temporary Storage	Disposal
Used paint	Hazardous wastes compound, segregated on pallets	Backhaul to a licensed disposal contractor
Use oil filters/grease cartridges	Hazardous wastes compound, in steel drum(s) segregated on pallets	Backhaul to a licensed disposal contractor, or return to supplier where agreements exist
Used rags and sorbents	Hazardous wastes compound, in steel drum(s) segregated on pallets	Backhaul to a licensed disposal contractor

16.4 INVENTORY MANAGEMENT

Bulk materials, including those products discussed in this plan, are transported to the Jericho Mine site over the Tibbitt to Contwoyto winter road each year. Storage is in areas indicated

above. The division supervisors will reconcile total amounts received against amounts ordered. The site manager will regulate use.

16.4.1 Fuels and Lubricants

Fuel and gasoline use are automatically metered as it is distributed from bulk tanks. The metered volumes are summarized weekly and reconciled against manual dipping of the tanks. The exception is use for power generators where weekly fuel use is recorded.

Jet fuel (Jet B) is dispensed from 205 L barrels as required by aircraft personnel. Use and on hand volumes are reconciled monthly.

Lubricant and other petroleum products are inventoried monthly.

16.4.2 Processing Plant Consumables

Processing plant consumables are reconciled on receipt. A consumables sheet is filled by the senior operator and provided to the site manager if any are consumed.

16.5 RECORDS

A procedure for tracking chemical purchase and use has been developed for the Jericho Mine site. A copy of the procedure is shown in Appendix J. Specific records requirements are discussed further in this section.

16.5.1 Fuels and Lubricants

Records of fuels and lubricants are required by the Canadian Council of Ministers of the Environment (CCME) and the Fire Marshal (under the *National Fire Code*). Records are kept under the supervision of Tahera Site Supervisor in consultation with the Mine Manager, for the following:

- reconciled bulk inventory from winter resupply;
- weekly use summaries;
- weekly reconciliation for each storage tank;
- overfill alarm tests;
- pressure tests (if applicable);
- inspections and maintenance checks of storage tank system, piping and delivery system;
- any alteration to the system;
- reports of leaks or losses;
- reports of spill responses; and
- records of training.

16.5.2 Processing Plant Consumables

The plant supervisor is responsible for reconciling winter resupply inventory. The plant supervisor keeps records of use if any are consumed. Weekly and monthly summaries are provided to the site manager for records keeping.

17 PREPAREDNESS AND TRAINING

17.1 LEVELS OF TRAINING

Two levels of training are given to Jericho Mine employees, depending on their role in emergency response:

- emergency responder training; and
- emergency awareness and preparedness training for all employees.

17.1.1 Emergency Responders

Emergency responder training is provided for all first-aid personnel, for the mine rescue team, and for designated employees. Training sessions are held as required by the *NWT Mine Health and Safety Act and Regulations*. Training involves fire fighting, mine rescue, first aid and spill response.

Emergency responder training is specific to their area of responsibility. Industrial first aid certification is a requisite and confined space entry certification may be required. Emergency responders obtain hands on training in use of fire suppression equipment (fire extinguishers, hoses, etc.), correct procedures for safe handling and clean up of hazardous chemicals used in their work area, and familiarity with MSDS and use of SCBA or air purifying respirators (where appropriate). Mine safety rescue teams meet the requirements of the Nunavut/NWT Mine Health and Safety Regulations as a minimum. Emergency responder training is conducted as required by legislation or, at a minimum, annually. Drills for emergency response teams are also conducted as required by legislation or, at a minimum, semi-annually.

17.1.2 Mine Rescue

The training for the mine rescue team is the responsibility of the site superintendant. Tahera Diamond Corporation retains the ultimate responsibility to ensure effective training is provided.

17.1.3 All Employees

Training for all employees includes:

- evacuation procedures and routes;
- alarm systems;
- when to attempt immediate response to an emergency and when to call for help;
- reporting procedures for personnel;
- shutdown procedures for equipment and electrical systems;
- types of potential emergencies;
- procedures for handling flammable liquids;
- importance of good housekeeping;
- importance of safe work habits;
- procedures for control and cleanup of leaks and spills; and

- procedures for disposal of waste materials.

Training programs are provided on the following schedule:

- for all new employees;
- when new equipment, materials, or processes are introduced;
- when procedures have been updated or revised; and
- when analysis of drill responses by the Occupational Health and Safety Committee results in a recommendation for refresher training in any or all areas.

Training is provided by a combination of trained, qualified Tahera staff and outside training service organizations, as appropriate.

17.1.4 Spill Response Training

A spill response exercise will be conducted when deemed required. The exercise will include:

- A response initiated via the 24-hour paging system.
- A mock spill using a large volume of fresh water (approximately 10,000 L) that is released.
- Emergency Response Team members responding to the spill.
- Mine equipment that is mobilized to contain the spill.
- The spill area will be cleaned and materials disposed of.
- A debriefing conducted post scenario to evaluate the response and identify any shortcomings and required improvements.

18 SITE RESTORATION

Whether site restoration is required will depend on the spill or other emergency and the substance(s) involved. Therefore no specific directions are appropriate in this section. If site restoration is an issue, it will be undertaken within the framework of the *Canadian Soil Quality Guidelines*, previously mentioned. INAC has responsibilities for federal lands within Nunavut whereas KIA has responsibilities for Inuit Owned Lands. Therefore both agencies would be consulted with respect to appropriate restoration in the event of a spill or emergency. The amount of restoration, if any, will be dependent on the nature of the spill or emergency. If restoration is required, a remedial action plan would likely be required by the responsible agency. For sites that will likely require restoration, a third party inspection and restoration by a competent, licensed, contractor will be considered. If a spill or fire causes extensive environmental damage, an environmental site assessment may be required.

Minor restoration will include the following:

- Confirm that the site is decontaminated.
- Replace removed contaminated soil with clean fill.
- Top dress the location, available from the till stockpile (as appropriate).

19 PLAN EVALUATION AND CONTINUAL IMPROVEMENT

Despite careful planning, it is highly probable that certain components of the contingency plan will need to be modified. Therefore, it will be necessary to audit or review the plan to pinpoint those components needing correction, adjustment, or upgrading. Of most importance is review of aspects of the plan affecting safety of employees and visitors of the facility and the general public. Operational aspects of the plan, as well as any paperwork that deals with the plan, are reviewed. A goal is to continuously audit all aspects of the plan for effectiveness.

Formal evaluations of the contingency plan are documented, deficiencies noted in the report, and progress in addressing deficiencies tracked in writing. Responsibilities to address deficiencies and accountabilities are assigned and deadlines for addressing required changes are set. The Jericho Mine Manager assumes overall responsibility for the process; authorization for expenditures may be required from other management personnel.

REFERENCES

Baecher, G.B. 1998. Geotechnical Reliability. Geoinstitute of the American Society of Civil Engineers.

Canadian Council of Ministers of the Environment (CCME). 2003. Canadian Soil Quality Guidelines.

EBA. 2006. Jericho Project. Processed Kimberlite Management Plan. Report prepared for Tahera Diamond Corporation.

National Institute for Occupational Safety and Health. 1995. NIOSH Pocket Guide to Chemical Hazards.

Manitoba Industrial Accidents Council (MIAC). 1996. Industrial Emergency Response Planning Guide.

SRK. 2001. Risk Assessment for Mine Waste Disposal. www.srk.co.uk

SRK 2006. Waste Rock Management Plan (Part 2, Kimberlite Ore, Coarse Processed Kimberlite and Recovery Circuit Rejects). Report prepared for Tahera Diamond Corporation.

SCHEDULE 1: BUILDING INSPECTION CHECKLIST

Assigned Area:

Assigned Supervisor:

Inspection Date:

√	Item	Comments/Deficiencies
	Are all worksites clean and orderly?	
	Are all exits kept free of obstructions?	
	Are all exits marked with an exit sign and illuminated by a reliable light source?	
	Are aisleways kept clear to allow unhindered passage?	
	Are combustible scrap, debris, and waste materials stored in covered metal receptacles and removed from the worksite promptly?	
	Are all flammable liquids kept in closed containers when not in use?	
	Are all extinguishers free from obstructions or blockage?	
	Are all extinguishers charged? Note date and time tested and initial on extinguisher tag.	
	Are "No Smoking" rules followed in areas involving storage and use of flammable materials?	
	Are all spilled materials or liquids cleaned up immediately?	
	Are all work areas adequately illuminated?	
	Are emergency telephone numbers posted where they can be readily found in case of emergency?	
	Are all fire doors in good condition?	
	Is there anything to hinder the door from completely closing?	
	Is the fire alarm system in good working order? Note date and time tested & initial.	

SCHEDULE 2: COMPLIANCE INSPECTION REPORT

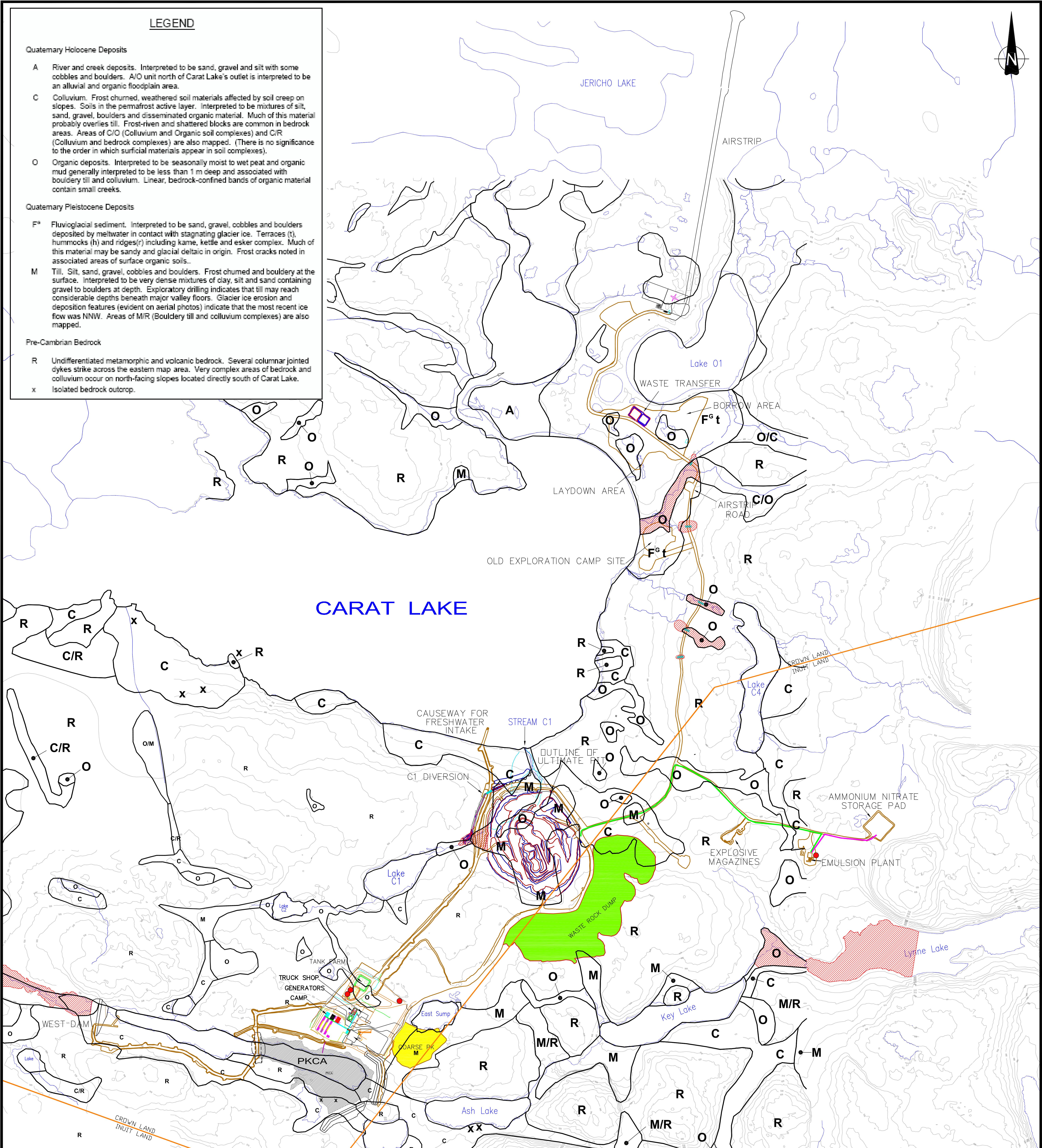
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APPENDICES

APPENDIX A

Environmental Map

Fold out copy in back pocket



Legend

	Waste Dump		Culvert
	PKCA		Spill Kit
	Stockpile Pad		AN Truck Route
	Spill Sensitive Area		Explosives Truck Route

NOTE:
Base map provided by Tahera. Stockpiles and PKCA boundary provided by SRK Consulting.

AMEC Earth & Environmental

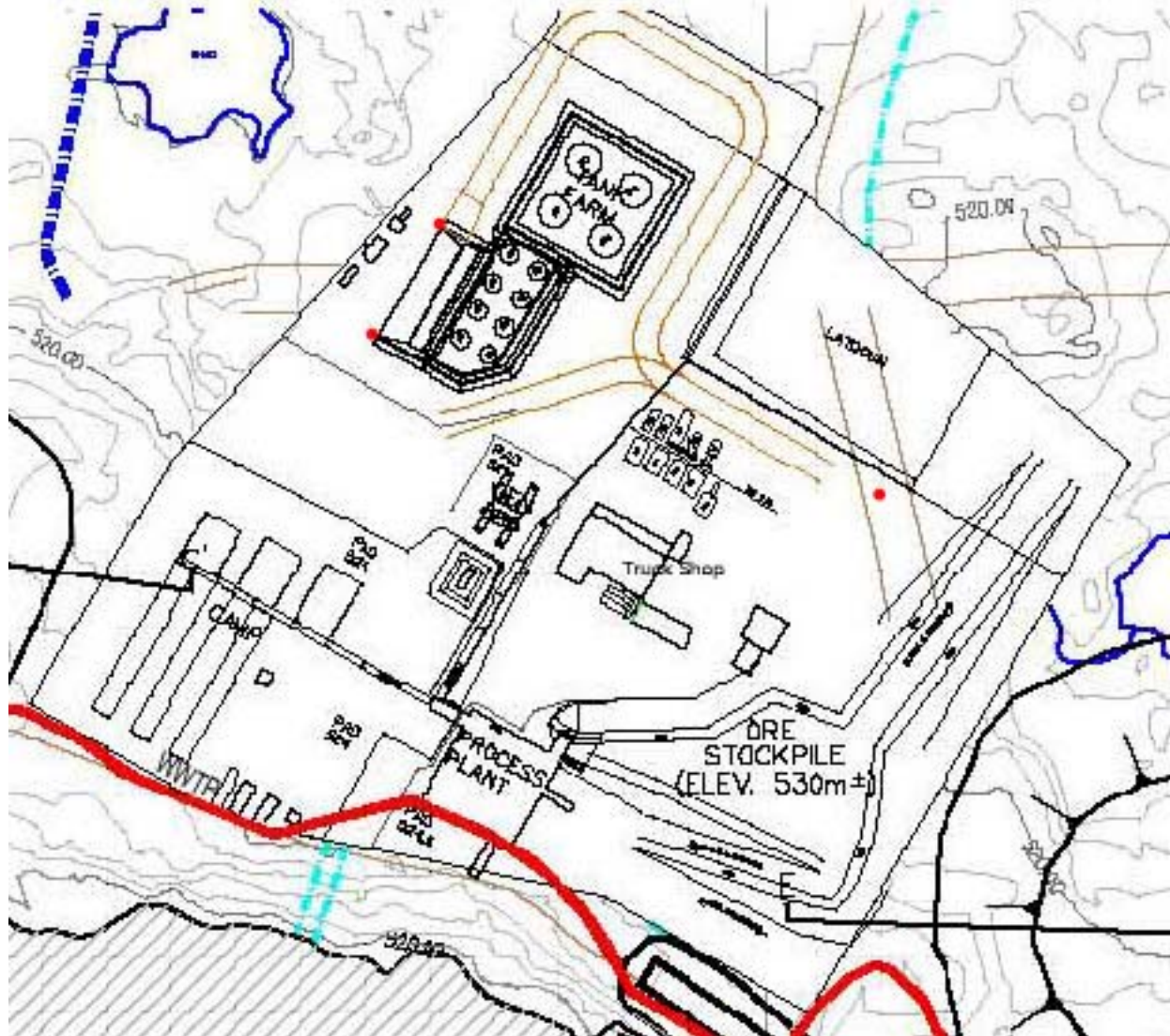
2227 Douglas Road, Burnaby, B.C. V5C 5A9
Tel. (604) 294-3811 Fax. (604) 294-4664

PROJECT	JERICO DIAMOND PROJECT
TITLE	ENVIRONEMNTAL SITE MAP

CLIENT

TAHERA
DIAMOND CORPORATION

DWN BY:	BWS	DATUM:	NAD27	DATE:	MARCH 2007
CHK'D BY:	BO	REV. NO.:	A	PROJECT NO:	VE51295
PROJECTION:	UTM Zone 12	SCALE:	AS SHOWN	FIGURE No.	FIGURE 1



● Spill kit locations

Camp and Storage Detail. Not to scale.

APPENDIX B

Emergency Specific Procedures



Company: Tahera Diamond Corporation

Site: Jericho Diamond Mine

Emergency Procedures

*This is a "controlled" document.
Routine distribution is restricted to the approved
distribution at **Jericho Mine**. All other persons
in possession of this document have uncontrolled copies
and should call document control for revision level status.*

Approved by: _____

Approved Date _____

Confidential

1.0 PERSONAL PROTECTION INFORMATION

Ventilation	Use adequate ventilation.
Respiratory Protection	Not generally required unless needed to prevent respiratory irritation. In case of spill or leak resulting in unknown concentration, use NIOSH/MSHA approved supplied air respirator.
Eye Protection	For splash protection, use chemical goggles and face shield.
Skin Protection	Use gloves resistant to the material being used, i.e., neoprene or Nitrile rubber. Use protective garments to prevent excessive skin contact.

2.0 HEALTH HAZARD DATA

Recommended Exposure Limits	Not established.
Acute Effects of Overexposure	Eye: May cause mild irritation, with stinging and redness of eyes.
	Skin: May cause severe irritation. Repeated or prolonged contact may cause defatting of the skin, resulting in dermatitis. Dermal LD50 for diesel fuel is >5 ml/kg (rabbit).
	Inhalation: May cause irritation to nose, throat or lungs. Headache, nausea, dizziness, unconsciousness may occur.
	Ingestion: May cause irritation to intestines. May cause headache, nausea, unconsciousness. If swallowed, may be aspirated resulting in inflammation and possible fluid accumulation in the lungs. Oral LD50 for diesel fuel is 9 ml/kg (rat).

3.0 FIRST AID AND EMERGENCY PROCEDURES

Eye	Flush eyes with running water for at least 15 minutes. If irritation or adverse symptoms develop, seek medical attention.
Skin	Immediately wash skin with soap and water for at least fifteen minutes. If irritation or adverse symptoms develop, seek medical attention.
Inhalation	Remove from exposure. If breathing is difficult, give oxygen. If breathing ceases, administer artificial respiration followed by oxygen. Seek immediate medical attention.
Ingestion	Do not induce vomiting. Seek immediate medical attention.

4.0 FIRE AND EXPLOSION DATA

Flash Point (Method Used)	>130F (>54C) (Estimated)
Flammable Limits (% by Volume in Air)	LEL: Not Established. UEL: Not Established.
Fire Extinguishing Media	Dry chemical, foam or carbon dioxide.
Special Fire Fighting Procedures	Evacuate area of all unnecessary personnel. Shut off source, if possible. Use NIOSH/MSHA approved self-contained breathing apparatus and other protective equipment and/or garments described in Section 1.0 if conditions warrant. Water fog or spray may be used to cool exposed containers and equipment. Do not spray water directly on fire – product will float and could be reignited on surface of water.
Fire and Explosion Hazards	Carbon and sulphur oxides and various hydrocarbons formed when burned.

5.0 SPILL AND LEAK PROCEDURES

Evacuate the area of all unnecessary personnel. Wear protective equipment and/or garments described in Section 1.0 if exposure conditions warrant. Shut off source, if possible and contain the spill. Protect from ignition. Keep out of water sources and sewers. Absorb in dry, inert material (sand, clay, etc.). Transfer to disposal drums using non-sparking equipment.

6.0 RESPONSE PERSONNEL

- Emergency Coordinator (large spill);
- Mine Site Services Department;
- Environment and Safety Manager;
- other personnel as required and designated by the Mine Manager.

7.0 EQUIPMENT

Small Spill

- portable diesel pump and hoses;
- container of appropriate size;
- absorbents from facility spill kit (which require replacement once the spill is cleaned up);
- personal protective equipment as specified in MSDS.

Large Spill

- the Emergency and Spill Coordinator may set up a decontamination zone with decontamination equipment (solvent wash, steamer, tyvik suits, etc);
- portable diesel pump and hoses;
- truck-, or skid-mounted tank of appropriate size;
- absorbents as directed by Mine Site Services (spill kit absorbents will likely not be sufficient); absorbents may need to be flow to Jericho for the final clean up;
- personal protective equipment as specified in MSDS.

8.0 CONTAINMENT, RECOVERY AND DISPOSAL ACTIONS

Spills at the fuel farm or bulk tanks will be contained by containment berms. These are the only places at Jericho where bulk diesel is stored. Recovery would involve pumping the spilled diesel back into the tank if tank integrity were not affected or into a suitable tank or tanks for temporary storage if the subject tank were damaged. Any diesel that was not contaminated by foreign matter would be put back into the supply store. Contaminated diesel would be burned or backhauled on the winter supply for disposal by a hazardous waste contractor. If backhauled, the contaminated fuel would be temporarily stored at the Waste Transfer area.

A spill from a tanker truck used to transport fuel during the winter haul could be anywhere between the fuel supplier and Jericho. It is unlikely Jericho personnel would be called upon to assist with clean up of such a spill unless it were proximate to the Jericho Mine. The method of containment and recovery would depend on the surface where the spill occurred. Section 6.4 details procedures to be used, depending on where the spill occurred.

If the spill is reportable (>100 L) report on the NWT/Nunavut Spill Line, **867-920-8130**. In any case log the spill and complete report.

Water

- very unlikely;
- containment boom deployed if possible;
- diesel pumped from within berm and burned or pumped to a waste oil tank for backhaul south.

Ice

- scrape up contaminated ice with heavy equipment and burn;
- remove residual ice to a container and transport to the contaminated ice treatment facility at the mine or south to hazardous waste facilities (depending on the location of the spill).

Land

- use diking, trenching, ditches, weirs, berms as appropriate to contain spill;
- pump diesel uncontaminated by foreign matter into suitable containers for use;

-
- burn contaminated diesel or pump to a waste oil container for backhaul south;
 - burn contaminated vegetation;
 - place contaminated soil in the PKCA or containerize for backhaul south to a hazardous waste facility.

Log the spill and complete report.

9.0 RESTORATION

Restoration applied will depend entirely on the nature of the spill and where it occurs:

- Spill behind berms may required replacement of sand used to protect berm liners to the extent possible without removing the tank(s). Contaminated sand may be burned to remove petroleum residues and re-used within a containment berm or placed in the PKCA or backhauled south to a hazardous waste contractor for disposal.
- Spills on soil require removal of the soil and replacement with clean soil; sites will be revegetated if practical.
- Spills on ice require no restoration.
- Spills on wetlands or muskeg will require restoration of wetland vegetation if practical once contaminants are removed.

Company Name: Tahera Diamond Corporation Date: 15 February 2007

Rev. 0



Company: Tahera Diamond Corporation

Site: Jericho Diamond Mine

Emergency Procedures

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Treated sewage is pumped to the PKCA. A raw sewage spill would occur with a break in any of the sewer lines from the accommodations toilet gathering lines or the main trunk line to the sewage treatment plant. A break in one of the sewage treatment plant tanks would result in loss of more or less treated sewage to the floor of the plant and to the crushed rock pad the plant is founded on. Any break in the outfall pipe from the sewage treatment plant would result in sewage flowing by gravity to the PKCA.

1.0 PERSONAL PROTECTION INFORMATION

Ventilation System	None required, unless confined space where methane could accumulate where ventilation is required.
Personal Respirators (NIOSH-Approved)	None required. Dust mask should be worn if risk of splashing.
Skin Protection	Wear protective gloves and clean body-covering clothing.
Eye Protection	Goggles or safety glasses

2.0 HEALTH HAZARD DATA

Potential for infection if sewage accidentally inhaled or ingested or comes in contact with injured skin or eyes. Seek medical attention if any signs of ill health.

3.0 FIRST AID AND EMERGENCY PROCEDURES

Inhalation	Move affected person to fresh air
Ingestion	Induce vomiting. Over-the-counter medicines to relieve upset stomach, such as Malox, Peptobismol, etc. may be taken as directed by medical staff.
Skin	Wash thoroughly with soap and water.
Eye	Flood affected eye(s) in an eye wash for a minimum of 10 minutes. Seek medical attention if irritation persists after this time.

4.0 FIRE AND EXPLOSION DATA

Not flammable; will not explode unless methane builds up in a confined space.

5.0 RESPONSE PERSONNEL

- Mine Site Services Department;

- Environment and Safety Manager.

6.0 EQUIPMENT

Equipment required depends entirely on the location of the spill.

- portable diesel or electric pump;
- vacuum truck if practical;
- portable containers for sewage;
- personal protective equipment.

7.0 CONTAINMENT, RECOVERY AND DISPOSAL ACTIONS

- Sewage will either be contained by building structures or escape to the crushed rock pad founding the accommodations complex or the sewage treatment plant.
- If the spill is large and if practical, use the vacuum truck to recover the sewage.
- If the spill is small use a portable pump and a suitably sized container.
- If the sewage treatment plant is operational, dispose of the raw sewage at the plant; if not use the PKCA.
- When all the sewage that can be is recovered, disinfect the affected area(s).
- In any building area, other than the sewage treatment plant, do swipe tests and culture for coliform bacteria to determine whether disinfection was complete. Swipe tests will not be practical in the sewage treatment plant itself because of routine small spills and aerosol deposition of bacteria.

Log the spill and complete a report.

8.0 RESTORATION

- Restoration will consist of replacing damaged piping or valves and, where practical, contaminated crushed rock with clean fill.
- Place contaminated fill on the waste dump where drainage off the dump is unlikely and cover with waste rock.



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1.0 PERSONAL PROTECTION INFORMATION

Ventilation System	Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area.
Personal Respirators (NIOSH-Approved)	For emergencies or instances where the exposure levels are not known, use a full-face piece positive-pressure, air-supplied respirator. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.
Skin Protection	Wear protective gloves and clean body-covering clothing.
Eye Protection	Use chemical safety goggles.

2.0 HEALTH HAZARD DATA

Airborne Exposure Limits	OSHA PEL 50 ppm Ceiling; ACGIH TLV 50 ppm Ceiling (vapour)
Acute Effects of Overexposure	Eyes: Splashes may cause irritation, pain, eye damage.
	Skin: Minor skin irritation and penetration may occur.
	Inhalation: Vapour inhalation is generally not a problem unless heated or misted. Exposure to vapours over an extended time period has caused throat irritation and headache. May cause nausea, vomiting, dizziness and drowsiness. Pulmonary edema and central nervous system depression may also develop. When heated or misted, has produced rapid, involuntary eye movement and coma.
	Ingestion: Initial symptoms in massive dosage parallel alcohol intoxication, progressing to central nervous system depression, vomiting, headache, rapid respiratory and heart rate, lowered blood pressure, stupor, collapse, and unconsciousness with convulsions. Death from respiratory arrest or cardiovascular collapse may follow. Lethal dose in humans is 100 ml (3 – 4 ounces).

3.0 FIRST AID AND EMERGENCY PROCEDURES

Inhalation	Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.
Ingestion	Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention.
Skin Contact	Remove any contaminated clothing. Wash skin with soap and water for at least 15 minutes. Get medical attention if irritation develops or persists.
Eye Contact	Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

4.0 FIRE AND EXPLOSION DATA

Flash Point (Method Used)	232F, 111C (CC)
Flammable Limits	LEL: 3.2%; UEL: 15.3%
Explosion	Above flash point, vapour-air mixtures are explosives within flammable limits noted above. Containers may explode when involved in a fire.
Fire Extinguishing Media	Dry chemical, foam or carbon dioxide. Water or foam may cause frothing. Water spray may be used to extinguish surrounding fire and cool exposed containers. Water spray will also reduce fume and irritant gases.
Special Fire Fighting Procedures	In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. Toxic gases and vapours may be released if involved in a fire.

5.0 SPILL AND LEAK PROCEDURES

Ventilate area of leak or spill. Remove all sources of ignition. Wear appropriate personal protective equipment. Isolate hazard area. Keep unnecessary and unprotected personnel from entering.

6.0 RESPONSE PERSONNEL

Emulsion Plant

- Explosives Superintendent;

- Environment and Safety Manager;
- Explosives Contractor employees as required.

Truck Shop

- Mechanical Superintendent
 - Environment and Safety Manager;
 - Mechanical employees as required.
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- Mine Manager if reportable spill (>100 L).

7.0 EQUIPMENT

Small Spill

- appropriate hand tools;
- absorbent materials;
- Floor Dry or equivalent.

Large Spill

- front end loader, if appropriate;
- portable pump if product pooled;
- appropriately sized liquid container(s);
- appropriate hand tools to complete clean up;
- absorbent materials;
- Floor Dry or equivalent.

8.0 CONTAINMENT, RECOVERY AND DISPOSAL ACTIONS

Contain and recover liquid when possible. Use non-sparking tools and equipment. Collect liquid in an appropriate container or absorb with an inert material (e.g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as sawdust. Do not flush to sewer.

Log the spill and complete report.

Small Spill

- Soak up spill with inert absorbents and dispose of absorbents as hazardous waste.
- Use Floor Dry or similar to remove residue and dispose of the Floor Dry with the absorbents.

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- Decontaminant hand tools, if used; ensure any wash water drains to a sump and not the environment.

Large Spill

- If product has pooled recover by pumping or appropriate means into a suitable container for reuse.
- Clean up residue as for a small spill.
- Place damaged and empty containers in the Waste Transfer area for backhaul south by a hazardous waste contractor for disposal.
- Decontaminate the pump, if used; ensure any wash water drains to a sump and not the environment.

9.0 RESTORATION

Not applicable; product is not used outside of contained areas at the mine.

Company Name: Tahera Diamond Corporation Date: 16 February 2007

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1.0 PERSONAL PROTECTION INFORMATION

Ventilation System	Use only in a chemical fume hood to keep airborne levels below recommended exposure limits. Ventilation should be corrosion proof. Do not use in unventilated spaces.
Personal Respirators (NIOSH-Approved)	Use NIOSH-Approved respirator. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.
Skin Protection	Wear impervious neoprene gloves, synthetic apron, coveralls and/or other resistant protective clothing sufficient to protect skin.
Eye Protection	Wear face shield and splash goggles.

2.0 HEALTH HAZARD DATA

Airborne Exposure Limits	Nitric Acid >90%: ACGIH TWA 2 ppm (5.2 mg/m ³); STEL 4ppm (10 mg/m ³). Nitrogen Dioxide 7.5 – 12.7%: ACGIH TWA 3 ppm (5.6 mg/m ³); STEL 5 ppm (9.4 mg/m ³).
Acute Effects of Overexposure	Eyes: Vapours, liquids and mists are extremely corrosive to the eyes. Brief contact of the vapours will be severely irritating. Brief contact of the liquid or mist will severely damage the eyes and prolonged contact may cause permanent eye injury which may be followed by blindness.
	Skin: Causes severe burns, blisters and yellow skin discolouration.
	Inhalation: Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract. Inhalation may be fatal as a result of spasm, inflammation and edema of the larynx and bronchi, chemical pneumonitis and pulmonary edema. Symptoms of exposure may include burning sensation, coughing, laryngitis, bronchitis, dyspnea, headache, nausea, hypotension, cyanosis, and vomiting. May cause delayed lung injury.
	Ingestion: Burns in mouth, pharynx and gastrointestinal tract. Risk of vomiting, nausea, diarrhea, abdominal pain, stomach perforation, hematemesis, hemoptysis, hypotension, nephritis, albuminuria, oliguria, anuria, hematuria, convulsions, kidney damage, coma and death

3.0 FIRST AID AND EMERGENCY PROCEDURES

Inhalation	Remove patient to fresh air. Administer approved oxygen supply if breathing is difficult. Administer artificial respiration or CPR if breathing has ceased. Seek immediate medical attention.
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Ingestion	If conscious, wash out mouth with water. Have conscious person drink several glasses of water or milk. Aim to dilute acid 100 times approximately. DO NOT induce vomiting. Seek immediate medical attention. Never give anything by mouth to an unconscious or convulsing person. Guard against aspiration into lungs. If spontaneous vomiting occurs, have victim lean forward with head down to avoid breathing in of vomitus, rinse mouth and administer more water.
Skin Contact	Immediate first aid is needed to prevent skin damage. IMMEDIATELY flush skin with running water for at least 30 minutes. Remove contaminated clothing, protecting your own hands and body. Seek immediate medical attention. If irritation persists, repeat flushing. Do not transport victim unless the recommended flushing period is completed or flushing can be continued during transport. Wash contaminated clothing before reusing.
Eye Contact	Immediate first aid is needed to prevent eye damage. Washing within 1 minute is essential to achieve maximum effectiveness. IMMEDIATELY flush eyes with copious quantities of water for at least 30 minutes holding lids apart to ensure flushing of the entire surface. Seek immediate medical attention. If irritation persists, repeat flushing.

4.0 FIRE AND EXPLOSION DATA

Flash Point (Method Used)	Not applicable
Flammable Limits	Not applicable
Explosion	Container explosion may occur under fire conditions or when heated. Flammable/explosive hydrogen gas may be formed upon contact of this product with metals.
Fire Extinguishing Media	Use flooding quantities of water.
Special Fire Fighting Procedures	<p>Wear adequate personal protection to prevent contact with material or its combustion products. Self contained breathing apparatus with a full facepiece operated in a pressure demand or other positive pressure mode. Cool containing vessels with flooding quantities of water until will after fire is out.</p> <p>Powerful oxidizing agent; may ignite oxidizable materials. Contributes to combustion of other materials. Contact with other material may cause fire and/or explosion. Emits toxic and corrosive fumes under fire conditions. Reacts violently with water.</p>

5.0 RESPONSE PERSONNEL

Emulsion Plant

- Explosives Superintendent;
- Environment and Safety Manager;
- Explosives Contractor employees as required.
- Mine Manager if reportable spill (>5 L).

Lab

- Diamond Plant Superintendent;
- Environment and Safety Manager.
- Mine Manager if reportable spill (>5 L).

6.0 EQUIPMENT

Small Spill

- appropriate hand tools;
- dry lime or soda ash.

Large Spill

- fire hose and water source;
- appropriately sized liquid container(s);
- appropriate hand tools to complete clean up;
- dry lime or soda ash.

7.0 CONTAINMENT, RECOVERY AND DISPOSAL ACTIONS

Any spill over 5 L to the environment must be reported on the NWT/Nunavut Spill Line: 867-920-8130.

Eliminate all sources of ignition. Don protective equipment; nitric acid is extremely corrosive.

A spill to the environment could only occur during the winter resupply. Scrape up any contaminated snow and ice and place in suitable containers. The melt water may be placed in the PKCA after temperatures rise above freezing.

Log the spill and complete report.

Small Spill

- Cover with soda ash or lime. Adequate ventilation is required for soda ash to release carbon dioxide gas.
- Place absorbent in a suitable container and mark for disposal. Temporarily store in the Waste Transfer area for backhaul to a hazardous waste contractor.
- Decontaminant hand tools, if used; ensure any wash water drains to a sump and not the environment.

Large Spill

- Evacuate and ventilate the area.
- If water can be contained, flood area to dilute acid.
- If water cannot be contained, use soda ash or lime to neutralize as for a small spill.
- Clean up residue as for a small spill.
- Place damaged and empty containers in the Waste Transfer area for backhaul south by a hazardous waste contractor for disposal.
- Decontaminate clean up equipment; ensure any wash water drains to a sump and not the environment.

8.0 RESTORATION

Not applicable; product is not used outside of contained areas at the mine.

Company Name: Tahera Diamond Corporation Date: 16 February 2007

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1.0 PERSONAL PROTECTION INFORMATION

Ventilation System	Local exhaust sufficient to control dust.
Personal Respirators (NIOSH-Approved)	NIOSH approved chemical respirator with dust and mist filter while handling crystalline material and concentrated solutions.
Skin Protection	Standard work gloves.
Eye Protection	Safety glasses.

2.0 HEALTH HAZARD DATA

Airborne Exposure Limits	No data.
Acute Effects of Overexposure	Eyes: slight eye irritant.
	Skin: long-term exposure to skin could be a mild irritant.
	Inhalation: irritant to respiratory tract.
	Ingestion: irritant to digestive tract.

3.0 FIRST AID AND EMERGENCY PROCEDURES

Inhalation	Remove patient to fresh air and rest. Call a physician.
Ingestion	Rinse mouth; refer to medical attention.
Skin Contact	Wash area with water, remove contaminated clothing and launder before reuse.
Eye Contact	Immediately flush with plenty of water for at least 15 minutes. Call a physician.

4.0 FIRE AND EXPLOSION DATA

Flash Point (Method Used)	No data.
Flammable Limits	No data.
Auto-Ignition Temperature	1000C (1832F)
Fire Extinguishing Media	Water, CO ₂ , Foam, Power extinguisher.
Special Fire Fighting Procedures	Fire fighters wear protective clothing and NIOSH approved respirator. No explosion hazard at optimum air concentration; explosive rating = weak.

5.0 RESPONSE PERSONNEL

- Explosives Superintendent;
- Environment and Safety Manager;
- Explosives Contractor employees as required.
- Mine manager if reportable spill to the environment (>25 kg).

6.0 EQUIPMENT

Small Spill

- appropriate hand tools;
- shop vacuum cleaner;
- suitably sized container for clean product;
- suitably sized container for contaminated product that cannot be re-used.

Large Spill

- appropriate hand tools, or front end loader if very large spill (several containers broken);
- suitably sized container(s) for recovered product
- suitably sized container(s) for contaminated product that cannot be re-used;
- hand tools for final clean up.

7.0 CONTAINMENT, RECOVERY AND DISPOSAL ACTIONS

A spill to the environment could only occur during the winter resupply. Scrape up any contaminated snow and ice and place in suitable containers. Store container(s) in the Waste Transfer area. If volume is small material can be disposed of in the PKCA. Large volumes may require backhaul for disposal off the mine. NOTE: Citric Acid is not toxic to aquatic organisms in low concentrations (US EPA 1992¹), however, high concentrations may depress pH to acute or chronic effects levels in small water bodies.

Log the spill and complete report.

Small Spill

- Place useable product in a suitable container and label.

¹ Reregistration Eligibility Document H7508W.

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- Place contaminated product that cannot be re-used in another container and label as waste. Temporarily transfer container to the Waste Transfer area for backhaul on the winter resupply.
 - Decontaminant hand tools, if used; ensure any wash water drains to a sump and not the environment.

Large Spill

- Use hand tools or front end loader to clean up spilled product.
- Handle as for small spills.
- Clean up residue as for a small spill.
- Decontaminate clean up equipment; ensure any wash water drains to a sump and not the environment.

8.0 RESTORATION

Not applicable; product is not used outside of contained areas at the mine.



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1.0 PERSONAL PROTECTION INFORMATION

Ventilation	None.
Respiratory Protection	None required under normal use. If mist is being generated or vapours are being produced at high temperatures, use NIOSH approved organic vapour mask.
Skin Protection	None.
Eye Protection	Safety goggles with optional face shield.

2.0 HEALTH HAZARD DATA

Symptoms of Overexposure	Skin and eye irritation.
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3.0 FIRST AID AND EMERGENCY PROCEDURES

Inhalation	Inhalation of mist may cause irritation.
Ingestion	No ill effects expected. Minute amounts aspirated into lungs may cause pulmonary injury.
Skin Contact	Not normally expected to cause ill effects. Chronic-prolonged/repeated skin contact may cause irritation.
Eye Contact	Irritation.

4.0 FIRE AND EXPLOSION DATA

Flash Point (Method Used)	>90F, >32C (COC)
Flammable Limits	Not given.
Explosion	Not given.
Fire Extinguishing Media	Use water fog, carbon dioxide, foam, dry chemical, earth or sand.
Special Fire Fighting Procedures	Wear fire fighting protective equipment and full-faced self contained breathing apparatus. Cool fire exposed containers with water spray. Contain runoff.
Unusual Fire Hazards	Dense smoke.

5.0 RESPONSE PERSONNEL

- Mechanical Superintendent;
- Mine Site Services Department;
- Environment and Safety Manager.

- Mine Manager if reportable environmental spill (100L).

6.0 EQUIPMENT

Small Spill

- hand tools;
- absorbent.

Large Spill

- containment materials (boom, etc.);
- heavy equipment (if outside);
- portable pump;
- suitable containers (barrels, etc.);
- absorbent;
- hand tools.

7.0 CONTAINMENT, RECOVERY AND DISPOSAL ACTIONS

Recover bulk of mixture into another container. Absorb residue with an inert material such as earth, sand, or vermiculite. Sweep up and dispose as solid waste.

Log the spill and complete report.

Small Spill

Inside

- Cover with inert absorbent such as Floor Dry or zonelite.
- Sweep up and place in a suitable container and mark as waste oil.
- Temporarily store in the Waste Transfer area pending backhaul on the winter resupply to a hazardous waste contractor for disposal.

Outside

- Dig up contaminated snow, ice, soil or vegetation and incinerate or place in a suitable container, mark as waste oil and temporarily store in Waste

Transfer area pending backhaul on the winter resupply to a hazardous waste contractor for disposal.

- If soil contaminated, test clean soil to ensure petroleum levels meet CCME Industrial Site Guidelines.
- If not excavate more soil, dispose of and retest clean soil.
- Log the spill.

Large Spill

Inside

- Contain the spill as appropriate, e.g., with booms, absorbent pads, etc.
- Pump pooled material into an appropriate container, such as a barrel for re-use.
- Pump any contaminated material that cannot be re-used into a separate container and mark as waste oil. Temporarily store in the Waste Transfer area pending backhaul on the winter resupply to a hazardous waste contractor for disposal.
- Complete clean up as for a small spill inside.

Outside

- If reportable, call the NWT/Nunavut Spill Line, **867-920-8130**.
- Contain the spill as appropriate (See Contingency Plan, Section 6.4).
- Pump pooled material into an appropriate container, such as a barrel for re-use.
- Pump any contaminated material that cannot be re-used into a separate container and mark as waste oil. Temporarily store in the Waste Transfer area pending backhaul on the winter resupply to a hazardous waste contractor for disposal.
- Complete clean up as for a small spill outside.
- Log the spill.

8.0 RESTORATION

- If spill is to soil, once soil has tested clean, replace contaminated soil with clean fill.
- If practical and not on an actively used surface, revegetate the area with a suitable seed or plant mix based on revegetation trials.
- If not practical, protect from erosion if necessary with suitable armouring (e.g. coarse crushed rock or rip rap).



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1.0 PERSONAL PROTECTION INFORMATION

Ventilation	None.
Respiratory Protection	None required; however use of adequate ventilation is good industrial practice.
Skin Protection	Impervious gloves.
Eye Protection	Chemical workers goggles (FP D).
Other Protective Equipment	Protective clothing.

2.0 HEALTH HAZARD DATA

Eyes/Inhalation/ Ingestion	No significant health hazards identified.
Skin	None expected for single short-term exposures. Prolonged/repeated contact may produce some irritation.

3.0 FIRST AID AND EMERGENCY PROCEDURES

Inhalation	If adverse effects occur, remove to uncontaminated area.
Ingestion	If large amount swallowed, induce vomiting; get medical attention.
Skin Contact	None required for unused motor oil. Contact with used motor oil, wash area thoroughly with soap and water or use waterless hand cleaners. Do not use gasoline, thinners or solvents.
Eye Contact	Flush with plenty of water for at least 15 minutes.

4.0 FIRE AND EXPLOSION DATA

Flash Point (Method Used)	401F, 205C (COC)
Flammable Limits	Not given.
Explosion	Not given.
Fire Extinguishing Media	Agents approved for Class B hazards (e.g. dry chemical, carbon dioxide, halogenated agents, foam, steam) or water fog.
Special Fire Fighting Procedures	Wear NIOSH/MSHA approved SCBA and full protective equipment.

5.0 RESPONSE PERSONNEL

- Mechanical Superintendent;
- Mine Site Services Department;
- Environment and Safety Manager.

- Mine Manager if reportable environmental spill (100L).

6.0 EQUIPMENT

Small Spill

- hand tools;
- absorbent.

Large Spill

- containment materials (boom, etc.);
- heavy equipment (if outside);
- portable pump;
- suitable containers (barrels, etc.);
- absorbent;
- hand tools.

7.0 CONTAINMENT, RECOVERY AND DISPOSAL ACTIONS

Recover bulk of mixture into another container. Absorb residue with an inert material such as earth, sand, or vermiculite. Sweep up and dispose as solid waste.

Log the spill and complete report.

Small Spill

Inside

- Cover with inert absorbent such as Floor Dry or vermiculite.
- Sweep up and place in a suitable container and mark as waste oil.
- Temporarily store in the Waste Transfer area pending backhaul on the winter resupply to a hazardous waste contractor for disposal.

Outside

- Dig up contaminated snow, ice, soil or vegetation and incinerate or place in a suitable container, mark as waste oil and temporarily store in Waste

Transfer area pending backhaul on the winter resupply to a hazardous waste contractor for disposal.

- If soil contaminated, test clean soil to ensure petroleum levels meet CCME Industrial Site Guidelines.
- If not excavate more soil, dispose of and retest clean soil.
- Log the spill.

Large Spill

Inside

- Contain the spill as appropriate, e.g., with booms, absorbent pads, etc.
- Pump pooled material into an appropriate container, such as a barrel for re-use.
- Pump any contaminated material that cannot be re-used into a separate container and mark as waste oil. Temporarily store in the Waste Transfer area pending backhaul on the winter resupply to a hazardous waste contractor for disposal.
- Complete clean up as for a small spill inside.

Outside

- If reportable, call the NWT/Nunavut Spill Line, **867-920-8130**.
- Contain the spill as appropriate (See Contingency Plan, Section 6.4).
- Pump pooled material into an appropriate container, such as a barrel for re-use.
- Pump any contaminated material that cannot be re-used into a separate container and mark as waste oil. Temporarily store in the Waste Transfer area pending backhaul on the winter resupply to a hazardous waste contractor for disposal.
- Complete clean up as for a small spill outside.
- Log the spill.

8.0 RESTORATION

- If spill is to soil, once soil has tested clean, replace contaminated soil with clean fill.
- If practical and not on an actively used surface, revegetate the area with a suitable seed or plant mix based on revegetation trials.
- If not practical, protect from erosion if necessary with suitable armouring (e.g. coarse crushed rock or rip rap).

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1.0 PERSONAL PROTECTION INFORMATION

Ventilation	Local exhaust and mechanical (general) ventilation to maintain exposure levels.
Respiratory Protection	Avoid breathing vapour and/or mist. Use with adequate ventilation. If ventilation is inadequate, use NIOSH/MSHA certified respirator which will protect against organic vapour/mist.
Skin Protection	Impervious protective gloves.
Eye Protection	Safety glasses or goggles.
Other Protective Equipment	Protective clothing as required, to avoid skin contact. An emergency eye wash station and shower should be available.
Work Hygienic Practices	Wash with soap and water after handling product and before eating, drinking or smoking.

2.0 HEALTH HAZARD DATA

Acute Effects of Overexposure	May be mildly irritating to eyes. Prolonged or repeated contact may cause dermatitis. Vapours may irritate the nose, throat and upper respiratory tract and cause central nervous system depression. Aspiration Hazard.
Signs/ Symptoms of Overexposure	Eye irritation, skin irritation, dermatitis, upper respiratory tract irritation, nausea, vomiting, diarrhea, headaches, dizziness, drowsiness.

3.0 FIRST AID AND EMERGENCY PROCEDURES

Inhalation	Remove to fresh air. Restore breathing. Get medical attention.
Ingestion	Do not induce vomiting. Get medical attention.
Skin Contact	Remove contaminated clothing. Wash with soap and water. If irritation persists, get medical attention.
Eye Contact	Flush with water for 15 minutes while holding eyelids open. Get medical attention.

4.0 FIRE AND EXPLOSION DATA

Flash Point (Method)	-10F, -23C (CC)
Explosion	LEL: 1.3% UEL: 8%
Fire Extinguishing Media	Agents approved for Class B hazards (dry chemical, carbon dioxide, halogenated agents, foam, steam) and water fog.
Special Fire Fighting Procedures	Fire fighters should use NIOSH approved SCBA and full protective equipment when fighting chemical fire. Use water spray to cool nearby containers exposed to fire.
Unusual Fire and Explosion Hazards	Do not use direct stream of water on fire. Toxic gases are released during combustion. Vapour may explode if ignited in enclosed area.

5.0 RESPONSE PERSONNEL

- Mine Site Services Department;
- Environment and Safety Manager.
- Mine Manager if reportable environmental spill (100L).

6.0 EQUIPMENT

Small Spill

- hand tools;
- suitable waste container;
- absorbent.

Large Spill

- front end loader;
- spill containment materials;
- absorbent;
- suitable containers;
- hand tools.

7.0 CONTAINMENT, RECOVERY AND DISPOSAL ACTIONS

If spill is reportable, report on the NWT/Nunavut Spill Line, **867-920-8130**.

If material released/spilled, eliminate sources of ignition. Evacuate area. Wear proper personal protective equipment. Contain spill (see Contingency Plan, Section 6.4). Stop leak. If can be done without risk, absorb liquid with suitable absorbent material. Collect for disposal.

If spill is on soil, excavate soil to below visible contamination. Incinerate contaminated soil or place in a suitable container, label as waste oil and temporarily store in the Waste Transfer area for backhaul on the winter resupply to a hazardous waste contractor for disposal.

Test the clean soil and if petroleum concentrations meet CCME Industrial Guidelines. If not excavate more soil and retest.

Log the spill and complete report.

8.0 RESTORATION

- If spill is to soil, once soil has tested clean, replace contaminated soil with clean fill.
- If practical and not on an actively used surface, revegetate the area with a suitable seed or plant mix based on revegetation trials.
- If not practical, protect from erosion if necessary with suitable armouring (e.g. coarse crushed rock or rip rap).

Company Name: Tahera Diamond Corporation Date: 17 February 2007

Rev. 1



Company: Tahera Diamond Corporation

Site: Jericho Diamond Mine

Emergency Procedures

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PERSONAL PROTECTION INFORMATION

Ventilation System	Local exhaust generally not required. Use only explosion proof electrical equipment.
Personal Respirators (NIOSH-Approved)	Use NIOSH approved SCBA in confined spaces or if exposed to heavy mist.
Skin Protection	Impervious gloves (viton, nitrile, neoprene) and impervious clothing.
Eye Protection	Safety glasses with side shields and face shield.

2.0 HEALTH HAZARD DATA

Acute Effects of Overexposure	Eye: Mild irritant with stinging and redness of the eyes.
	Skin: Prolonged exposure may cause defatting, redness, itching, inflammation, cracking and possible secondary infection.
	Inhalation: Headache, nausea, weakness, sedation, unconsciousness
	Ingestion: May cause irritation to the intestines. If swallowed maybe aspirated resulting in inflammation and possible fluid accumulation in the lungs.

3.0 FIRST AID AND EMERGENCY PROCEDURES

Inhalation	Remove to fresh air, provide oxygen therapy or resuscitation as indicated.
Ingestion	Rinse mouth with water. Do not induce vomiting. Call physician immediately.
Skin Contact	Remove contaminated clothing and flush with soap and water for at least 15 minutes. If irritation or adverse symptoms develop, seek medical attention.
Eye Contact	Flush with water for at least 15 minutes. If irritation or adverse symptoms develop, seek medical attention.

4.0 FIRE AND EXPLOSION DATA

Flash Point (Method Used)	-40C, -40F (TCC)
Flammable Limits	LEL: 1.4%; UEL: 7.4%
Explosion	Fumes may accumulate away from the produce and if ignited flash back.

Fire Extinguishing Media	Dry chemical, foam, CO ₂
Special Information	Evacuate the area of all unnecessary personnel. NIOSH/MSHA approved SCBA and full protective equipment. Approach from upwind if possible. Water should be used to keep surrounding materials not on fire cool. Burning may cause toxic products of combustion.

5.0 RESPONSE PERSONNEL

- Mine Site Services Department;
- Mechanical Superintendent;
- Environment and Safety Manager.
- Mine Manager if spill reportable (100 L).

6.0 EQUIPMENT

- hand tools as appropriate for clean up;
- portable pump if spill contained and pooled;
- absorbent materials;
- appropriate container for recoverable spilled product.

7.0 CONTAINMENT, RECOVERY AND DISPOSAL ACTIONS

If spill is reportable, report on the NWT/Nunavut Spill Line, **867-920-8130**.

If material released/spilled, eliminate sources of ignition. Evacuate area. Wear proper personal protective equipment. Contain spill (see Contingency Plan, Section 6.4). Stop leak. If can be done without risk, absorb liquid with suitable absorbent material. Collect for disposal.

If spill is on soil, excavate soil to below visible contamination. Incinerate contaminated soil or place in a suitable container, label as waste oil and temporarily store in the Waste Transfer area for backhaul on the winter resupply to a hazardous waste contractor for disposal.

Test the clean soil and if petroleum concentrations meet CCME Industrial Guidelines. If not excavate more soil and retest.

Log the spill and complete report.

8.0 RESTORATION

- If spill is to soil, once soil has tested clean, replace contaminated soil with clean fill.
- If practical and not on an actively used surface, revegetate the area with a suitable seed or plant mix based on revegetation trials.
- If not practical, protect from erosion if necessary with suitable armouring (e.g. coarse crushed rock or rip rap).



Company: Tahera Diamond Corporation

Site: Jericho Diamond Mine

Emergency Procedures

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1.0 PERSONAL PROTECTION INFORMATION

Ventilation	Use adequate ventilation.
Respiratory Protection	Use SCBA with minimal ventilation. In well-ventilated, open areas, the use of a respirator equipped with combination organic vapour/acid gas, HEPA cartridges and dust/ mist prefilter is required.
Skin Protection	Use protective gloves resistant to material being used.
Eye Protection	Wear safety goggles.
Work Hygienic Practices	Avoid contamination of work clothing.

2.0 HEALTH HAZARD DATA

Recommended Exposure Limit	Not established
Acute Effects of Overexposure	High concentrations of dust will cause some irritation to eyes, nose and throat.
	Inhalation may cause benign pneumoconiosis, mottling of the lungs.
	Inhalation/ingestion: manganese poisoning. Irritation. Central nervous system disorders, apathy, drowsiness, sleep disturbance, muscular twitching, spastic gait and emotion control problems.

3.0 FIRST AID AND EMERGENCY PROCEDURES

Inhalation	Remove to fresh air. Support. Flush with water for 15 minutes. Obtain medical attention in all cases.
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4.0 FIRE AND EXPLOSION DATA

Lower Explosive Limit	800 F
Extinguishing Media	Dry powder, dry sand, CO ₂ .
Special Fire Fighting Procedures	Isolate fire and allow to burn out.
Fire and Explosion Hazards	Dust can be ignited when suspend in air. Will propagate flame but isn't expected to generate sufficient pressure to explode.

5.0 RESPONSE PERSONNEL

- Diamond Plant Superintendent;

-
- On Duty Diamond Plant Operator;
 - Mine Services Department for large spills;
 - Environment and Safety Manager (notification).

6.0 EQUIPMENT

- hand tools;
- shop vacuum cleaner;
- suitably sized container for reusable product;
- depending on size of spill and location, mechanized equipment for clean up.

7.0 CONTAINMENT, RECOVERY AND DISPOSAL ACTIONS

- Use appropriate protective equipment.
- Avoid the use of compressed air to manoeuvre spilled material.
- Fine material should be swept up/vacuumed using explosion proof equipment.
- Keep dry and wet material separated.
- Avoid repacking wet material in sealed containers.

8.0 RESTORATION

Not applicable.



Company: Tahera Diamond Corporation

Site: Jericho Diamond Mine

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1.0 PERSONAL PROTECTION INFORMATION

Ventilation System	Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area.
Personal Respirators (NIOSH Approved)	For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. WARNING: Air purifying respirators do not protect workers in oxygen-deficient atmospheres.
Skin Protection	Rubber or neoprene gloves and additional protection including impervious boots, apron, or coveralls, as needed in areas of unusual exposure to prevent skin contact.
Eye Protection	Use chemical safety goggles and/or a full face shield where splashing is possible.

2.0 HEALTH HAZARD DATA

Airborne Exposure Limits	OSHA PEL 5 ppm Ceiling; ACGIH TLV 5 ppm Ceiling
Acute Effects of Overexposure	Eye: Corrosive. Vapours are irritating and may cause damage to the eyes. Contact may cause severe burns and permanent eye damage.
	Skin: Corrosive. Can cause redness, pain, and severe skin burns. Concentrated solutions cause deep ulcers and discolour skin.
	Inhalation: Corrosive. Inhalation of vapours can cause coughing, choking, inflammation of the nose, throat, and upper respiratory tract, and in severe cases, pulmonary edema, circulatory failure and death.
	Ingestion: Corrosive. Swallowing hydrochloric acid can cause immediate pain and burns of the mouth, throat, esophagus and gastrointestinal tract. May cause nausea, vomiting, and diarrhea. Swallowing may be fatal.

3.0 FIRST AID AND EMERGENCY PROCEDURES

Inhalation	Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.
Ingestion	DO NOT INDUCE VOMITING. Give large quantities of water or milk if available. Never give anything by mouth to an unconscious person. Get medical attention immediately.
Skin Contact	In case of contact, immediately flush skin with plenty of water for at

	least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.
Eye Contact	Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

4.0 FIRE AND EXPLOSION DATA

Flash Point (Method Used)	Not given.
Flammable Limits	Not flammable.
Explosion	Not considered to be an explosion hazard.
Fire Extinguishing Media	If involved in a fire, use water spray. Neutralize with soda ash or slaked lime.
Special Fire Fighting Procedures	In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. Structural firefighter's protective clothing is ineffective for fires involving hydrochloric acid. Stay away from end of tanks. Cool tanks with water spray until well after fire is out.

5.0 RESPONSE PERSONNEL

- Lab technician;
- Plant Superintendent;
- Environment and Safety Manager (notification);
- Mine Manager if reportable spill (5L)

6.0 EQUIPMENT

- soda ash or lime;
- hand tools;
- suitably sized container for absorbent;
- hose and water supply.

7.0 CONTAINMENT, RECOVERY AND DISPOSAL ACTIONS

- Ventilate area of leak or spill.
- Wear appropriate personal protective equipment.
- Isolate hazard area.
- Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible.
- Neutralize with alkaline material (soda ash, lime), then absorb with an inert material (e.g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as sawdust. Label container and temporarily store in Waste Transfer area for backhaul on the winter resupply to a hazardous waste contractor for disposal.
- Do not flush to sewer.

8.0 RESTORATION

Not applicable.

Company Name: Tahera Diamond Corporation Date: 19 February 2007

Rev. 0



Company: Tahera Diamond Corporation

Site: Jericho Diamond Mine

Emergency Procedures

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1.0 PERSONAL PROTECTION INFORMATION

Ventilation System	No information.
Personal Respirators (NIOSH-Approved)	NIOSH/MSHA-approved dust-type respirator.
Skin Protection	Impervious gloves, butyl or rubber, coveralls and impervious boots.
Eye Protection	Goggles.

2.0 HEALTH HAZARD DATA

Acute Effects of Overexposure	Eye: No information.
	Skin: Irritation of the skin and mucous membranes.
	Inhalation: No information.
	Ingestion: Ingestion of large amounts causes violent gastroenteritis.

3.0 FIRST AID AND EMERGENCY PROCEDURES

Inhalation	Remove to fresh air; call physician.
Ingestion	Drink water and induce vomiting.
Skin Contact	Flush thoroughly with water.
Eye Contact	Immediately flush eyes with plenty of water for at least 15 minutes, lifting upper and lower eyelids occasionally. Get medical attention.

4.0 FIRE AND EXPLOSION DATA

Flash Point (Method Used)	Not applicable
Flammable Limits	Not applicable
Explosion	Not applicable
Fire Extinguishing Media	Small fire: dry chemical. Large fire: water spray, fog or foam.
Special Information	<p>Remove containers, if possible without risk. Cool containers with water. Use NIOSH/MSHA-approved SCBA when material is involved in fire.</p> <p>Oxidizer - keep away from reducing agents. Will explode if heated to 1000 f in presence of reducing agents, organic materials, or if mixed with cyanides. Yields toxic gaseous oxides when heated above 1000 F.</p>

5.0 RESPONSE PERSONNEL

- Lab technician;
- Plant Superintendent;
- Environment and Safety Manager (notification).

6.0 EQUIPMENT

- hand tools as appropriate for clean up;
- shop vacuum cleaner;
- container of appropriate size to hold spilled product;
- hose and water to wash down residue to sump.

7.0 CONTAINMENT, RECOVERY AND DISPOSAL ACTIONS

Log the spill and complete report.

- Recover product with appropriate hand tools into a suitable container for reuse in the plant.
- If the product is contaminated beyond use with foreign material, place in a suitable container, seal, attach a WHMIS label and warning and place in the Waste Transfer area for backhaul south by a hazardous waste carrier.
- Damaged bags can be burned or temporarily placed in the Waste Transfer area and backhauled south on the winter resupply.
- Wash down tools in the plant where water will drain to the sump.

8.0 RESTORATION

Not applicable; spills will not be to the environment.



Company: Tahera Diamond Corporation

Site: Jericho Diamond Mine

Emergency Procedures

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1.0 PERSONAL PROTECTION INFORMATION

Ventilation System	Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area.
Personal Respirators (NIOSH Approved)	Wear NIOSH/MSHA-approved, dust type respirator, where dust or mists may be generated.
Skin Protection	Rubber or neoprene gloves and additional protection including impervious boots, apron, or coveralls, as needed in areas of unusual exposure to prevent skin contact.
Eye Protection	Use chemical safety goggles and/or a full face shield where splashing is possible.

2.0 HEALTH HAZARD DATA

Airborne Exposure Limits	OSHA/PPM PEL: 2 mg/cu m % by Wt.: 99.00%
Acute Effects of Overexposure	Eye: Causes severe burns. Small quantities can result in permanent damage and/or loss of vision.
	Skin: Corrosive action causes burns and frequently deep ulceration with subsequent scarring. Prolonged contact destroys tissue. Dust or mist from solutions can cause irritant dermatitis.
	Inhalation: Inhalation of dusts or mists can cause damage to the upper respiratory tract and to the lung tissue depending on severity of exposure. Effects can range from mild irritation of mucous membranes, severe pneumonitis and destruction of lung tissue.
	Ingestion: Ingestion either in solid or liquid form can cause very serious damage to the mucous membranes or other tissues with which contact is made, and may be fatal.

3.0 FIRST AID AND EMERGENCY PROCEDURES

Inhalation	Remove to fresh air. If not breathing, give artificial respiration, preferably mouth to mouth. If breathing is difficult, give oxygen. Contact a physician.
Ingestion	If conscious, drink large quantities of water or acidic beverages (tomato or orange juice, carbonated soft drinks). DO NOT induce vomiting. Take immediately to a hospital or physician. If vomiting occurs, administer additional water. If unconscious, or in convulsions, take immediately to a hospital. Never give anything to eat or drink to someone who is unconscious, having convulsions, or

	unable to swallow.
Skin Contact	Immediately flush skin with plenty of water while removing contaminated clothing and boots. Call a physician. If skin feels slippery, caustic may still be present in sufficient quantities to cause rash burn. Continue washing until slick skin feeling is gone. Thoroughly clean contaminated clothing and boots before reuse or discard.
Eye Contact	Flush eyes with large quantities of running water for a minimum of 15 minutes. If victim is wearing contact lenses, remove them. Hold eyelids apart during the flushing to ensure rinsing of entire surface of the eye and lids with water. DO NOT let victim rub eye(s). Do not attempt to neutralize with chemical agents. Oils/ointments should not be used at this time. Get medical attention if eye irritation occurs.

4.0 FIRE AND EXPLOSION DATA

Flash Point (Method Used)	Not applicable.
Flammable Limits	Not flammable.
Explosion	Not explosive.
Fire Extinguishing Media	Use extinguishing method suitable for surrounding fire.
Special Fire Fighting Procedures	<p>Firefighters should wear NIOSH/MSHA approved self-contained breathing apparatus and full protective clothing. Keep unnecessary people away, isolate hazard area and deny entry. Evacuate residents who are downwind of fire. Dike area to prevent runoff and contamination of water sources. Dispose of fire control water later.</p> <p>Contact with some metals particularly magnesium, aluminum and zinc (galvanized) can rapidly generate hydrogen, which is explosive.</p>

5.0 RESPONSE PERSONNEL

- Lab technician;
- Plant Superintendent;
- Environment and Safety Manager (notification);
- Mine Manager if reportable spill (5L)

6.0 EQUIPMENT

- hand tools;
- suitably sized container for absorbent;
- hose and water supply.

7.0 CONTAINMENT, RECOVERY AND DISPOSAL ACTIONS

- Only trained personnel equipped with NIOSH/MSHA approved, full face piece combination dust/mist and acid gas respirators should be permitted in area.
- For dry material, use appropriate methods, shovels, brooms, and vacuums to clean up the spill.
- If mixed with water, or likely to become mixed with water or any liquid, dike area to contain spill. Reclaim if possible. Or, dilute spill with large amounts of water then neutralize with dilute acid.
- Use vacuum truck to pick up neutralized liquid residues (pH 6 to 9) may be disposed of in waste water treatment facilities which allow the discharge of neutral salt solutions.
- After all visible traces have been removed, flush area with large amounts of water.
- Runoff from fire control may cause pollution.
- Log spill and complete report.

8.0 RESTORATION

Not applicable.



Company: Tahera Diamond Corporation

Site: Jericho Diamond Mine

Emergency Procedures

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1.0 PERSONAL PROTECTION INFORMATION

Ventilation System	Provide adequate ventilation to minimize dust inhalation.
Personal Respirators (NIOSH-Approved)	Use dust mask if handling in bulk to prevent inhalation of airborne particles.
Skin Protection	Use gloves, if needed, to avoid prolonged or repeated skin contact.
Eye Protection	Use splash goggles when eye contact may occur.

2.0 HEALTH HAZARD DATA

Airborne Exposure Limits	OSHA PEL 10 mg/m ³ ; ACGIH TLV 10 mg/m ³ ; MFRS Recommendation 10 mg/m ³ .
Acute Effects of Overexposure	Eye: may produce irritation and redness.
	Skin: None provided.
	Inhalation: dust may cause irritation to the respiratory system.
	Ingestion: None provided.

3.0 FIRST AID AND EMERGENCY PROCEDURES

Inhalation	None provided.
Ingestion	If ingested, do not induce vomiting; remove product from mouth and call a physician.
Skin Contact	In case of skin contact, remove contaminated clothing and wash skin thoroughly with soap and water.
Eye Contact	If splashed into the eyes, flush with clear water for 15 minutes or until irritation subsides. If irritation persists, call a physician.

4.0 FIRE AND EXPLOSION DATA

Flash Point (Method Used)	None exhibited.
Flammable Limits	Not flammable.
Explosion	As with most organic powders, flammable dust clouds may be formed in air. Avoid creating dust. Keep away from sources of ignition.
Fire Extinguishing Media	Carbon dioxide, dry chemical, foam, in preference to a water spray.
Special Fire fighting Procedures	None given.

5.0 RESPONSE PERSONNEL

- On duty plant operator;
- Plant Superintendent;
- Environment and Safety Manager (notification).

- Mine Manager (reportable spill, 100 L).

6.0 EQUIPMENT

- hand tools;
- shop vacuum;
- hose and water.

7.0 CONTAINMENT, RECOVERY AND DISPOSAL ACTIONS

- Sweep up dry and flush spill area with water. Drain water to plant sump, not the environment. The product or its solutions should not be allowed to enter waterways without treatment.
- Spills of dilute solutions may be flushed with copious amounts of water, or alternately, they may be absorbed with an inert material such as earth or Floor Dry and contained for disposal.
- Log spill and complete report.

8.0 RESTORATION

Not applicable. spill would be within a completely contained area.

Company Name: Tahera Diamond Corporation Date: 20 February 2007

Rev. 1



Company: Tahera Diamond Corporation

Site: Jericho Diamond Mine

Emergency Procedures

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1.0 PERSONAL PROTECTION INFORMATION

Unless authorized, remain a minimum of 5 m away from a damaged density meter, or until the meter's radioactive source has been determined to be safely shielded.

2.0 HEALTH HAZARD DATA

Radiation from meters is normally shielded and must be below 2.5 μ Siverts/h outside the shield (instrument).

3.0 FIRST AID AND EMERGENCY PROCEDURES

There are no special first aid procedures as injury should not occur except for high radiation exposure. If high radiation exposure is suspected (above the health hazard limit) seek immediate medical attention.

In the case of emergency that may have damaged the meters containing the radioactive sources, the following steps must be taken:

- Cease work immediately.
- If the gauge has been partially damaged or destroyed, keep people at least 5 m away until the source is replaced or shielded, or until radiation levels are known to be safe.
- If possible, shutters on the sources in the density meters must be closed and the meters removed from danger of fire exposure if time permits. These procedures must be carried out by personnel trained in the safe use of radioactive prescribed substances.
- Have leak test performed after any incident that may result in source damage.
- In case of an accident or fire, do not use the gauge until any danger from or damage to the source is assessed.
- In the case of damage to meters, notify the Atomic Energy Control Board within 24 hours and file a report in accordance with licence conditions. The report, if required, will be prepared by the Plant Manager or designate.

4.0 FIRE AND EXPLOSION DATA

Meters and sources are non-flammable and will not explode. If meters are exposed to fire, they must be assumed to be leaking radiation until tested.

5.0 RESPONSE PERSONNEL

- On duty plant operator;
- Plant Superintendent;
- Radiation Safety Officer;
- Environment and Safety Manager;
- Mine Manager.

6.0 EQUIPMENT

- radiation survey meter;
- packing container to seal leaking radiation source.

7.0 CONTAINMENT, RECOVERY AND DISPOSAL ACTIONS

All testing and recovery is to be done ONLY by personnel trained in the safe handling of radioactive devices. If the sample radioactivity is greater than 200 becquerels assume the radioactive source is leaking.

Meters and radioactive sources are not liquid and cannot spill or leak in that sense. Defective meters must be returned to the supplier, sent to the Atomic Energy Control Board of Canada or an approved waste handling facility following Transportation of Dangerous Goods Regulations for radioactive substances. Radioactive sources must be effectively sealed prior to shipment. The consignee of meters must be notified prior to shipment. Label the package to indicate its contents and affix a radiation warning sign. If in doubt, contact AECSB.

- Discontinue using the affected nuclear gauge.
- Take measures to limit the spread of radioactive contamination from the leaking source.
- Isolate the leaking radioactive source by placing exclusion barriers at a distance of five (5) metres around the nuclear gauge installation.
- Immediately after complying with the above, inform the Canadian Nuclear Safety Commission that a leaking source has been detected.
- Seek qualified professional advice on how to manage the leaking radioactive source.
- Make arrangements for disposal of the leaking source.
- Attempt to determine the source leakage and submit findings in writing to the Canadian Nuclear Safety Commission.

8.0 RESTORATION

Not applicable.

Company Name: Tahera Diamond Corporation

Date: 31 March 2007

Rev. 0



Company: Tahera Diamond Corporation

Site: Jericho Diamond Mine

Emergency Procedures

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1.0 PERSONAL PROTECTION INFORMATION

Ventilation	Use adequate ventilation.
Respiratory Protection	Not generally required unless needed to prevent respiratory irritation. In case of spill or leak resulting in unknown concentration, use NIOSH/MSHA approved supplied air respirator.
Eye Protection	Use splash-proof, dust-resistant SAF goggles.
Skin Protection	Use gloves resistant to the material being used, i.e., neoprene or Nitrile rubber. Use protective garments to prevent excessive skin contact.

2.0 HEALTH HAZARD DATA

Recommended Exposure Limits	Not established.
Acute Effects of Overexposure	Eye: May cause mild irritation, with stinging and redness of eyes.
	Skin: May cause severe irritation. Repeated or prolonged contact may cause defatting of the skin, resulting in dermatitis.
	Inhalation: May cause irritation to nose, throat or lungs. Headache, nausea, dizziness, unconsciousness may occur.
	Ingestion: May cause irritation to intestines. May cause headache, nausea, unconsciousness. If swallowed, may be aspirated resulting in inflammation and possible fluid accumulation in the lungs.

3.0 FIRST AID AND EMERGENCY PROCEDURES

Eye	Flush eyes with running water for at least 15 minutes. If irritation or adverse symptoms develop, seek medical attention.
Skin	Immediately wash skin with soap and water for at least fifteen minutes. If irritation or adverse symptoms develop, seek medical attention.
Inhalation	Remove from exposure. If breathing is difficult, give oxygen. If breathing ceases, administer artificial respiration followed by oxygen. Seek immediate medical attention.
Ingestion	Do not induce vomiting. Seek immediate medical attention.

4.0 FIRE AND EXPLOSION DATA

Flash Point (Method Used)	>130F (>54C) (Estimated)
Flammable Limits (% by Volume in Air)	LEL: 0.7. UEL: Not Established.
Fire Extinguishing Media	Dry chemical, foam, carbon dioxide or water spray.
Special Fire Fighting Procedures	Evacuate area of all unnecessary personnel. Shut off source, if possible. Use NIOSH/MSHA approved self-contained breathing apparatus and other protective equipment and/or garments described in Section 1.0 if conditions warrant. Water fog or spray may be used to cool exposed containers and equipment. Do not spray water directly on fire – product will float and could be reignited on surface of water.
Fire and Explosion Hazards	Moderate fire hazard when exposed to heat/flame. Vapour heavier than air; may travel considerable distance to ignite source and flashback.

5.0 SPILL AND LEAK PROCEDURES

Evacuate the area of all unnecessary personnel. Wear protective equipment and/or garments described in Section 1.0 if exposure conditions warrant. Shut off source, if possible and contain the spill. Protect from ignition. Keep out of water sources and sewers. Absorb in dry, inert material (sand, clay, etc.). Transfer to disposal drums using non-sparking equipment.

6.0 RESPONSE PERSONNEL

- Emergency Coordinator (large spill);
- Mine Site Services Department;
- Environment and Safety Manager;
- other personnel as required and designated by the Mine Manager.

7.0 EQUIPMENT

Small Spill

- portable diesel pump and hoses;
- container of appropriate size;
- absorbents from facility spill kit (which require replacement once the spill is cleaned up);
- personal protective equipment as specified in MSDS.

Large Spill

- the Emergency and Spill Coordinator may set up a decontamination zone with decontamination equipment (solvent wash, steamer, tyvik suits, etc);
- portable diesel pump and hoses;
- truck-, or skid-mounted tank of appropriate size;
- absorbents as directed by Mine Site Services (spill kit absorbents will likely not be sufficient); absorbents may need to be flow to Jericho for the final clean up;
- personal protective equipment as specified in MSDS.

8.0 CONTAINMENT, RECOVERY AND DISPOSAL ACTIONS

Spills from bulk tanks will be contained by containment berms. The airstrip the only place at Jericho where bulk Jet A is stored. Recovery would involve pumping the spilled Jet A back into the tank if tank integrity were not affected or into a suitable tank or tanks for temporary storage if the subject tank were damaged. Any Jet A that was not contaminated by foreign matter would be put back into the supply store. Contaminated Jet A would be burned or backhauled on the winter supply for disposal by a hazardous waste contractor. If backhauled, the contaminated fuel would be temporarily stored at the Waste Transfer area.

A spill from a tanker truck used to transport Jet A fuel during the winter haul could be anywhere between the fuel supplier and Jericho. It is unlikely Jericho personnel would be called upon to assist with clean up of such a spill unless it were proximate to the Jericho Mine. The method of containment and recovery would depend on the surface where the spill occurred. Section 6.4 details procedures to be used, depending on where the spill occurred.

If the spill is reportable (>100 L) report on the NWT/Nunavut Spill Line, **867-920-8130**. In any case log the spill and complete report.

Water

- very unlikely;
- containment boom deployed if possible;
- Jet A pumped from within berm and burned or pumped to a waste oil tank for backhaul south.

Ice

- scrape up contaminated ice with heavy equipment and burn;
- remove residual ice to a container and transport to the contaminated ice treatment facility at the mine or south to hazardous waste facilities (depending on the location of the spill).

Land

- use diking, trenching, ditches, weirs, berms as appropriate to contain spill;
- pump Jet A uncontaminated by foreign matter into suitable containers for use;

-
- burn contaminated Jet A or pump to a waste oil container for backhaul south;
 - burn contaminated vegetation;
 - place contaminated soil in the PKCA or containerize for backhaul south to a hazardous waste facility.

Log the spill and complete report.

9.0 RESTORATION

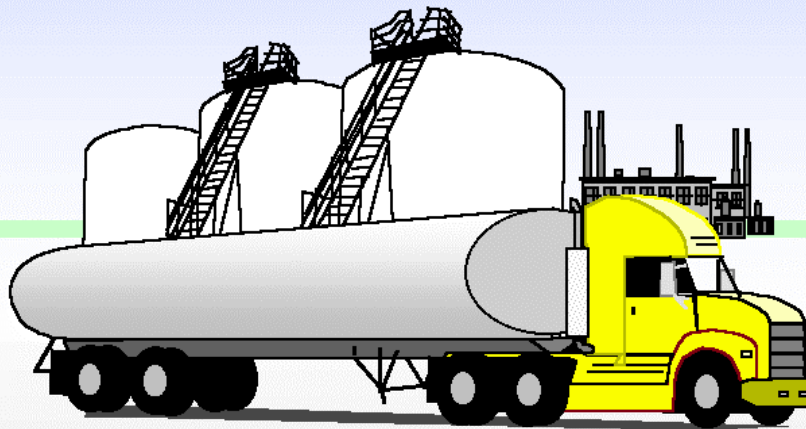
Restoration applied will depend entirely on the nature of the spill and where it occurs:

- Spill behind berms may required replacement of sand used to protect berm liners to the extent possible without removing the tank(s). Contaminated sand may be burned to remove petroleum residues and re-used within a containment berm or placed in the PKCA or backhauled south to a hazardous waste contractor for disposal.
- Spills on soil require removal of the soil and replacement with clean soil; sites will be revegetated if practical.
- Spills on ice require no restoration.
- Spills on wetlands or muskeg will require restoration of wetland vegetation if practical once contaminants are removed.

APPENDIX C

Industrial Emergency Response Planning Guide

Industrial Emergency Response Planning Guide



Manitoba Industrial Accidents Council

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If you have any comments or questions about this document please let us know:


INTRODUCTION

It is a reasonable assumption that every business or industry will, at some point, experience some type of crisis or emergency. Emergency preparedness and planning activities will help to minimize human, property, and economic losses due to any hazardous event.

The province of Manitoba recognizes this fact and as a result, all businesses that handle, transport, store or otherwise use significant quantities of dangerous goods are required, by provincial legislation, to have an emergency plan.

‘Industrial Emergency Response Planning Guide’ is designed for small to medium size Manitoba businesses with little or no experience emergency planning. It has been designed to be user friendly and proceeds step by step through a process for developing an appropriate emergency plan. Worksheets and other aids are used where possible to help simplify the process where possible.

All businesses are different and some may require more involved methods and information at certain times during plan development. References are included at the rear of the document to guide the user to more rigorous processes or methods whenever necessary.

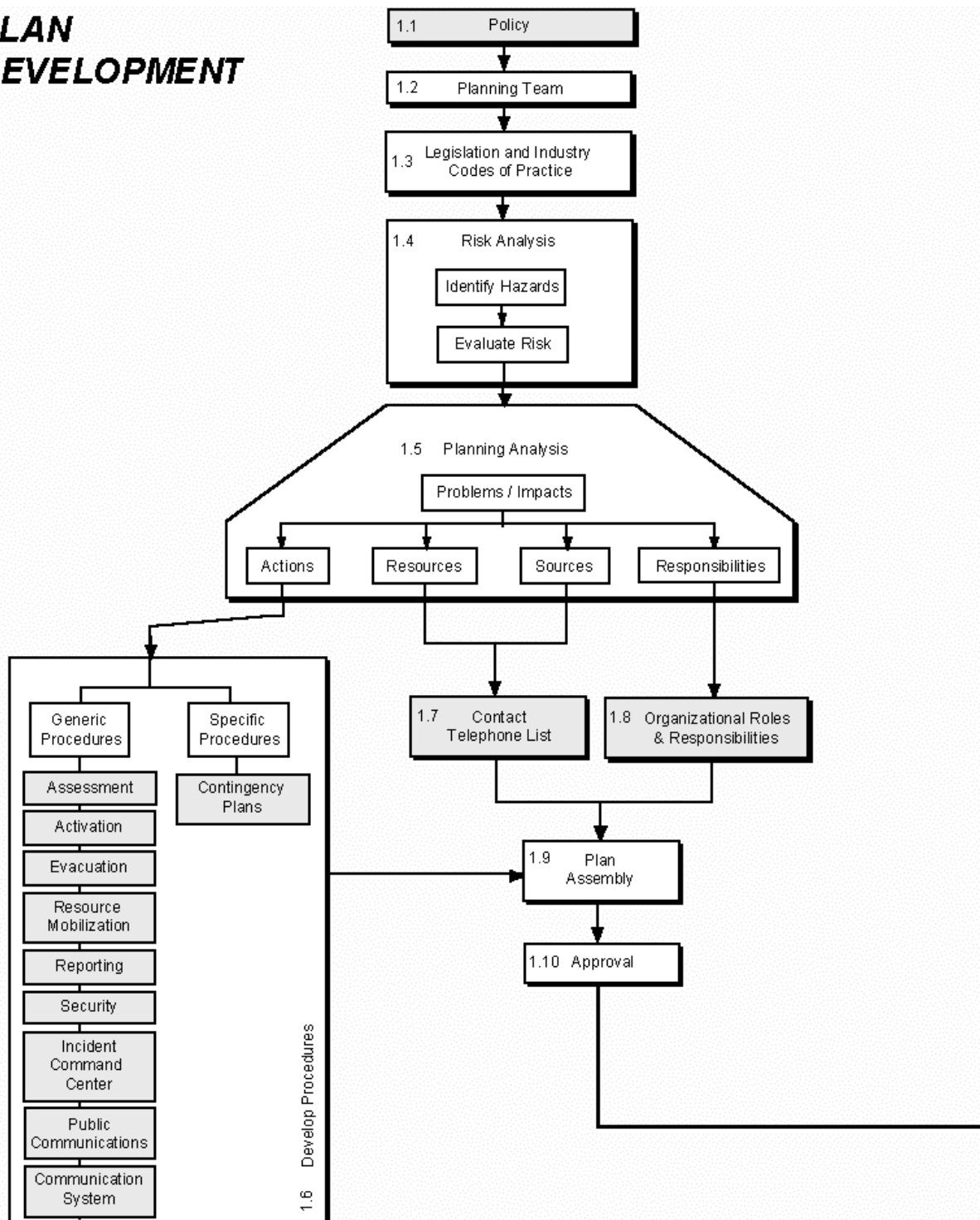


Planning Tips

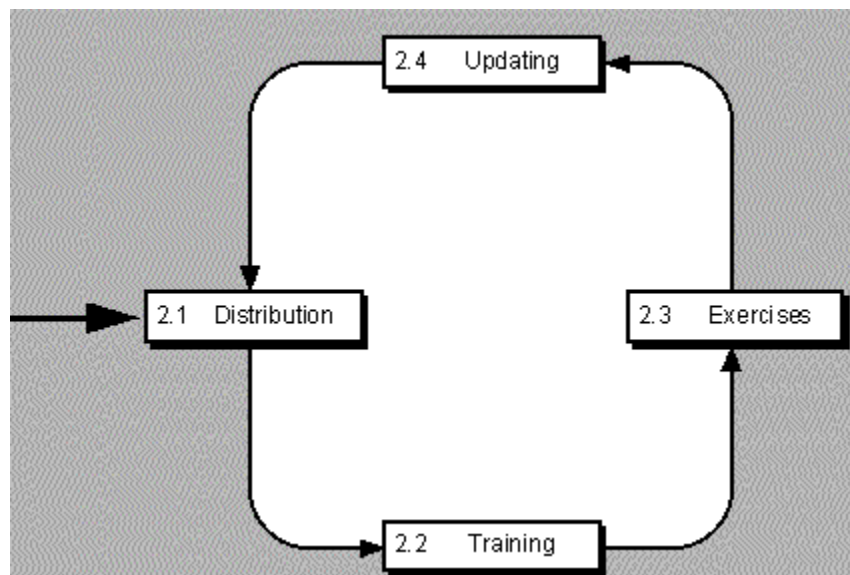
Make the plan realistic

Simple	Procedures should be easy to find, understand and execute.
Parallel	The organizational structure, roles and responsibilities should be similar to those of day to day operations.
People	The plan should fit the people and not try and fit people to the plan.

PLAN DEVELOPMENT



PLAN ADMINISTRATION



1. PLAN DEVELOPMENT

1.1 POLICY

OVERVIEW

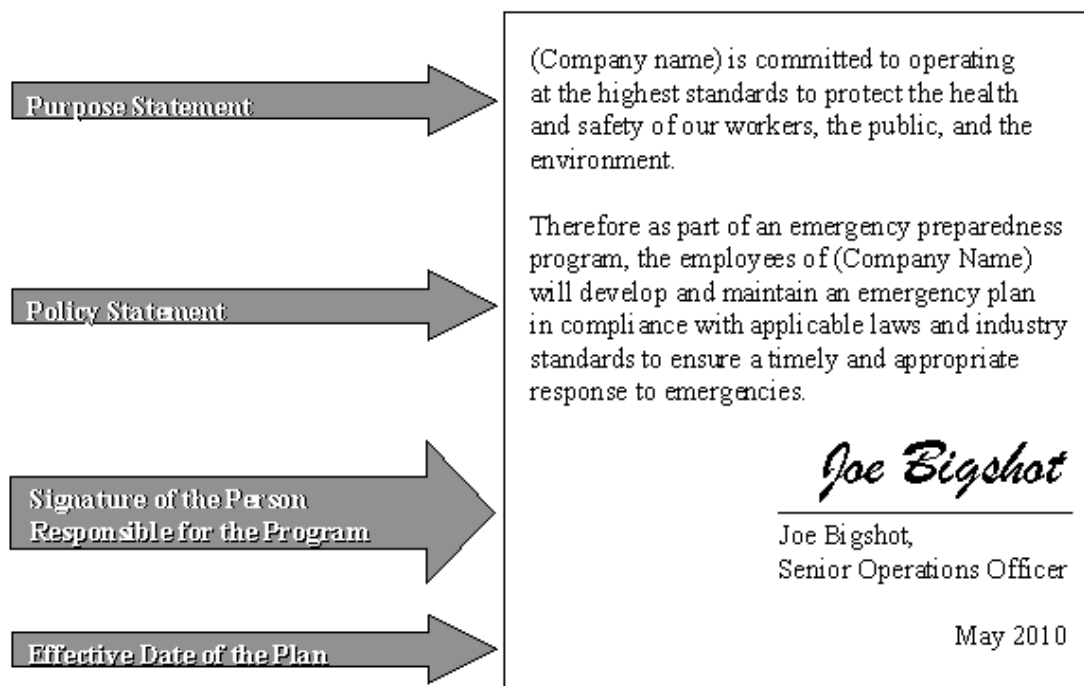
Every organization should have a policy reflecting its commitment to emergency response planning. The policy is usually signed by the senior most person within the organization.

The policy becomes part of the plan (see section 1.9).

ACTION REQUIRED

Senior Management	Develop an appropriate emergency preparedness / planning policy for your organization
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EXAMPLE



1.2

EMERGENCY PLANNING TEAM

OVERVIEW

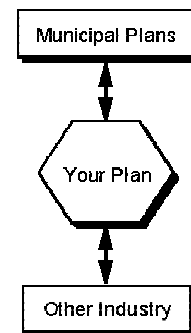
The Emergency Planning Team is responsible for the development and administration of the emergency response plan. The team is made up of the following:

1) Emergency Planning Coordinator

Responsible for overseeing the development and maintenance of the plan and;

2) Emergency Planning Committee

In larger and more complex organizations a committee of persons with expertise act as a resource to the emergency planning coordinator to ensure that the plan accurately reflects the needs of the organization. It is advisable to bring in outside expertise (fire, police, utilities, etc...) to work with the planning committee.



ACTION REQUIRED

Senior Management	<ul style="list-style-type: none">▪ Select and appoint an appropriate position / person within the organization to be the Emergency Planning Coordinator.
Emergency Planning Coordinator	<ul style="list-style-type: none">▪ Decide whether an emergency Planning Committee is required. If so, identify the types of expertise available within the organization that will be useful on the committee and assign appropriate individuals to the committee.▪ Invite outside agencies to participate on the committee.▪ Integrate the organizations emergency response plan with other emergency response plans.

ADDITIONAL INFORMATION

CSA Z731- Emergency Planning for Industry
MIAC-C's Principals for Joint Emergency Preparedness

OVERVIEW

The planning team should identify all federal, provincial and municipal regulations which apply to their operation and contact regulatory agencies to identify requirements and obtain advice.

In addition, some types of industries are required to follow procedures recommended in codes of practice. These industry associations must be contacted to identify appropriate codes.

ACTION REQUIRED**Emergency
Planning
Team**

- Identify all pertinent legal authority in the way of local, provincial, and federal acts and regulations.
- Consult with regulatory agencies as necessary.
- Identify and implement industry codes of practice.

ADDITIONAL INFORMATION

- CSA Z731 - Emergency Planning for Industry

OVERVIEW

The risk assessment is the basis for the emergency plan although this information is not physically part of the plan. Keep the results of this process on file.

The next few pages outline a simple risk analysis process. Higher risk facilities will require more sophisticated risk analysis techniques.

ACTION REQUIRED**Emergency
Planning
Team**

- Undertake a risk assessment.
- Consider methods to eliminate or reduce risk.

ADDITIONAL INFORMATION

- CSA Z731 - Emergency Planning for Industry
- MIAC-C Risk Assessment Guidelines

**Preparedness Tip**

For each serious risk that is identified, consider taking measures to reduce that risk.

Elimination	of a material or substance.
Substitution	of lower toxicity or flammability chemicals.
Reduce Energy	such as temperature, pressure, or quantity.
Backup	of control devices and systems.
Containment	to control the extent of spills.

Step 1 - Identify the Hazards

The risk assessment begins by creating a list of all of the hazards that could possibly impact the site of operations. This process should include both natural hazards as well as human made hazards both internal to the company and those represented by any adjacent industries.

ACTION REQUIRED

Emergency Planning Team

- Complete worksheet A. Remember to include other hazards as appropriate.

Worksheet A - Hazard Identification

☐ Check all that apply

NATURAL	HUMAN CAUSED
<input type="checkbox"/> Tornado / Plough Wind	Fire
<input type="checkbox"/> Severe Hail	<input type="checkbox"/> Minor
<input type="checkbox"/> Heavy Rain/Flash Flood	<input type="checkbox"/> Major
<input type="checkbox"/> Flood (River)	<input type="checkbox"/> Structural Fire
<input type="checkbox"/> Extreme/Prolonged Heat	Explosion
<input type="checkbox"/> Extreme/Prolonged Cold	<input type="checkbox"/> Minor
<input type="checkbox"/> Blizzard/Major Snow Storm	<input type="checkbox"/> Major
<input type="checkbox"/> Freezing Rain/Ice Storm	Chemical Release
<input type="checkbox"/> Dust Storm	<input type="checkbox"/> Chemical 1 _____
<input type="checkbox"/> Other _____	<input type="checkbox"/> Chemical 2 _____
<input type="checkbox"/> Other _____	<input type="checkbox"/> Chemical 3 _____
<input type="checkbox"/> Other _____	<input type="checkbox"/> Sabotage
<input type="checkbox"/> Other _____	<input type="checkbox"/> Bomb Threat
<input type="checkbox"/> Other _____	<input type="checkbox"/> Civil Unrest
	<input type="checkbox"/> Plane Crash
	<input type="checkbox"/> Dam Break
	<input type="checkbox"/> Epidemic
	<input type="checkbox"/> Financial Collapse
	<input type="checkbox"/> Utility Shortage/Outage
	<input type="checkbox"/> Gas Main Break
	<input type="checkbox"/> Water Main Break
	<input type="checkbox"/> Radiation Fallout
	<input type="checkbox"/> Other _____
	<input type="checkbox"/> Other _____

Step 2 Evaluate Risks

The second step is to evaluate the degree of risk represented by each hazard. Risk is a function of the frequency (probability) and consequences (severity) of a hazards occurrence.

ACTION REQUIRED

**Emergency
Planning
Team**

- Take the list of hazards from the previous step (Worksheet A).
- For each hazard identified:
 - Select the appropriate frequency category from Table 1
 - Select the appropriate consequence category from Table 2.
 - Take the frequency and consequence categories that you have selected and locate the risk level in table 3. Record this result in the appropriate box on Worksheet B.

Table 1 - Frequency Categories

	Category	
A	Highly Likely	The hazard is very probable (100% chance) within the next year.
B	Likely	The hazard is probable (10%-100%) within the next year or; has at least one chance of occurring in the next 10 years.
C	Possible	The hazard is possible (1%-10%) within the next year or; has a one chance of occurrence in a hundred years.
D	Unlikely	The hazard is likely to occur less than once in a 100 years.

Consequences

Evaluate the consequences (severity) resulting from the hazard by selecting the category which best describes the effects of a worst credible mishap on personnel, public, environment, economy.

Note: The hazard is placed in the highest category for which it meets one or more criteria.(i.e.: death or fatal injury is always catastrophic even if all other consequences are negligible.

Table 2 - Consequence Categories

Category Impact Type	a Catastrophic	b Critical	c Marginal	d Negligible
Personnel	<ul style="list-style-type: none"> • Death or fatal injury 	<ul style="list-style-type: none"> • Permanent disability, severe injury or illness 	<ul style="list-style-type: none"> • Injury or illness not resulting in disability, major quality of life loss or perceived illness. 	<ul style="list-style-type: none"> • Treatable first aid injury.
Public	<ul style="list-style-type: none"> • Death or fatalities due to direct exposure 	<ul style="list-style-type: none"> • Permanent disability, severe injury or illness 	<ul style="list-style-type: none"> • Injury or illness not resulting in disability, major quality of life loss or perceived illness. 	<ul style="list-style-type: none"> • Minor quality of life loss.
Environment	<ul style="list-style-type: none"> • A major hazardous spill that is uncontained. • Regional or total species / subspecies loss. 	<ul style="list-style-type: none"> • A minor hazardous chemical spill that is uncontained. • Local or species / subspecies damage. 	<ul style="list-style-type: none"> • A major hazardous materials spill which is contained. • Portion of local organisms negatively impacted. 	<ul style="list-style-type: none"> • A minor hazardous chemical spill which is contained • No measurable impact to the environment.
Economic Impact	<ul style="list-style-type: none"> • Total loss of financial base, incapacitating the community. • Funding not available within one week to initiate urgent recovery procedures. 	<ul style="list-style-type: none"> • Partial loss of financial base, temporarily incapacitating the community. • Funding not available within four days to initiate recovery procedures. 	<ul style="list-style-type: none"> • Minor loss to financial base, temporarily incapacitating the community. • Funding not available within 24 hours to initiate recovery procedures. 	<ul style="list-style-type: none"> • Minor loss to the financial base. • Funding not available within 12 hours to initiate recovery procedures.
Facility Impact	<ul style="list-style-type: none"> • Complete shutdown of facilities and critical services for more than a month. 	<ul style="list-style-type: none"> • Complete shutdown of facilities and critical services for more than two weeks 	<ul style="list-style-type: none"> • Complete shutdown of facilities and critical services for more than a week. 	<ul style="list-style-type: none"> • Complete shutdown of facilities and services for more than 24 hours
Property	<ul style="list-style-type: none"> • More than 50% of property located in the proximity of the impact is severely damaged. 	<ul style="list-style-type: none"> • More than 25% of property located in the proximity of the mishap is severely damaged. 	<ul style="list-style-type: none"> • More than 10 of property located in the proximity of the mishap is severely damaged. 	<ul style="list-style-type: none"> • No more than 1% of property in the proximity of the mishap is severely damaged.

Risk

Risk is the combination of probability and consequences (severity).

Based on your answers from the probability table and the consequences table select the corresponding risk category.

Frequency Category Severity Category	A Highly Likely	B Likely	C Possible	D Unlikely
a) Catastrophic	aA	aB	aC	aD
b) Critical	bA	bD	bC	bD
c) Marginal	cA	cB	cC	cD
d) Negligible	dA	dB	dC	dD

	High	· Receive top planning priority.
	Medium	· Receive planning priority.
	Low	· Do not plan for these.
	Very Low	· Do not plan for these.

Worksheet B - Risk Evaluation Summary

HIGH RISK	MODERATE RISK

LOW RISK	VERY LOW RISK

OVERVIEW

The risk assessment (Section 1.4) has demonstrated which hazards represent the most serious risks and should therefore receive planning priority.

The next step is to systematically review each hazard (beginning with the highest risk) to assemble the information that will become the emergency response plan.

ACTION REQUIRED

Emergency Planning Team

- Photocopy Worksheet C (Copy in appendix).
- Using Worksheet C evaluate for each of the high and medium ranked hazards on Worksheet B.
- Identify the impacts or problems that are likely to occur due to the hazard (be detailed).
- The actions that will be necessary to reduce or eliminate the impact of the hazard (be detailed).
- The resources that will be necessary to undertake that action.
- The position (individual) or agency that is responsible for seeing that the action is done.
- Where these resources can be obtained company, mutual aid community, provincial government, federal government or other

ADDITIONAL INFORMATION



Planning Tip

The North American Emergency Response Guidebook may help you to develop actions for responding to incidents involving dangerous goods.

WORKSHEET E - PLANNING ANALYSIS

HAZARD

MAJOR RIVER FLOOD

IMPACT	EMERGENCY RESPONSE / ACTIONS REQUIRED	RESOURCES REQUIRED	RESOURCE SOURCES / RESPONSIBILITY
Release of Chemical X due to containment tank floating.	Anchor tank Drain tank and relocate contents	Professional to evaluate engineering demands. Hauling company	XYZ Engineering 555-1257 ABC Chemical Transport
Damage to machine A	Remove / Relocate Sandbag/Dyke equipment	Approx 1200 sandbags Approx 30 yards sand 12 people 1 Water Pump (400 gph)	Arco Sandbags (staff to pickup) Terra Conglomerates (will deliver) Staff Chunks power equipment

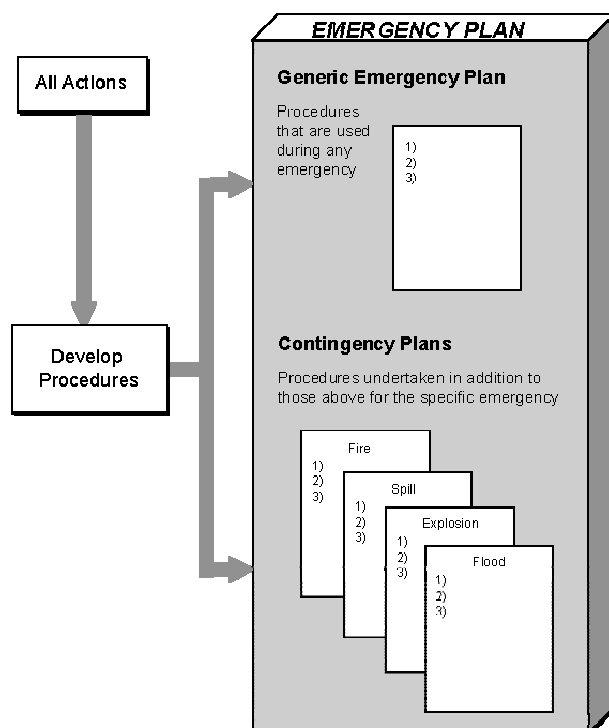
OVERVIEW

The completed planning analysis (Section 1.5) provides a complete listing of all the actions necessary for any emergency - essentially a number of hazard-specific emergency plans.

This information is key to the emergency plan but needs to be further structured and refined into a more useful product.

This refinement is a two stage process:

- 1) Developing procedures for each action
- 2) Separating procedures into those that pertain to all emergencies (Generic emergency plan) and those that apply to specific hazards (Contingency plans).



The majority of this section (1.6.1 to 1.6.9) describes many of the procedures that are to be found in the generic emergency plan. The contingency plans that you will develop will depend on the hazards in your area of operations.

1.6.1 Assessment

1.6.4 Mobilization

1.6.7 Incident Command Center

1.6.2 Activation

1.6.5 Reporting

1.6.8 Public Communication

1.6.3 Evacuation

1.6.6 Security

1.6.9 Communication System

ACTION REQUIRED

Emergency Planning Team

- ☐ Develop procedures for each action (Section 1.5)
- ☐ Develop an emergency plan and contingency plans for specific emergencies.
- ☐ Take all procedures
 - ☐ Determine which are applicable to all or most emergencies.
 - ☐ List these as a generic emergency plan
 - ☐ Assign all remaining procedures as separate contingency plans.

ADDITIONAL INFORMATION



Planning Tips

Developing Procedures

When writing procedures

- Be concise
- Use checklists as appropriate
- Avoid technical jargon where possible
- Issue directions - use action oriented language

OVERVIEW

A rapid yet thorough situation assessment is essential to ensure that appropriate and sufficient resources are brought to bear on the emergency.

ACTION REQUIRED

Emergency Planning Team

- ☐ Develop procedures for evaluating an emergency situation to ensure that critical issues are addressed and that an appropriate response develops.

ADDITIONAL INFORMATION



Planning Tip

There are any number of questions that can be included in an assessment checklist. Here are some common ones:

- ☐ What is the nature of the incident?
 - ☐ Chemical spill,
 - ☐ Fire,
 - ☐ Explosion, etc...
- ☐ What are the type and quantity of chemicals involved?
- ☐ Am I safe?
- ☐ Are there any deaths or injuries?
- ☐ What is at risk - people, property, environment?
- ☐ What are the weather conditions?
- ☐ What should (can) be done immediately?

1.6.2 EMERGENCY PLAN - ACTIVATION

OVERVIEW

An emergency may be reported from any source (employee at the facility, outside agency, general public...) and, depending on the nature of the business, may occur at a location other than a fixed facility. This section of the plan describes procedures for:

- ☐ Processing emergency calls.
- ☐ Notifying key personnel.
- ☐ Activating the Emergency Plan.

Regardless of the location of the emergency, the procedure should indicate where to call in an emergency and who is responsible for receiving the information. In most situation this will require access to a 24 hour telephone number or radio location.

ACTION REQUIRED

Emergency Planning Team

- ☐ Develop a procedure for alerting on-site personnel to the emergency.
- ☐ Develop or designate a system for receiving internal and external emergency calls on a 24 hour basis.
- ☐ Develop a procedure for notifying key personnel, indicating who is to make the notification and how contact is to be made.

ADDITIONAL INFORMATION



Preparedness Tip

Activation

Hardware

There are a number of options for on site alerting including sirens, horns, lights, PA. systems...

Training

Train staff in the function of the activation system and the initial actions to take when alerted.

Testing

Routinely test the system

24 Hours

Ensure that the system functions at all times by using a security office or answering service.

OVERVIEW

The safety of employees and visitors at the site is of critical importance. A safe and rapid evacuation is necessary to ensure that casualties are avoided during an emergency.

Evacuation routes and procedures should be established in the plan and implemented through signage and training around the workplace.

ACTION REQUIRED**Emergency
Planning
Team**

- ☐ Develop an evacuation plan including routes and procedures.
- ☐ Implement the evacuation plan by posting signage and training and drilling staff in evacuation procedures.
- ☐ Review and change evacuation plans whenever physical changes are made to the work environment.

ADDITIONAL INFORMATION**Preparedness Tip**

Develop procedures to keep evacuation as effective as possible.

Lighting

Ensure adequate lighting of evacuation routes

Maintenance

Keep doors unlocked and routes free of obstructions.

Special Needs

Make arrangements for employees and visitors with special needs.

Testing

Practice evacuation procedures and adjust as necessary.

1.6.4 EMERGENCY PLAN - RESOURCE MOBILIZATION

OVERVIEW

After an initial assessment of the need for personnel and equipment have been made and key personnel have been alerted, resources need to be assembled in a coordinated manner.

ACTION REQUIRED

Emergency Planning Team

- ❑ Designate a person or position who will be responsible for mobilizing personnel, equipment and other technical resources from within the organization. For facilities with a number of distinct sections, it may be appropriate to designate a separate contact for each section.
- ❑ Identify specific procedures to be used for arranging resources and assistance from outside organizations and designate a person or position to be responsible for initiating these procedures.

ADDITIONAL INFORMATION



Planning Tips

Resource Mobilization

The person(s) designated to mobilization should have a sound working knowledge of all available resources

1.6.5 EMERGENCY PLAN - REPORTING

OVERVIEW

During a typical emergency response, reports will have to be made to both internal and external parties to aid in the response operation or, as in some cases, are a legislated requirement.

ACTION REQUIRED

Emergency Planning Team	<ul style="list-style-type: none">❑ Develop a list of the reports that will have to be made during an emergency response. Include the following:<ul style="list-style-type: none">❑ Who is responsible for making the report❑ To whom the reports are to be made❑ When reports are to be made❑ The form of each report (verbal, written)
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ADDITIONAL INFORMATION

- CSA Z731 - Emergency Planning for Industry



Planning Tips

Reporting Procedures

Referring to Legislation and Industry Codes of Practice (Section 1.3) and Emergency Organization: Roles and Responsibilities (Section 1.8) may help to determine reporting procedures.

1.6.6 EMERGENCY PLAN - SECURITY

OVERVIEW

During an emergency situation proper security measures will be required to limit the movement of unauthorized personnel into the incident site including the public, media, and facility staff not involved in the response.

ACTION REQUIRED

Emergency Planning Team	<ul style="list-style-type: none">□ Determine the need for security during an emergency.□ Where security is required identify how this is to be done and who is responsible for initiating security measures.
-------------------------	--

ADDITIONAL INFORMATION

- CSA Z731 - Emergency Planning for Industry



Planning Tips

Security

Major Incidents

In most cases local police departments will provide assistance with security.

Minor Incidents

Smaller, in house emergencies can typically be secured by using physical barriers including barricades, tape and signage.

1.6.7 EMERGENCY PLAN - INCIDENT COMMAND CENTER

OVERVIEW

In order to coordinate an emergency response operation, a suitable work area, the Incident Command Center, is required.

ACTION REQUIRED

Emergency Planning Team

- Designate one or more locations which could be used as an Incident Command Center.
- Identify the specific items that will have to be available at the Incident Command Center.

ADDITIONAL INFORMATION

- CSA Z731 - Emergency Planning for Industry



Planning Tips

Incident Command Center

The Incident Command Center should be:

- Situated in a safe location
- Be close enough to effectively manage the emergency response operation.

Options may include:

- Vehicle or building at the site (minor incident)
- Mobile Command Center from an emergency response agency (larger incident).
- Building off the site (larger incident)

1.6.8 EMERGENCY PLAN - COMMUNICATION WITH THE PUBLIC

OVERVIEW

The public has an inherent right to be informed of risks to which it might be exposed and to be warned and advised in case of an accident. It is to industry's advantage to accurately and completely inform the public regularly with respect to its operations and facilities. Community awareness will develop trust and lead to improved citizen involvement in the event of an emergency.

ACTION REQUIRED

Emergency Planning Team	<ul style="list-style-type: none"><input type="checkbox"/> Identify the following in the plan:<ul style="list-style-type: none"><input type="checkbox"/> The population that might be affected.<input type="checkbox"/> Adequate methods to inform citizens and the media.<input type="checkbox"/> Procedures for rapid and efficient communications if an accident occurs.<input type="checkbox"/> Warning systems that will be used during an emergency.<input type="checkbox"/> Appropriate actions to be taken during and after an emergency.<input type="checkbox"/> A spokesperson.
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ADDITIONAL INFORMATION

1.6.9 EMERGENCY PLAN - COMMUNICATION SYSTEM

OVERVIEW

One of the keys to an effective emergency response is an effective communications system that is able to relay accurate information quickly. To do this reliable communications equipment must be used, procedures developed and personnel trained.

When planning for an emergency consider the conventional communication systems may be unavailable communications systems may be required to operate for extended periods in adverse conditions or communications may be necessary with a central control area.

ACTION REQUIRED

Emergency Planning Team

- Develop an effective emergency communications system for the company: This should include the following:
 - Equipment
 - Use backup power sources and batteries.
 - Plan for a secondary communications system.
 - Develop a routine maintenance program.
 - Procedures
 - Develop communications operating procedures. These should conform to standardized procedures and those of other agencies that may be involved with the emergency response.
 - Develop a communications schedule to allow emergency responders to keep management informed.
 - Training
 - Develop a training program to be made available to all users of the system.

ADDITIONAL INFORMATION

1.6.10 EMERGENCY PLAN - CONTINGENCY PLANS

OVERVIEW

The generic emergency response plan consists of procedures that apply to all or most emergencies.

Contingency plans are sets of procedures and information specific to individual hazards (ie floods - sandbagging).

ACTION REQUIRED

Emergency Planning Team	<input type="checkbox"/> Group procedures that are specific to individual hazards into contingency plans for those hazards.
--	---

ADDITIONAL INFORMATION

OVERVIEW

The planning analysis (Section 1.5) provides a listing of the people, equipment and supplies will be required to undertake emergency actions (Section 1.6).

The imaginative use of available resources, including external response groups, may reduce or eliminate the duplication of effort and the loss of time and/or money. Routine maintenance should be addressed to ensure that all resources are in a state of readiness.

Knowledge of the capabilities of various external response groups, such as fire, medical, police and environmental agencies should be determined.

ACTION REQUIRED**Emergency Planning Committee**

- ☐ Develop a listing of all internal and external resources (personnel and equipment) that will be required to respond to any emergency.
- ☐ Compile information from site drawings or knowledgeable personnel on the following:
 - ☐ The locations of isolation points of sources of energy or product (electrical, gas ...).
 - ☐ The locations of emergency protective equipment (fire hydrants, monitors, fire pumps...)
 - ☐ The locations, quantities, accessibility and operability of equipment and supplies.
- ☐ Verify the response capabilities of all contracted sources
- ☐ Write clearly defined procedures to mobilize the various resources as needed during the emergency.

ADDITIONAL INFORMATION

- CSA Z731 - Emergency Planning for Industry

1.7.1 MUTUAL AID AGREEMENTS

OVERVIEW

Organizations may choose to enter into mutual assistance agreements with other industries and government agencies to provide help with one another in emergencies that they would be unable to contend with alone. Such agreements allow for the sharing of personnel and equipment which enhances response capabilities. This is particularly useful for example when one organization lacks special resources needed to counteract a particular emergency and these resources are available through others.

Mutual assistance agreements are especially beneficial where a number of industries operate in the same area allowing a common pool of resources thus minimizing costs and avoiding unnecessary duplication of materials and equipment.

ACTION REQUIRED

Emergency Planning Team

- ☐ Assess the following options
 - ☐ Dovetailing plans with current municipal or industrial agreements
 - ☐ Consider formalizing links with a qualified third party by way of retainer contract to ensure that capable hands on first responders can be activated and attend at the incident scene.
 - ☐ Any formal agreements should be reproduced or referenced in the plan along with standard procedures to be used by staff to activate mutual assistance.

ADDITIONAL INFORMATION

- MIAC-Cs Guiding Principles for Joint Municipal and Industrial Emergency Preparedness
- CSA - Z731 - Emergency Planning for Industry

1.7.2 CONTACT TELEPHONE LIST

OVERVIEW

A list of telephone numbers of the external and internal resources that can assist during an emergency is essential for the rapid activation of an appropriate emergency response.

ACTION REQUIRED

Planning Team

- Compile and maintain a list of contacts. Include:
 - A brief description of the resources;
 - A key contact name and secondary contact;
 - A means of activation:
 - Work phone number;
 - Home phone number;
 - Mobile telephone or cellular numbers;
 - Pagers;
 - Fax, etc.
- All contacts included in the list should be aware that they are on the list and know is expected of them (Section 1.2).
- Develop a procedure to update the list regularly (Section 2.3).

ADDITIONAL INFORMATION



Preparedness Tip

Wallet Cards

It may be useful to put key contact numbers and other priority information on wallet size cards that can be distributed to staff.

Note: This does not preclude having the information in the plan.

OVERVIEW

The emergency plan should identify the organizational structure for the emergency response and the roles and responsibilities of all individuals or groups identified in the plan.. This should include clearly defined roles and responsibilities including authority and accountability for all staff as well as those external agencies listed in the plan.

ACTION REQUIRED

**Emergency
Planning
Team**

- Identify and / or develop specific roles and responsibilities for all key individuals, groups or agencies (both internal and external) that are listed in the plan.

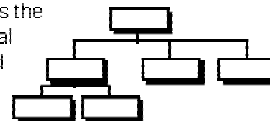
ADDITIONAL INFORMATION

- CSA Z731 - Emergency Planning for Industry

**Planning Tips****Roles and Responsibilities****Simple**

Use checklists where possible.

Use a flow chart that clearly shows the organizational structure and lines of authority.

**Parallel**

The organizational structure, roles and responsibilities should be similar to those of day to day operations.

OVERVIEW

The final step in developing the plan is to combine the elements of the plan into a usable product.

ACTION REQUIRED**Content**

Title / Cover Page	Title (Emergency Plan) Name of Company / Facility Location of Facility Address of Facility (if different from location) Phone Number Type of facility - what is done here General Manager - Name & Telephone Number Date of Plan
Policy	(Section 1.1)
Distribution List	
Table of Contents	
Generic Plan	(Section 1.6)
Contingency Plans	(Section 1.6)
Resource / Callout Lists	(Section 1.7)
Organizational Chart	(Section 1.8)
Additional information	Site Plan - floor plans Access Routes Hazards and Equipment for first responders Maps & Other Attachments

Assembly

Paper	Print the plan on good quality white paper for durability.
Tabs	Are recommended to help locate information in a hurry.
Binder	The plan should be put in binders to protect them and so that changes can be made easily.

Binders should be a readily identifiable color (red is common) and labeled so that they are easily located.

OVERVIEW

The emergency plan will need to be approved by management and should conform to company policy, industry codes of practice and industrial emergency planning standards.

ACTIONS REQUIRED

Planning Committee	<input type="checkbox"/> Refer to Sections 1.1 and 1.3 to determine if the plan meets all of the criteria outlined in that section.
Management	<input type="checkbox"/> Approves the plan.

2. PLAN ADMINISTRATION

OVERVIEW

Emergency plans should be distributed to all appropriate individuals or agencies and records kept of their locations.

ACTIONS REQUIRED**Emergency
Planning
Coordinator**

- ☐ Number each copy of the plan.
- ☐ Distribute copies of the plan to:
 - ☐ All members or departments having roles in the plan
 - ☐ Other external agencies that have a role in the plan
- ☐ Maintain a list of to whom plans have been distributed.

**Preparedness Tip****Protect your ERP**

Ensure that some copies of the plan are kept off site so that they are not made unavailable by the emergency.

OVERVIEW

An emergency is an abnormal situation and an individual's ability to cope largely depends on the amount of emergency response training that they have.

A training program should include the following:

- ☐ Fundamental knowledge.
- ☐ Roles and responsibilities within the plan.
- ☐ Familiarity with policy and procedures.
- ☐ Hands on response training including use of equipment and protective devices.

Whenever possible this training should conform to recognized standards (i.e. NFPA, OSHA)

ACTIONS REQUIRED**Emergency
Planning
Team**

- ☐ Design and implement a training program to ensure that staff have the skills and knowledge to enable them to respond to an emergency in a safe and effective manner.

ADDITIONAL INFORMATION

- CSA Z731 - Emergency Planning for Industry
- Emergency response training is available in Manitoba. Contact MIAC-Mb for more information.

2.3

UPDATING

OVERVIEW

Some types of information found in emergency plans is subject to change (i.e.: Telephone #s). The emergency plan should be reviewed on a regular basis and amended as required.

It is advisable to periodically recall all plans and replace with new versions to ensure that all plan amendments are kept up to date.

ACTIONS REQUIRED

**Emergency
Planning
Coordinator**

- Ensure that information in all copies of the emergency plan are kept up to date.

2.4

PLAN TESTING

OVERVIEW

An emergency plan is more effective when it is tested since it gives personnel to practice their roles and allows for the detection and correction of any inadequacies.

An initial test of the plan should occur as part of the development process. In addition it should be tested as often as is practically feasible even if it is only a partial test (i.e.: conducting an emergency callout to test the speed of notification and mobilization of resources).

ACTIONS REQUIRED

Emergency Planning Coordinator	<ul style="list-style-type: none"><input type="checkbox"/> Regularly design and implement emergency exercises.<input type="checkbox"/> Use the results of the exercise to update and improve the plan.
---	---

ADDITIONAL INFORMATION

- CSA Z731 - Emergency Planning for Industry
- Training courses in exercise design are available in Manitoba. Contact MIAC-Mb for more information.

3. APPENDIX

References

The following were used to help create this document. You may find them useful when developing your emergency response plan.

Canadian Manufacturers Association (1989)

A Simplified Guide to Emergency Planning

Major Industrial Accidents Council of Canada

CSA Z731 Emergency Planning for Industry

Major Industrial Accidents Council of Canada

Guiding Principles for Joint Municipal and Industrial Emergency Preparedness

Holloway, Lynne D (1996)

Emergency Response: It's All in the Plan

Occupational Health and Safety Canada - 1996 Buyers Guide

Transport Canada, US Department of Transportation,
Secretariate of Transport and Communications (1996)

1996 North American Emergency Response Guidebook

WORKSHEET E - PLANNING ANALYSIS

HAZARD

IMPACT	EMERGENCY RESPONSE / ACTIONS REQUIRED	RESOURCES REQUIRED	RESOURCE SOURCES / RESPONSIBILITY

Appendix D

Radiation Safety Policy and Procedures Manual

TAHERA DIAMOND CORPORATION
Jericho Diamond Mine

**RADIATION SAFETY POLICY AND PROCEDURES
MANUAL**

Publication effective date: **December 31, 2004**

Revision Number: 0

Manual prepared
by
Stuart Hunt & Associates Ltd.

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RADIATION SAFETY POLICY AND PROCEDURES MANUAL**AMENDMENT REVISIONS RECORD**

DATE	AMENDMENT TITLE	PAGE NO

RADIATION DOSE CONTROL AND ALARA POLICY STATEMENT

Radiation doses received during the installation, removal and servicing of nuclear gauge systems can be controlled through the application of safe work practices supported by appropriate radiation detection instrumentation. Safe work practices for the installation and removal of nuclear gauge source holders used at the Jericho Diamond Mine are described in this radiation safety policy and procedures manual.

The primary purpose of this manual is to provide guidance and instruction on how to minimize radiation doses, when working on or around nuclear gauge source holders. Radiation doses shall be kept within regulatory guidelines and whenever possible **As Low As Reasonably Achievable (ALARA)**. Adopting this attitude when working with radioactive materials places a limitation on risk. The risk of any *deterministic* injury is virtually non-existent and the risk of *stochastic* (chance) injury is confined to those limits that are considered to be acceptable.

Only those persons who have received appropriate training shall be authorized to install, remove nuclear gauge source holders and maintain nuclear gauging systems. Training will include instruction on radiation dose control measures applicable to the installation and removal of nuclear gauge source holders. This training are subjected to periodic review and upgrading to satisfy Canadian Nuclear Safety Commission (CNSC) radiation safety training requirements.

Radiation exposure and dose control instrumentation is designed to provide information on radiation intensity and the radiation dose that an individual may receive. The use of radiation detection instrumentation in conjunction with the radiation dose control practices described in this manual will help keep radiation doses **As Low As Reasonably Achievable**.

The publishing of this radiation safety policy and procedures manual is part of the Tahera Diamond Corporation commitment to the development and management of an effective corporate radiation safety program. Tahera Diamond Corporation personnel involved with the use or maintenance of nuclear gauging devices at the Jericho Diamond Mine property are to take full advantage of the information provided by this manual

Mine Manager, Jericho Diamond Mine

RADIATION SAFETY MANAGEMENT STRUCTURE

The Tahera Diamond Corporation Radiation Safety Officer is responsible for the development and management of the Jericho Diamond Mine radiation safety program. The Radiation Safety Officer will report directly to the Mill Manager. The Mill Manager are responsible for implementing any radiation safety measures recommended by the Radiation Safety Officer or ordered by the Canadian Nuclear Safety Commission. Jericho Diamond Mine employees shall comply with the policies and procedures included with this manual. Acceptance and adoption of the radiation safety policies and procedures included with this manual, by all Tahera Diamond Corporation employees, will keep occupational radiation doses within regulatory limits and where possible As Low As Reasonably Achievable. The overall responsibility for the Jericho Diamond Mine radiation safety program rests with the Tahera Diamond Corporation Board of Directors.

Mine Manager, Jericho Diamond Mine
Tahera Diamond Corporation

RADIATION SAFETY OFFICER DUTIES

The Radiation Safety Officer (RSO) shall be responsible for all radiation safety issues associated with the use of nuclear gauging systems at the Jericho Diamond Mine. The duties of the RSO shall include the following:

1. The management and co-ordination of the company radiation safety program in accordance with stated corporate radiation safety policies, federal and provincial radiation safety regulations, and the conditions of use included with the Tahera Diamond Corporation Nuclear Substances and Radiation Devices licence.
2. Interact, on behalf of the Tahera Diamond Corporation with federal, provincial or territorial agencies on matters relating to radiation safety at the Jericho Diamond Mine.
3. Maintain copies of all correspondence relating to radiation safety at the Tahera Diamond Corporation
4. Conduct periodic audits of nuclear gauge use at the mine to confirm compliance with both Canadian Nuclear Safety Commission (CNSC) regulations and the Tahera Diamond Corporation, Nuclear Substances and Radiation Devices licence.
5. Maintain an inventory of all nuclear gauging systems in use and/or storage at the Jericho Diamond Mine.
6. Make arrangements for the leak testing of nuclear gauge source holders that are in use or storage, with a CNSC approved leak test measurement agency. Maintain copies of all applicable leak testing documentation.
7. Maintain and make available radiation detection instrumentation for use by qualified personnel.
8. Make arrangements for the annual calibration of radiation survey meters with a CNSC approved gamma radiation survey meter calibration agency. Maintain copies of all applicable survey meter calibration documentation.
9. Train or make arrangements for training of personnel who are required to work on or around nuclear gauging systems.
10. Carry out periodic checks to confirm that personnel are using appropriate safety equipment for entry into vessels equipped with nuclear gauges, installation and removal of nuclear gauge source holders.
11. When required, provide training, in accordance with the *Transportation of Dangerous*

Goods and the Packaging and Transport of Nuclear Substances regulations, for those persons involved with the consignment of Class 7 material.

12. Arrange for the disposal of nuclear gauges no longer required by the Tahera Diamond Corporation. Maintain copies of all relevant disposal documentation.
13. Provide advice on the management of nuclear gauge incidents. Investigate all nuclear gauge incidents, make recommendations and implement procedures to prevent similar incidents occurring.
14. The elimination of unsafe work practices.
15. Keep copies, on file, of all applicable regulations and guidelines.
16. Keep the Mine Manager informed of all radiation safety issues.
17. Prepare and submit to the Canadian Nuclear Safety Commission Annual Compliance Reports for Group 2.2 Licensees two months prior to the anniversary of the expiry date for the Tahera Diamond Corporation Nuclear Substances and Radiation Devices Licence.

NUCLEAR GAUGING DEVICE PURCHASING AND ACCEPTANCE PROCEDURES

Purchasing

No person or organization shall purchase, import, possess or use radioactive material in Canada without first having in their possession a valid Canadian Nuclear Safety Commission (CNSC) Nuclear Substances and Radiation Devices (NSRD) Licence. Nuclear Substances and Radiation Devices Licences are issued by the CNSC, Materials Regulation Division (613) 995-5086. The supplier of a nuclear gauge must have in their possession, a copy of the Tahera Diamond Corporation NSRD licence before a nuclear gauge can be transferred to the Jericho Diamond Mine. Standard practice is to include a copy of the NSRD licence with the original copy of the nuclear gauging system purchase order. All purchase orders for nuclear gauging devices are to be approved and counter signed by the Radiation Safety Officer. Nuclear gauging systems not shown on the Tahera Diamond Corporation NSRD licence must be added to the licence **before** the Tahera Diamond Corporation can take possession of the device. See ***“Nuclear Substances and Radiation Devices licence amendment request”*** for additional information.

When purchasing a new nuclear gauging system, request, as a condition of sale, that the manufacturer provide a Type A qualification certificate for the source holder and if applicable a *“Special Form Certificate”*, for the sealed radioactive source. Copies of these documents are to be kept on file for a period of two (2) years following the return of a nuclear gauging system to the manufacturer or when it is sent for disposal.

Receiving and accepting a nuclear gauge

1. Following receipt of a nuclear gauging device, inform the Radiation Safety Officer, so that he/she can take the following action:
 - a. Confirm that the information on the shipping document agrees with the information marked on the product information plaque attached to the source holder.
 - b. Confirm, with a radiation survey meter, that the radiation intensity at thirty (30) centimetres from the external surface of the source holder is less than or equal to 50 $\mu\text{Sv/h}$.
 - c. Confirm that a leak test certificate has been included with the shipping documents. If there is no leak test certificate arrange to have a leak test carried out on the source holder and keep a record of the leak test result. ***(Refer to the Sealed Radioactive***

- Source Leak Testing section of this manual for further instruction).***
- d. Carry out a visual inspection of the shipment to confirm that there is no obvious damage to, tampering of, or leakage from the source holder.

If there are any discrepancies with any of the previously mentioned items take the following actions:

- a. Items 1a. to c. - inform the Consignor of the equipment immediately.
 - b. Item 1d (damaged source holder) - inform both the Consignor and the Canadian Nuclear Safety Commission immediately and in writing within twenty one (21) days, following the discovery that a nuclear gauge source holder has been damaged while in transit.
 - c. Item 1d (tampering and leakage) – inform both the Consignor and the Canadian Nuclear Safety Commission immediately. A written report shall be sent to the Canadian Nuclear Safety Commission, within twenty-one (21) days, following the preliminary report.
2. Nuclear gauge source holders that are not installed for immediate use shall be transferred to a secure storage area. Access to the source holder storage area shall be limited to those persons authorized to enter the storage area.
3. Arrange to have the source holder added to the "***Nuclear Gauge Inventory***" (Appendix A)

NUCLEAR SUBSTANCES AND RADIATION DEVICES LICENCE AMENDMENT REQUEST

Changes to an NSRD licence can be made at any time during the valid period for the licence. Typical examples of licence amendment requests are as follows:

1. The addition or deletion of a nuclear gauging device from a licence
2. Addition or deletion of nuclear gauge use locations
3. Tahera Diamond Corporation name change
4. Change of names for the Signing, Applicant Authority or Radiation Safety Officer.

NSRD licence amendment requests are to be sent to the Canadian Nuclear Safety Commission, Materials Regulation Division. They shall include the following information:

1. NSRD licence number.
2. Make and model number of device to be added or deleted.
3. The radioisotope and radioactivity to be used.
4. A copy of the Federal or Provincial Corporations Act "*Certificate of Amendment*" when the name of Tahera Diamond Corporation has been changed.
5. Names of persons being added and/or replaced

All licence amendment requests are to be prepared and signed by the Tahera Diamond Corporation Radiation Safety Officer. The processing of an amendment request will usually take two (2) to three (3) weeks to complete. There is no cost recovery fee for a licence amendment. Contact Stuart Hunt & Associates 1 (800) 661-4591 for additional information concerning Nuclear Substances and Radiation Devices licence amendment requests.

TRANSFER AND DISPOSAL OF NUCLEAR GAUGES

Nuclear gauges surplus to Tahera Diamond Corporation requirements can be transferred to an organization with a valid NSRD licence or sent to an approved radioactive waste management site for disposal. Steps to be followed for the transfer or disposal of nuclear gauges are described below.

Transfer

The transfer of a nuclear gauge to another organization cannot be completed until the following items have been confirmed or completed:

1. The receiving organization has a valid Canadian Nuclear Safety Commission NSRD licence, which includes the nuclear gauge being transferred.
2. A valid sealed radioactive source leak test certificate is included with the gauge transfer documents.
3. A CNSC **"Record of Disposition of Radioactive Material"** or similar document has been completed and a copy sent to the Canadian Nuclear Safety Commission.
4. A copy of the manufacturer's operating instructions for the nuclear gauge.
5. Copies of documents relating to the nuclear gauge transfer are to be kept on file for a period of three (3) years.
6. Nuclear gauge inventory record amended.

Disposal

Nuclear gauges scheduled for disposal can be sent to any one of the following agencies after making prior arrangements:

1. The nuclear gauge supplier/manufacturer.
2. Atomic Energy of Canada Research, Waste Management Systems.
3. A waste management facility possessing the appropriate CNSC Waste Facility Operating Licence.

Current radioactive material waste management fees are based on a combination of radiological hazardous lifetime and the volume of material for disposal including the outer shipping container. Volume reduction can be achieved by having the radioactive source removed from the source holder. Organizations offering this type of service must be able to demonstrate that they have a valid NSRD licence, which authorizes them to remove the radioactive source from the source holder.

Waste disposal documentation

The disposal of a nuclear gauge shall be supported by documentation that demonstrates compliance with the following regulations:

1. CNSC General Nuclear Safety and Control Regulations.
2. CNSC Nuclear Substances and Radiation Devices Regulations
3. CNSC Packaging and Transport of Nuclear Substances Regulations.
4. Transport Canada, Transportation of Dangerous Goods Clear Language Regulations.

The following documents have to be completed to ensure compliance with the above regulations:

1. Atomic Energy of Canada Research, Waste Management Systems waste manifest data sheet, WIP III.
2. CNSC Record of Disposition of Radioactive Material or equivalent document from a radioactive waste management Broker.
3. Shippers Declaration of Dangerous Goods for the transport of Radioactive (Class 7) material.

The following documentation is to be kept on file and available for inspection by the Canadian Nuclear Safety Commission.

1. Type A shipping container qualification report(s).
2. Sealed radioactive source Special Form Certificate(s).

For advice on the disposal of nuclear gauges contact Stuart Hunt & Associates Ltd., at 1 800 661-4591 or FAX (780) 459-0746.

WORKER AUTHORIZATION AND RADIATION SAFETY TRAINING

Worker authorization - only those persons who have received the required level of radiation safety training shall be authorized to carry out any of the following activities at the Tahera Diamond Corporation, Jericho Diamond Mine:

- Install, remove and maintain nuclear gauging systems
- Isolate nuclear gauging systems
- Work around nuclear gauging systems
- Arrange for the transport of nuclear gauging systems

The principle objectives behind this radiation safety training are to satisfy CNSC regulatory requirements and the development of skills to help reduce radiation doses and where possible to keep them As Low As Reasonably Achievable (ALARA). Departmental supervisors are responsible for ensuring that personnel receive the required level of radiation safety training.

Radiation safety for nuclear gauge users - personnel responsible for the installation, removal and maintenance of nuclear gauging systems are to receive instruction on the following topics before they can maintain nuclear gauges without direct supervision:

- Units of radioactivity and radiation dose
- Biological effects of ionizing radiation
- Introduction to ionizing radiation
- Radiation detection instrumentation
- Correct use of radiation survey meters
- Radiation protection practices and procedures
- Nuclear gauge installation and removal
- Sealed radioactive source leak testing
- Nuclear gauge incident/emergency response techniques

The format for this course are a combination of formal lectures and practical sessions.

Nuclear gauge “isolation” training - training for personnel responsible for nuclear gauge isolation shall include the following topics:

- Introduction to nuclear gauging systems

- Radiation dose levels associated with nuclear gauges
- Nuclear properties associated with nuclear gauging systems
- Radiation dose limits
- Radiation dose control measures
- Correct use of a radiation survey meter
- Nuclear gauge “lock out” and “tagging” procedures and documentation
- Nuclear gauge incident response procedure

Radiation safety orientation - personnel who have no direct involvement with nuclear gauges but who are required to work in areas where nuclear gauges are located shall be provided with radiation safety orientation training. Radiation safety orientation training shall be a combination of verbal instruction and video¹ presentation. Orientation training shall include the following topics:

- Introduction to nuclear gauging systems
- Radiation hazard warning sign
- Radioactivity and radiation dose
- Radiation dose limits
- Radioactive Material Safety Data Sheets
- Radiation dose control procedures
- Nuclear gauge incident response

1. Working Safely around Nuclear Gauges - available from Stuart Hunt & Associates Ltd.

Class 7 Transportation of Dangerous Goods training - those persons who have the additional responsibility of arranging for the off-site transport of nuclear gauges are required to attend Transportation of Dangerous Goods Training for Class 7 Materials. Topics covered during this training session shall include:

- Class 7 TDG responsibilities and training requirements.
- Regulations applicable to the transportation of Class 7 material
- TDG related offences and fines
- Class 7 TDG related terms, units of radioactivity and radiation dose.
- Radioactive material receipt procedures
- Exemptions, Classifications and Safety Marks
- Documentation requirements for radioactive material shipping containers
- Shipping document preparation

- Preparation of shipment instructions
- Transportation accident response and reporting requirements
- Radiation safety and radiation dose control for Class 7 shipments

Radiation safety training records - radiation safety training records shall be maintained and available for inspection by representatives from the Canadian Nuclear Safety Commission. Copies of the following records shall be maintained:

- Date and location of course
- Names of the individuals attending the course
- Course content
- Exam or test results, if administered
- Name of course instructor

NUCLEAR GAUGE SOURCE HOLDER SECURITY AND STORAGE

Storage

Nuclear gauge source holders that are not in use shall be kept in a designated nuclear gauge storage area. The storage area shall meet the following requirements:

1. The radiation intensity in occupied areas surrounding a nuclear gauge storage area does not exceed 2.5 $\mu\text{Sv/h}$; and that measures are in place to ensure that personnel do not receive an annual effective radiation dose in excess of 1 millisievert (mSv).
2. Access to the nuclear gauge storage area shall be limited to authorized persons. A list of authorized persons shall be posted in the instrumentation workshop(s).
3. The nuclear gauge inventory record shall be amended each time a nuclear gauge is removed from or returned to the nuclear gauge storage area.
4. The nuclear gauge storage area shall be identified with a radiation hazard warning sign that shows the following:
 - a. Radiation hazard warning symbol.
 - b. Hazard warning statement, i.e. **"Caution Radioactive Material Storage Area"**.
 - c. Name of person or job title and telephone number that can be contacted in case of an emergency.
 - d. The sign shall have black lettering and trefoil on a yellow background as per the example shown in Appendix B.

Security

Nuclear gauge security shall be controlled through the following procedures:

1. Nuclear gauge sources holders shall only be removed from storage, installed or removed from their operating positions by persons who have received the required level of training.
2. The installation and removal of nuclear gauge source holders shall only be carried out after a Safe Work Permit or Work Order has been issued.

All process operations controlled by nuclear gauges are connected to control rooms under the supervision of operations personnel. An action, such as the unauthorized closing of a source shutter or removal of a source holder will alert operators to an unexpected change in plant operating status. An unexpected change in the operating status for a nuclear gauge will result in an immediate response by operations personnel to determine the following:

1. The cause of the problem.
2. Steps to be taken to correct the problem.

If the problem is the unauthorized closing of a source holder shutter or removal of a source holder appropriate actions shall be taken to prevent a similar incident occurring a second time. If it is discovered that the nuclear gauge source holder has been stolen mine operations personnel shall initiate the following actions:

1. Inform the Radiation Safety Officer, mine security and/or local police; provide them with a description of the source holder including manufacturer, radioisotope and radioactivity.
2. Contact the designated nuclear gauge emergency response person and inform him/her of the situation.
3. Inform the Mill Manager.
4. Inform the Canadian Nuclear Safety Commission as soon as possible.
5. Carry out an inquiry to determine how installation security was breached and initiate steps to prevent the repeat of a similar incident.

To minimize the risk of unauthorized removal or theft follow the manufacturer's instructions for the installation of source holders. Following installation of a source holder make sure that the mounting bolts are tight enough to prevent casual removal. Nuclear gauge source holders that are no longer in use shall have the shutter locked in the closed position and be transferred to the nuclear gauge storage facility.

SEALED RADIOACTIVE SOURCE LEAK TESTING

Regulatory requirement

The sealed radioactive source leak testing instructions described below are designed to achieve the following:

1. Demonstrate compliance with the Atomic Energy Control Board (AECB) Regulatory Document R-116 ***“Requirements for Leak Testing Selected Sealed Radiation Sources”***, effective January 9, 1995.
2. Provide a set of sealed radioactive source leak test sample collection procedures that can be used to monitor sealed radioactive source capsule integrity for the nuclear gauges used at the Tahera Diamond Corporation, Jericho Diamond Mine. If, after reading these instructions, it is still not clear how to collect a sealed radioactive source leak test sample seek additional advice from a qualified person.

Sealed radioactive source leak testing frequency

Nuclear gauges employing sealed radioactive sources with a radioactivity greater than fifty Megabecquerels (>50 MBq) shall be leak tested at least once every twelve (12) months, with the exception of gaseous radioactive sources, which are not required to be leak tested. Radioactive sources that are continually in storage are required to be leak tested once every twenty-four (24) months. Nuclear gauges that have been in storage for twelve (12) months or longer shall be leak tested before being put back into use. Sealed radioactive sources associated with nuclear gauges that have been involved in an incident such as a fire shall be leak tested before the nuclear gauge is returned to routine use.

Sealed radioactive source leak test requirements

The sealed radioactive source leak test sample collection procedure consists of two (2) parts - the taking of a leak test sample from the source holder followed by the measurement of the leak test sample for radioactivity. Jericho Diamond Mine personnel responsible for the collection of leak test samples from nuclear gauge source holders shall follow the procedures described under the heading of ***“Sealed Radioactive Source Leak Test Sampling Procedure”***. Analysis of leak test samples shall be carried out by an agency that has been accredited by the Canadian Nuclear Safety Commission. A list of approved sealed radioactive source leak testing agencies can be obtained from the Canadian Nuclear Safety Commission.

Leak Test documentation

The individual responsible for the collection of sealed radioactive source leak test samples shall have access to and be familiar with the following documents:

Tahera Diamond Corporation sealed radioactive source leak test sample collection procedure(s). If additional procedures are required contact Stuart Hunt & Associates Ltd. ([780] 458-0291 or 1 800 661-4591) for advice and assistance with the development of new sealed radioactive source leak test sampling procedures.

An inventory of all nuclear gauge source holders and their location.

Sealed radioactive source **Leak Test Sampling Certificate** (Appendix E).

Sealed radioactive source leak test kits¹

Copies of these documents and a sealed radioactive source leak test kit are to be kept available, for inspection and assessment by the Canadian Nuclear Safety Commission.

Leaking sealed radioactive source

When a leak test sample analysis indicates that the sample radioactivity is in excess of 200 becquerels (>200 Bq) it is to be assumed that the radioactive source is leaking. When a radioactive source is leaking the following steps shall be taken:

1. Discontinue using the affected nuclear gauge.
2. Take measures to limit the spread of radioactive contamination from the leaking source.
3. Isolate the leaking radioactive source by placing exclusion barriers at a distance of five (5) metres around the nuclear gauge installation.
4. Immediately after complying with items 1, 2 & 3 inform the Canadian Nuclear Safety Commission that a leaking source has been detected.
5. Seek qualified professional advice on how to manage the leaking radioactive source.
6. Make arrangements for disposal of the leaking source
7. Attempt to determine the cause of source leakage and submit findings in writing to the Canadian Nuclear Safety Commission.

NOTE: The management of this type of incident requires specialized equipment and skills. Professional outside help is usually required to deal with leaking radioactive sources. Contact Stuart Hunt & Associates for advice on the management of a leaking source.

¹Leak test kits are available from Stuart Hunt & Associates Ltd., [(780) 458-0291 or 1 800 661-4591].

Preparation of used Leak Test Kits for shipment

Prior to the packaging of used leak test kits for shipment it is good practice to check them with a radioactive contamination monitor. The contamination monitor will provide information on the following:

1. The radiation intensity, if any, being given off by the leak test samples.
2. Which leak tests may be a source of potential radioactive contamination hazard to the leak test sample measurement agency.
3. Whether the *Packaging and Transport of Nuclear Substances and Transportation of Dangerous Goods Clear Language* regulations have to be followed.

ADVICE: If the radiation intensity from the leak test kits is in excess of twice background contact Stuart Hunt & Associates (1 800 661-4591) for advice on how to proceed. If the radiation intensity from the leak test kits is less than twice background no special shipping or handling precautions need be taken. The leak test kits can be sent by any mode of transportation except Canada Post. ***Canada Post regulations prohibit the use of the postal service for the transfer of potentially radioactive materials.***

Leak test records management

All documents, relating to the collection and assay of sealed radioactive source leak tests, shall be kept on file for a period of at least **three (3) years**. Original copies of the following documents are to be kept on file as proof of compliance with CNSC regulatory requirements:

1. Inventory of sealed radioactive sources leak tested.
2. Sealed radioactive source leak test sampling certificates.
3. Sealed radioactive source leak test sample analysis certificates.

SEALED RADIOACTIVE SOURCE LEAK TEST SAMPLING PROCEDURE (Non-insertion type fixed nuclear gauges equipped with shutters)

The sealed radioactive source leak test sampling procedure described in this section is to be used for the fixed nuclear gauge(s) currently in use at the Jericho Diamond Mine.

1. Prior to collecting a leak test sample complete all of the information required by the **Leak Test Sampling Certificate** and **Leak Test Kit**.
2. Whenever possible, close the source housing shutter before taking the leak test sample. If it is not possible to close the source housing shutter, caution must be used to ensure that no body parts are placed in the primary radiation beam. Familiarity with the device being leak tested is essential.
3. If applicable, use a radiation survey meter to confirm that the shutter is in the closed position. ***Movement of the shutter control arm from the open to closed position is not always a reliable indication that the shutter is in fact closed.*** If the shutter proves difficult to close inform the RSO before proceeding.
4. Take one (1) of the two (2) Q-tips supplied with the leak test kit. Moisten the cotton tip with water or cleaning solvent and wipe all of the exterior seams for the source housing and accessible source housing interfaces, i.e. the source housing shutter rotating rod and handle. Place the Q-tip in the designated wet sample plastic sleeve.
5. Repeat step 4 with the dry Q-tip.
6. Send completed leak test kits and a signed copy of the Leak Test Sampling Certificate to a Canadian Nuclear Safety Commission approved leak test measurement agency for analysis. ***The time span between sampling and analysis should be kept as short as practical but shall not exceed ten (10) working days.***

Caution: After the leak test samples have been taken treat the Q-tips as being contaminated with radioactive material until proven otherwise.

7. When the analysis of a leak test indicates that the level of removable radioactive contamination is in excess of 200 becquerels initiate the steps described under the heading of **Leaking Sealed Radioactive Source**.

RADIATION HAZARD WARNING: Leak test samples are not to be taken from a source capsule. This practice will result in an unnecessary and potentially hazardous radiation dose being received by the leak test sample collector.

RADIATION DETECTION INSTRUMENTS

Calibration

Radiation detection instrumentation used for radiation dose assessment purposes shall be calibrated at least once every twelve (12) months. Calibrations are to be carried out in accordance with Regulatory Document, R-117 ***“Requirements for Gamma Radiation Survey Meter Calibration”***. Radiation survey meters must also be calibrated by an agency that is recognized by the Canadian Nuclear Safety Commission. A list of approved gamma radiation survey meter calibration agencies can be obtained from the Canadian Nuclear Safety Commission. The Jericho Diamond Mine radiation survey meter can be found in the office of the Radiation Safety Officer. The make and model of the survey meter available for use is described below:

Instrument	Detector Type	Energy Range	Highest Range
Ludlum, model 3 survey meter	Model 44-38 external energy compensated GM detector	50 keV – 1.25 MeV	2 mSv/h

This instrument is calibrated against a Cesium-137 secondary calibration standard.

Radiation surveys

Radiation surveys shall be carried out by personnel who have received instruction, on the correct use of radiation survey meters. Prior to the start of any gamma radiation survey the radiation survey meter shall be put through the following performance check:

1. Confirm that the survey meter has been calibrated by a qualified gamma survey meter calibration agency within the past twelve (12) months. There are calibration label attached to the survey meter showing the date when the unit was last calibrated. If twelve (12) months have elapsed since the last calibration the unit cannot be used until it has been re-calibrated
2. Carry out a battery check to confirm that the batteries are still carrying a charge, if not, recharge or replace the batteries.
3. Confirm that the detector is responding to ionizing radiation by moving the range switch to the x1 or x10 position. Place a small Cs-137 check source close to or on contact with the radiation detector. The meter needle will move anywhere up to 75%

of the maximum range. If the needle does not move then there could be a problem with the detector and it should be removed from service until it is repaired and re-calibrated.

4. If the detector is equipped with a beta shield, confirm that the beta shield is in the closed position.
5. The performance check is now complete and the radiation survey can proceed.

PACKAGING AND TRANSPORTATION PROCEDURES FOR NUCLEAR GAUGES

The packaging and transportation of nuclear gauging devices from the Tahera Diamond Corporation, Jericho Diamond Mine shall be in accordance with the following regulations:

1. Canadian Nuclear Safety Commission *Packaging and Transport of Nuclear Substances Regulations*.
2. Transport Canada's Transportation of Dangerous Goods (TDG) *Clear Language Regulations*.
3. International Air Transport Association (IATA) Dangerous Goods Regulations when the nuclear gauge is to be transported by aircraft.

Only those persons who are in possession of a valid TDG *Certificate of Training* for Class 7 material are authorized to prepare and release a radioactive material (Class 7) shipment for transport from the Tahera Diamond Corporation, Jericho Diamond Mine. Prior to transferring the radioactive material shipment to a commercial carrier the following steps shall be taken:

1. Select the correct Description/Shipping Name
2. Complete all sections of the Shippers Declaration of Dangerous Goods in accordance with the relevant regulations.
3. If required, confirm that a valid "**Special Form Certificate**" is available.
4. Confirm that the exterior surface of the shipping container is free from removable radioactive contamination.
5. Confirm that Type A container qualification records are available for the shipment
6. Mark and label the package correctly
7. If required, supply the Carrier with four (4) Class 7 placards. **Note:** Class 7 placards are no longer required for shipments displaying *Radioactive White I* and *Radioactive Yellow II* hazard labels.
8. Transfer the shipment to the designated Carrier
9. Confirm that the Carrier has been advised of the nature of the shipment
10. Confirm that the designated driver has a "**Certificate of Training**".

Contact Stuart Hunt & Associates Ltd., at 1 800 661-4591 when assistance with the preparation of a Class 7 shipment, is required.

CARE AND MAINTENANCE OF NUCLEAR GAUGING SYSTEMS

The proper care and maintenance of nuclear gauge source holders will ensure that radiation doses received by personnel, while working on or around nuclear gauging devices, are within regulatory limits and where possible as low as reasonably achievable. Shutter performance and inspections of the source holder should be carried out at least once every twelve (12) months. A record of shutter performance and source holder condition shall be maintained. When any of the items listed below do not meet the required performance standard inform the Radiation Safety Officer and the Electrical Instrumentation Supervisor.

Source holder condition - Examine the outer steel housing for the source holder to confirm that it has not been degraded by process fluids or corrosive liquids. Confirm that the shutter movement arm is in good condition.

Shutter performance check - The shutter should move easily from the open to closed position and vice-versa. Make arrangements to have the nuclear gauge source holder and shutter serviced if there is evidence shutter performance failure.

Shutter “ON” and “OFF” positions - Each source holder is equipped with clearly marked “ON” and “OFF” position for the shutter. Confirm that these positions are clearly marked and visible. Arrange to have the source holder cleaned when these positions are not visible.

Shutter isolation - Confirm that the shutters for nuclear gauges, not in use, are locked in the closed position.

Source holder position - The direction of the primary beam for the source holder is to be directed away from normal traffic or occupied areas. Confirm that any gaps, that are large enough for a hand to be placed between the source holder and a vessel or pipe wall is covered with a metal barrier.

Source holder maintenance - Any modification or maintenance to the source holder, that will affect the inherent radiation safety for the device, shall not be carried out without prior authorization from the Canadian Nuclear Safety Commission.

Source holders removed from their operating position - Nuclear gauge source holders that have been removed from their operating position shall not be left unattended. Confirm that they have been transferred to a designated nuclear gauge storage area and that the nuclear gauge inventory record has been amended to show the change of location.

Radiation hazard warning sign - Each nuclear gauge installation is to be identified with a clearly visible radiation hazard warning sign (Appendix C). Confirm that it displays the required information and that it is in good condition.

Source holder product identification plate – Confirm that the information on the plate is complete and in good condition. Damaged plates or plates where the information is no longer clearly visible are to be replaced.

POSTING OF RADIATION HAZARD WARNING SIGNS

Radiation hazard warning signs are to be used to alert personnel to potential radiation hazards associated with the nuclear gauging devices used at the Tahera Diamond Corporation, Jericho Diamond Mine. The signs are to be made of a durable material marked with either black or magenta lettering and the international radiation hazard symbol or "*Trefoil*". The sign and lettering are to be visible from a distance of at least three (3) metres. Examples of signs for nuclear gauge radiation hazard warning and nuclear gauge storage are included with this manual as Appendices B and C.

INSTALLATION OF NUCLEAR GAUGE SOURCE HOLDERS

Radiation dose control

The radiation intensity at a distance of 30 centimetres from the external surface of a nuclear gauge source holder should not exceed 50 :Sv/h regardless of source radioactivity. The radiation intensity at one metre from a source holder using a gamma emitting radioactive source are 4.5 :Sv/h. Radiation doses can be controlled through the use of time, distance and shielding.

- The radiation dose received is directly proportional to the amount of time spent in a radiation field. The longer the exposure time the higher the radiation dose received.
- The radiation intensity from most nuclear gauge source holders is inversely proportional to the square of the distance ($1/r^2$). Doubling the distance from the source holder will decrease the original radiation intensity down to one quarter ($1/2^2$). Triple the distance down to one ninth ($1/3^2$)
- Shielding is used to reduce the radiation intensity around a radioactive source. The type of shielding employed will depend on whether beta particles, gamma photons or neutrons are being emitted. It is the responsibility of the source holder manufacturer to provide enough shielding to satisfy Canadian Nuclear Safety Commission requirements for nuclear gauge source holders.

The radiation dose received by an individual who is working on or around a nuclear gauge source holder will depend on distance and the time spent at that distance. For example, the maximum dose that a worker could receive at a distance of two (2) metres from a nuclear gauge are 1.1 :Sv/h. For the vast majority of nuclear gauge source holders, the radiation intensity at 30 centimetres are less than 50 :Sv/h. The radiation dose received by workers will also be lower.

Nuclear gauge installation

Nuclear gauge source holders are to be installed by properly trained and authorized personnel. Personnel responsible for the nuclear gauge source holder installation shall complete the following steps prior to and following source holder installation:

1. Make arrangements to have a Safe Work Permit or Work Order issued for installing the source holder.
2. Carry out a visual inspection of the source holder to confirm that it has not been damaged.

3. Confirm that the source holder shutter is in the closed position and secured with a padlock.
4. Use a radiation survey meter to confirm that the shutter is in the fully closed position and that the radiation field around the source holder does not exceed 50 $\mu\text{Sv/h}$ at a distance of thirty (30) centimetres from the external surface of the source holder.
5. Install the source holder in accordance with the manufacturer's engineering drawings and specifications.
6. If required, protect source holder from high temperature, chemical and/or physical damage.
7. After installing the source holder, measure the radiation intensities on contact with the source holder and at a distance of thirty (30) centimetres from the source holder. Take at least four (4) measurements at each distance on two (2) perpendicular planes around the source holder with the source shutter in the **OPEN** and **CLOSED** positions. Record the radiation intensity values for future reference. **DO NOT ATTEMPT TO MEASURE THE RADIATION INTENSITY OF THE PRIMARY RADIATION BEAM.**
8. Post nuclear gauge radiation hazard warning signs (Appendix C) at locations where they are clearly visible to personnel approaching the nuclear gauge installation.
9. Amend nuclear gauge inventory to show new location for the nuclear gauge source holder.

REMOVAL OF NUCLEAR GAUGE SOURCE HOLDERS

Removal of a nuclear gauge source holder is to be carried out by properly trained and authorized personnel. Personnel responsible for removal of the nuclear gauge source holder shall follow the sequence of steps described below:

1. Make arrangements for a Safe Work Permit or Work Order to be issued for removal of the source holder.
2. Before removal, of the source holder, confirm that the shutter is closed and locked out. Use a radiation survey meter to confirm that the shutter is closed.
2. Examine the source holder for any visible damage. If there is any evidence of damage seek the advice of the Radiation Safety Officer before proceeding.
4. Follow manufacturer's instructions for the removal of the source holder from its operating position.
5. If the source holder is being removed for equipment maintenance purposes, it is to be transferred to the nuclear gauge storage area or Instrument Shop until the maintenance procedure is finished.
6. Amend nuclear gauge inventory to show new location of the source holder.

REMOVAL OF A SOURCE HOLDER WITH AN OPEN SHUTTER

When a source holder shutter is jammed in the open position, arrangements shall be made for its safe removal, repair and/or disposal. Removal of the source holder is to be carried out by properly trained and authorized personnel. Prior to the removal of the source holder, the following steps shall be implemented:

1. Inform the Radiation Safety Officer and the Electrical Instrumentation Supervisor of the intended removal, repair and/or disposal of the source holder.
2. If required, contact Stuart Hunt & Associates (1 800 661-4591) for radiation safety support during removal of the source holder.
3. Assisted by Stuart Hunt & Associates develop a procedure for the safe removal of the source holder.
4. Arrange for all personnel directly involved with the removal of the source holder to wear radiation dosimeters.
5. Calculate the amount of shielding required, to reduce the radiation intensity for the primary radiation beam to less than, 50 $\mu\text{Sv/h}$ at a distance thirty (30) centimetres, from the source holder.
6. Following removal of the source holder, make arrangements, to have Stuart Hunt & Associates repair the shutter. If Stuart Hunt & Associates is unable to repair the shutter have them make arrangements to send the source holder to either the manufacturer or for disposal.
7. Arrange to have the source holder removed from the nuclear gauge inventory if and when it is returned to the manufacturer or sent for disposal

ENTRY INTO CONFINED SPACE FITTED WITH A NUCLEAR GAUGE

In addition to routine confined space entry precautions the following radiation dose control measures shall be taken for all confined spaces fitted with nuclear gauges.

1. Make arrangements to have a Safe Work Permit or Work Order issued.
2. Lock and tag the source shutter in the closed position. This procedure to be carried out properly trained and authorized personnel
3. Confirm that the shutter is in the closed position by using the following procedure:

*Insert a radiation detector into the space between the source housing and vessel wall. Close the shutter and monitor the decrease in gamma radiation intensity as the shutter closes. When the shutter is closed, the radiation intensity should be approximately equal to the highest radiation intensity measured on contact with the exterior of the nuclear gauge source holder. If there is no significant reduction in the radiation intensity it is to be assumed that the shutter is still in the open position. Instructions for the management of a nuclear gauge with a malfunctioning shutter can be found in this manual under the heading **“Removal of a source holder with an open shutter”**.*

4. Record the radiation intensities measured before and after the shutter has been closed for future reference.
5. Upon initial entry into the confined space measure the radiation intensity in the vicinity where the nuclear gauge is installed. If the magnitude of the measured radiation intensity will cause a person to receive a radiation dose in excess of 20 μSv per day, appropriate dose reduction steps (Item 8) shall be taken.
6. Record the radiation intensity reading (in the vicinity of the source) on the Safe Work Permit or Confined Entry Space Permit.
8. When a high reading is encountered, insert a steel plate at least two and a half (2.5) centimetres thick between the nuclear gauge source housing and vessel wall. If the radiation intensity inside the confined space is still too high continue to add steel plate until the radiation intensity is at an acceptable level or limit the amount of time spent in the vessel.

9. When all steps have been taken to reduce the risk of unnecessary radiation dose from the nuclear gauge, sign off the relevant sections of the applicable Safe Work Permit, Work Order or Confined Space Entry Permit.

CONFINED SPACE RADIATION HAZARD WARNING SIGNS

Radiation hazard warning signs are to be used to alert personnel to the fact that a confined space, such as an enclosed vessel or hopper, is fitted with a nuclear gauge. The radiation hazard warning sign is to be attached to each personnel access cover for a confined space. Appendix D is an example of the radiation hazard warning sign to be used.

EMERGENCY PROCEDURES

Nuclear gauge sealed radioactive sources, along with their lead and steel source holders, are designed to withstand normal physical abuse and exposure to fire. Failure of either the radioactive source encapsulation or the source shielding can create radioactive contamination and radiation exposure problems in the workplace. The instructions described below are to be followed whenever a nuclear gauge is involved in an incident where there is the potential for personnel to be put at risk.

Situations requiring emergency response action

Emergency response procedures shall be initiated whenever a nuclear gauge is exposed to fire, explosion, corrosion or has experienced physical damage. The individual who discovers the problem shall initiate the following actions:

1. While remaining at a safe distance (>5 meters) shall prevent personnel from entering the area around the damaged source housing.
2. Contact by radio or have someone contact the Radiation Safety Officer and emergency response person or job title identified on the radiation hazard warning sign. If a person is assigned the task of contacting the emergency response person have that person report back after the RSO, emergency response person or job title has been contacted. If that person does not return send a second person.

Emergency response actions

1. Obtain the radiation intensity record for the nuclear gauge source holder.
2. Collect radiation survey meter, carry out survey meter function test.
3. Carry out a radiation survey around the radioactive source housing. If the radiation intensity values are in agreement with the radiation intensity record it can be assumed that the source housing is undamaged. When the radiation intensity record cannot be located or is not available use the following guideline:

"When the radiation intensity from any external surface of the source holder is less than 50 μ Sv/h at a distance of 30 centimetres, it can be assumed, that the source holder has not been damaged".

4. If the radiation intensity is in excess of 50 $\mu\text{Sv/h}$, isolate the nuclear gauge by setting up barriers at the 20 $\mu\text{Sv/h}$ level. Post signs at the barriers to warn personnel that a radiation exposure hazard exists.
5. Seek advice from qualified radiation safety specialists on additional radiation dose control procedures.
6. If the source housing is undamaged, carry out a sealed radioactive source leak test and have the test sample analyzed for evidence of removable radioactive contamination.
7. If radioactive contamination in excess of 200 becquerels is found, follow the procedures described in the section on **"Sealed Radioactive Source Leak Testing"**.
8. Do not put the nuclear gauge back into operation until a qualified person has indicated that it is safe to be put back into operation.

NUCLEAR GAUGE SOURCE HOLDERS EXPOSED TO FIRE

The first priority is to bring the fire under control. Source holder construction consists of a lead shield surrounded by an outer steel housing. Should the fire be hot enough to melt the lead shield, it is contained, by the steel housing. The melted lead will continue to provide an effective radiation shield. Should the source holder shielding fail the radiation intensity at a distance greater than 5 metres from the source holder will not cause fire fighting personnel to receive a radiation dose in excess of the annual effective dose allowed for the general public. The following steps should be taken when dealing with a nuclear gauge exposed to fire.

1. Bring the fire under control
2. If required, spray water on the outer steel housing of the source holder to keep it cool and to prevent the lead from melting.
3. Remain at a distance of 5 metres or further until a radiation survey has been made of the area surrounding the source holder.
4. Do not move closer to the source holder until it has been declared safe by the Radiation Safety Officer.
5. After the fire has been extinguished follow the steps outlined under the heading of ***Emergency Response Actions***

Personnel contaminated with radioactive material

1. Remove contaminated clothing, place in a plastic bag. Seal the bag and identify the contents.
2. Immediately flush the contaminated surface with copious quantities of water. Use a mild detergent to help remove the contamination.
3. Periodically check the contaminated skin with a portable contamination monitor to assess decontamination progress.
4. If decontamination of skin proves difficult do not use harsh cleaning agents or methods that will cause the skin to be damaged.
5. Seek qualified medical assistance when the skin cannot be cleaned properly.

Actions to be taken by the Radiation Safety Officer

1. Inform the Canadian Nuclear Safety Commission of any incident involving radioactive material immediately after being notified of the incident.
2. Provide the CNSC with a verbal report of what has happened and what action is being taken to correct the problem.
3. As soon as possible and no later than twenty-one (21) days submit a written report to the CNSC describing the incident. Include with the report the following:
 - a. Radiation dose received by personnel.
 - b. Radioisotope and amount of radioactivity involved.
 - c. Levels of radioactive contamination encountered.
 - d. Success of the decontamination effort.
 - e. Final contamination survey results.
 - f. Fate of the nuclear gauge.
 - g. Cause of the incident and steps taken to prevent a similar incident occurring.

RADIATION SAFETY RECORDS MANAGEMENT

To satisfy Canadian Nuclear Safety Commission regulatory requirements, a record of all radiation safety related activities shall be maintained and kept available for inspection by CNSC Compliance Officers. To satisfy the CNSC the following radiation safety related records should be maintained.

1. Names of persons involved with the maintenance and use of nuclear gauging systems.
2. Description of the radiation safety training given to personnel involved with the handling and use of nuclear gauging devices.
3. Names of persons who have received radiation safety training.
4. Radiation safety training course dates and name of instructor.
5. Inventory of all nuclear gauging devices in use and storage.
6. Nuclear gauge incident reports.
7. Nuclear gauge purchase and transfer records.
8. Sealed radioactive source leak test sampling and measurement reports
9. Inventory of radiation survey meters and their calibration records.
10. Disposal of nuclear gauging devices.
11. Shipping documents for nuclear gauging devices.
12. Annual Compliance Reports
13. Any other records required by the Canadian Nuclear Safety Commission.

All radiation safety related records shall be kept on file until their disposal is authorized by the Canadian Nuclear Safety Commission. All requests for the disposal of records shall be submitted in writing to the Canadian Nuclear Safety Commission.

TAHERA DIAMOND CORPORATION

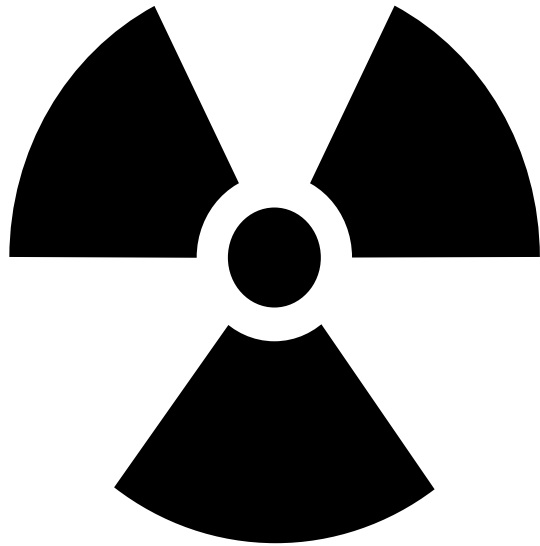
JERICO DIAMOND MINE

SEALED RADIOACTIVE SOURCE INVENTORY RECORD

RADIOISOTOPE LICENCE NO:

INVENTORY EFFECTIVE DATE:

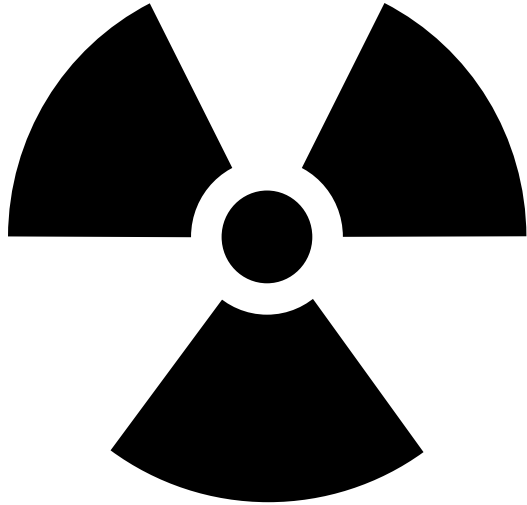
No.	Manufacturer	Source Holder Model	Maximum Activity (GBq)	Assay Date	Current Activity (GBq)	Configuration	Nuclear Substance	Tag Number	Serial Number	Location
1	Ronan Canada	SA-1				1	Cs-137			
2										
3										
4										
5										
6										
7										
8										
9										



CAUTION

RADIOACTIVE MATERIAL STORAGE AREA

IN CASE OF EMERGENCY CONTACT:



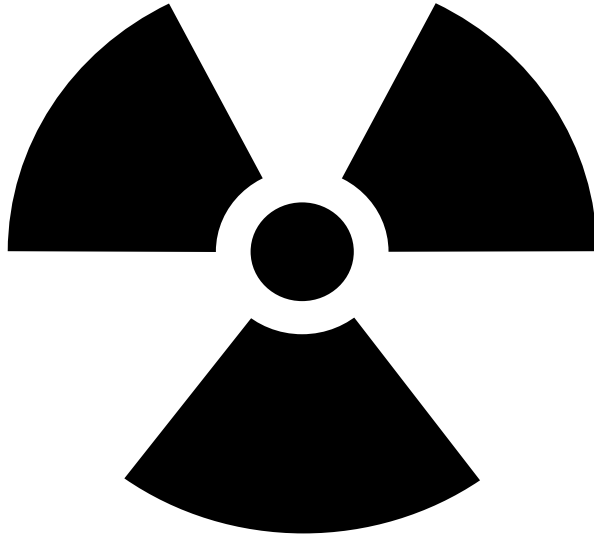
RADIATION DANGER RAYONNEMENT

RADIONUCLIDE:

RADIOACTIVITY:

ASSAY DATE:

IN CASE OF EMERGENCY CONTACT



CAUTION

**THIS VESSEL IS FITTED
WITH A NUCLEAR GAUGE**

**DO NOT ENTER THIS VESSEL UNTIL IT IS CONFIRMED THAT THE
SOURCE SHUTTER IS IN THE CLOSED POSITION AND LOCKED OUT.
SHUTTER CLOSURE IS TO BE CONFIRMED BY NOTING THE CHANGE
IN THE RADIATION SURVEY METER RESPONSE WHEN THE SHUTTER
IS MOVED FROM THE OPEN TO CLOSED POSITION
OPERATION TO THE ISOLATION MODE.**

SEALED RADIOACTIVE SOURCE LEAK TEST SAMPLING CERTIFICATE

CNSC Licence Number:
 Licensee's Name:
 Licensee's Address:

Sampling Location:

Contact Name:
 Phone Number:
 FAX Number:

Samplers Name:
 Phone Number:
 Fax Number:

Wipe sampling method: Using both wet and dry swabs, wipe seams of source housing and all source housing interfaces.

Leak Test Kit Number	Radioisotope	Source Holder Manufacturer and Model Number	Serial No:	Use or Storage Location

Sampling Date:

Sampler's signature

Radioactive Material Safety Data Sheet

This data sheet presents information on radioisotopes only.

For information on chemical compounds incorporating this radionuclide, see the relevant Material Safety Data Sheet.

Cesium-137

PART 1 – RADIOACTIVE MATERIAL IDENTIFICATION

Common Names:	Cesium-137	Chemical Symbol:	Cs-137 or ^{137}Cs
Atomic Number:	55	Mass Number:	137 (82 neutrons)
Chemical Form:	Cesium chloride	Physical Form:	A pellet of cesium ceramic housed in a welded stainless steel capsule

PART 2 – RADIATION CHARACTERISTICS

Physical half-life:	30.22 years	Specific (GBq/g):	Activity 3,220
----------------------------	-------------	--------------------------	-----------------------

Principle Emissions	E_{Max} (keV)	E_{eff} (keV)	Dose Rate ($\mu\text{Sv/h/GBq}$ at 1m)	Shielding Required
Beta* (β)	94.6% - 511	157	-	-
Gamma (γ) / X-Rays	89.9% - 662	-	103 ^a	HVL Lead: 0.65 cm
Alpha (α)	-	-	-	-
Neutron (n)	-	-	-	-

* Where Beta radiation is present, Bremsstrahlung radiation are produced. Shielding may be required.

Note: Only emissions with abundance greater than 10% are shown.

^a The Health Physics and Radiological Health Handbook, Scintra, Inc., Revised Edition, 1992

Progeny : Ba-137m

PART 3 – DETECTION AND MEASUREMENT

Methods of detection (in order of preference)

1. A radiation survey meter equipped with an energy-compensated Geiger Mueller detector.
2. Ion chamber survey meter – tends to be less sensitive than a Geiger Mueller survey meter but is able to respond more precisely in higher radiation fields.

3. Gamma scintillation detector – very sensitive but is also energy dependent. Must be calibrated for Cs-137 before it can be used for dose assessment surveys.

DOSIMETRY

Whole Body	<input checked="" type="checkbox"/>	Skin	<input type="checkbox"/>	Extremity	<input type="checkbox"/>	Neutron	<input type="checkbox"/>
Internal:	Sealed sources pose no internal radiation hazard. However, in the event of loss of containment by the sealed source, all precautions should be taken to prevent inhalation or ingestion of the material.						
Critical Organ(s):	None known at this time.						
Annual dose limits:	<p><i>Non-nuclear energy workers:</i> 1mSv per year</p> <p><i>Nuclear energy workers:</i> a) 50 mSv in one year b) 100 mSv total over five years</p> <p><i>Pregnant nuclear energy workers:</i> 4 mSv over the balance of the pregnancy</p>						

PART 4 – PREVENTIVE MEASURES

Always use the principles of time, distance and shielding to minimize dose

Engineering Controls:	Sealed radioactive sources used in industrial applications should always be within a protective source housing to minimize radiation dose and to protect the source capsule from damage.		
Personal Protective Equipment	<i>(for normal handling, unsealed sources only. Always use gloves, glass and other personal protective equipment and clothing as appropriate to the material handled).</i> No special PPE required.		
Special Requirements:	Storage	None	

PART 5 – CONTROL LEVELS

Oral Ingestion		Inhalation	
ALI (kBq)		ALI (kBq)	DAC (Bq/ml)
3700		7400	2.2×10^{-3}
Maximum Contamination:	Surface	0.3 Bq/cm ²	

Exemption Quantity (EQ):

1,000 Bq

PART 6 – NON-RADIOLOGICAL HAZARDS

No potential health effects are known regarding non-radiological hazards associated with cesium. However, large oral doses of the material may cause gastrointestinal disturbances. Chronic effects are not known at this time.

OSHA Permissible Exposure Limit (PEL): 15 mg/m³ total dust, 5 mg/m³ respirable fraction for nuisance dusts

PART 7 - EMERGENCY PROCEDURES

*The following is a guide for first responders. The following actions, including remediation, should be carried out by qualified individuals. In cases where life-threatening injury has resulted, **first** treat the injury, **second** deal with personal decontamination.*

Personal Decontamination Techniques**Wash well with soap and water and monitor skin**

- Do not abrade skin, only blot dry
- Decontamination of clothing and surfaces are covered under operating and emergency procedures

SPILL AND LEAK CONTROL

- Alert everyone in the area
- Confine the problem or emergency (includes the use of absorbent material)
- Clear area
- Summon Aid

DAMAGE TO SEALED RADIOACTIVE SOURCE HOLDER**Evacuate the immediate vicinity around the source holder**

- Place a barrier at a safe distance from the source holder (min. 5 meters)
- Identify area as a radiation hazard
- Contact emergency number posted on local warning sign

SUGGESTED EMERGENCY PROTECTIVE EQUIPMENT

- Gloves
- Footwear Covers
- Safety Glasses
- Outer layer or easily removed protective clothing (as situation requires)

Revision Date:

December 22, 2004

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St. Albert, Alberta
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**APPENDIX E
ARCTIC SUNWEST CHARTERS
EMERGENCY RESPONSE PLAN MANUAL**

Emergency Response Plan Manual

Arctic Sunwest Charters
(171817 Canada Inc)

100 Dickins Street
Yellowknife International Airport

Box 1807
Yellowknife, NT
Canada X1A 2P4
Phone: (867) 873-4464
Fax: (867) 873-9334

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INTRODUCTION

The owner of Arctic Sunwest Charters is responsible for the safety of the community and security of all buildings and property belonging to Arctic Sunwest Charters. Arctic Sunwest Charters Dispatch is the first point of contact and first responder in all emergency response situations.

PREFACE

The objective of the Emergency Response Plan (ERP) is to minimize the effects of an emergency, particularly in respects to saving lives and maintaining ASC operations. Procedures contained in this manual are published to afford guidance before, during and after any emergencies involving aircraft, structures and other events affecting the operation of the airport and ultimately Arctic Sunwest Charters. Procedures included in this manual are:

- specific procedures to respond to, mitigate and recover from emergencies;
- the chain of command in an emergency within Arctic Sunwest and its links with local emergency response units;
- a communication protocol to ensure that accurate and up-to-date information is provided to various parties such as: the ECC, RCMP, Fire Hall, media, and next of kin in the appropriate manner;
- defined roles and responsibilities for those assigned to respond in an emergency.

Scope of ERP

- Phase I: Overdue Aircraft
- Phase II: Missing Aircraft
- Phase III: Aircraft Accident Off Airport
- Phase IV: Wind Down
- Aircraft Accident On Airport
- Alert for Aircraft Emergencies / Incidents
- Structural Fires (Non Aircraft)
- Hazardous Material Handling
- Bomb Threats
- Hijacking
- Medical Emergencies
- Aircraft Diversions - Medical
- Natural Disasters
- Security Emergencies
- Aftermath and dealing with NOK

IMPORTANT

It is essential that all ARCTIC SUNWEST personnel are fully aware that they must not provide any information (fact or opinion) about the emergency in any form (orally or in writing) unless authorized by the Owner of Arctic Sunwest, the General Manager or their designate.

Definitions

This Arctic Sunwest Charters Emergency Response Plan Manual is designed for use by employees of Arctic Sunwest Charters. All employees should become familiar with its contents, in their specific capacity. In the event of an emergency, it will serve as a quick reference. It should be kept in an easily accessible location at all times, preferably at your usual work station.

Questions or comments concerning this manual should be directed to the Safety Manager at Arctic Sunwest Charters.

DEFINITIONS

Airport Manager

The GNWT, Dept. of Transportation, designated official in charge of the airport or their authorized representative.

Airside

The area of an airport intended to be used for activities directly related to aircraft operations and to which public access is normally restricted.

Alert for Aircraft

An emergency condition requiring the Emergency Response Services (ERS) equipment to stand by at a specific point on the airport as a precautionary measure.

Aviation Occurrence

- a) any accident or incident associated with operation of aircraft, or
- b) any situation or condition that the Transportation Safety Board of Canada has reasonable grounds to believe could result in an accident or incident if not rectified.

Reportable accidents and incidents shall be reported to the Transportation Safety Board by the quickest means possible be that by phone or fax (numbers located in Appendix B). The report at minimum shall include the information identified in Appendix D 3.3

Reportable Accident

An aviation accident is defined by the Transportation Safety Board of Canada as an accident resulting directly from the operation of an aircraft where:

1. A person sustains a serious injury or is killed as a result of:
 - a. Being on board the aircraft.
 - b. Coming in contact with any part of the aircraft or its contents, or
 - c. Being directly exposed to the jet blast or rotor downwash of the aircraft;
2. The aircraft sustains damage or failure that adversely affects the structural strength, performance or flight characteristics of the aircraft and that requires major repairs or replacement of any affected component part, or

Definitions

3. The aircraft is missing or inaccessible.

Reportable Incident

A reportable incident as defined by the Transportation Safety Board of Canada means an incident resulting directly from the operation of an airplane where:

1. An engine fails or is shut down as a precautionary measure.
2. Smoke or fire occurs.
3. Difficulties in controlling the aircraft are encountered owing to any airplane system malfunction, weather phenomena, wake turbulence, uncontrolled vibrations, or operations outside the flight envelope.
4. The aircraft fails to remain within the intended landing or take-off area, lands with all or part of the landing gear retracted or drags a wing tip, engine pod or any part of the airplane.
5. Any crewmember whose duties are directly related to the safe operation of the aircraft is unable to perform the crewmember's duties as a result of a physical incapacitation that poses a threat to the safety of any person, property, or the environment.
6. Depressurization occurs that necessitates an emergency descent.
7. A fuel shortage occurs that necessitates a diversion or requires approach and landing priority at the destination of the aircraft.
8. The aircraft is fuelled with the incorrect type of fuel or contaminated fuel.
9. A collision, a risk of collision or loss of separation occurs.
10. A crewmember declares an emergency or indicates any degree of emergency that requires priority handling by an air traffic control unit or the standing by of Aircraft Fire Fighting Services (AFFS).
11. Any dangerous goods are released in or from the aircraft.

Note: A rejected takeoff due to a warning light illuminating or an auto-feather system not arming is **not** a reportable incident.

Bomb Threat

Normally divided into two categories:

- a) a specific threat – a statement giving time of activation, location, type of bomb, or even complete details.

Notification Procedures

- b) a non-specific threat – in which the caller makes a single statement that there is a bomb on an aircraft, in the ASC building, or on airport property.

Emergency Response Headquarters

A secure, designated area at Arctic Sunwest Charters, equipped to support and coordinate operations during airport emergency situations. This may begin in Dispatch and move to the boardroom (or other room as determined by the Emergency Response Coordinator) which is lockable.

Emergency Response Services (ERS)

Services provided to the flying public to provide fire suppression and rescue services (if able).

Hijacking

The unlawful seizure of an aircraft either in the air or on the ground by one or more persons.

In Flight

An aircraft is deemed to be in flight from the time all external doors are closed following embarkation until the later of the following:

- a) the time when any such door is opened for the purpose of disembarkation; or
- b) when the aircraft makes a forced landing in circumstances where the owner or operator thereof or a person acting on behalf of them is not in control of the aircraft, the time at which control of the aircraft is restored to the owner or operator or their agent.

Isolation Area

That part of an airport designated by the Airport Manager to which aircraft under bomb threat, hijacking, or hazardous cargo emergency conditions are directed.

Muster Station (Rendezvous Point)

A pre-designated geographical meeting location for use during specific emergencies.

Emergency Response Plan

This action plan is designed to provide basic emergency response guidelines for all Arctic Sunwest Charters personnel in the event that an emergency occurs on or near the facilities until appropriate response personnel arrive. This action plan does not detail the response procedures to be followed by trained personnel after the initial response to an emergency. Designated Arctic Sunwest Charters emergency response personnel are trained to follow up with secondary emergency response procedures once the first response has stabilized the emergency.

The scope of the emergency response plan applies to all staff, passengers, visitors, and buildings and grounds owned and operated, or supervised by Arctic Sunwest Charters.

Notification Procedures

The Duty Officer is authorized by the General Manager, who is authorized by the president of the company, to oversee the emergency response plan. Any of these authorities or their designees may serve as the Emergency Coordinator in declaring the scope of the emergency and directing its response. The General Manager will serve as the Emergency Response Coordinator unless otherwise assigned.

The types of emergencies are as follows:

MINOR EMERGENCY: Any incident, potential or actual, which will not seriously affect the overall operation of Arctic Sunwest Charters. Immediately report to Dispatch at extension x503 or x526. Some examples of a minor emergency are: brownout, water leak, false fire alarm, or maintenance problem, etc.

MAJOR EMERGENCY: Any incident, potential or actual, which affects an entire building or buildings, or which disrupts the overall operation of Arctic Sunwest Charters. Outside emergency services will probably be required, as well as a major response from Arctic Sunwest Charters support services. Major policy considerations may be required from the administration during these conditions. Report to Dispatch at extension x503 or x526. Some examples of a major emergency are: power outage, fire, major vehicle accident, snow emergency, bomb threat, HAZMAT spill, etc.

DISASTER: Any event or occurrence that seriously impairs or halts the operations of Arctic Sunwest Charters. In some cases, mass personnel casualties and severe property damage may occur. A coordinated effort of all resources is required to effectively control the situation. Outside emergency services will be essential. In all cases of disaster, an Emergency Command Center will be established, and the appropriate support and operational plans will be executed. Some examples of a disaster are: hurricane/tornado, flood, serious fire, total blackout, nuclear disaster, etc.

In addition, any incident which has a potential for adverse publicity concerning Arctic Sunwest Charters should be promptly reported to Dispatch (24 hours per day, 7 days per week) and the General Manager. Some examples of such incidents are: accidents or incidents, criminal activities, false rumours, etc.

Declaring a State of Emergency

The authority to declare a state of emergency rests with the president of the company or, in his/her absence, the General Manager.

During a state of emergency, the emergency response coordinator, with the president or General Manager's authorization, shall place into immediate effect the appropriate procedures necessary to meet the emergency and to safeguard persons and property. The emergency response coordinator or his/her designee shall immediately consult with the president or general manager regarding the emergency and the possible need for a declaration of a state of emergency.

When this declaration is made, only passengers and staff are authorized to be present at the facility. Those who cannot present proper identification showing their legitimate business will be asked to leave the facility. In addition, only those faculty and staff members who have been assigned emergency response team duties by the emergency response coordinator will be allowed to enter the designated emergency areas.

Notification Procedures

In the event of earthquakes, aftershocks, fires, storms, or a major disaster occurring on or about the facility, or one that involves Arctic Sunwest Charters property; Public Safety officers (Police, Fire, Ambulance Officials) will be dispatched to determine the extent of any damage to Arctic Sunwest Charters property.

The emergency response coordinator, who will be the general manager or his/her designee, will appoint an Emergency Response Team and will coordinate Arctic Sunwest Charters response with internal departments and outside agencies.

The Emergency Response Personnel and Notification Procedures are contained herein. The Emergency Response Coordinator will initiate the notification process and the response procedures for the primary response to facility emergencies. The RCMP and Yellowknife Fire Department will be notified of any condition requiring non Arctic Sunwest Charters intervention or assistance. Also listed are the step-by-step emergency response procedures for the emergencies listed in the index. These procedures are to be followed by all personnel as indicated in the individual instructions.

An EMERGENCY COMMAND CENTER will be established at the facility where the coordination of all communications will occur through the EMERGENCY COMMAND CENTER for emergency calls. The Emergency Response Coordinator will designate an unlisted telephone number or numbers for communications between key emergency response personnel. The Duty Officers and Management team have cellular telephones for emergency use in the event of a communications problem.

The Emergency Response Coordinator (command center) or Dispatch will notify all primary and secondary emergency response personnel to activate the Emergency Response Plan. The emergency response personnel (Safety Wardens) will then direct all workers and passengers about the correct response procedures to the particular emergency, which may include the designation of a meeting location for emergency personnel. Unless designed otherwise, the Emergency Response Team will meet at the EMERGENCY COMMAND CENTER to receive their instructions.

The President of the Company or his/her designee will respond to media inquiries, issue press releases, and designate one central location for the meeting of media personnel with company representatives for the dissemination of information.

Notification Procedures

Arctic Sunwest Charters personnel should follow the step-by-step Emergency Response Procedures listed herein to initially notify the Emergency Command Center at Dispatch of the nature of the emergency. You may do this by dialling x503/526 internally or 873-4464 or 765-0914 from off of the facility. In the event of a condition which requires immediate police, Fire Company, or ambulance response, personnel should

Dial 669-1111 to advise the authorities of a situation requiring immediate response and then contact Dispatch advising the dispatcher of the same.

Refer to the Emergency Response Personnel and/or the emergency number listed herein for specific personnel and numbers if contact is required.

The Duty Officer will notify all Emergency Response Personnel to begin the Emergency Response Plan.

In the event of a major emergency or disaster, the Emergency Response Coordinator will coordinate a timely notification procedure for all employees, passengers and surrounding communities with the members of the Emergency Response Team through local media communications networks and or through the Public Address system and the telephone switchboard.

Do not discuss any details concerning an emergency with any news media personnel. All questions, communications or requests for information by news media for Arctic Sunwest Charters personnel should be directed to the Emergency Response Coordinator who will coordinate all dissemination of information.

Section 1 – Aircraft Emergencies

PHASE 1 – Overdue Aircraft

1. When an aircraft becomes overdue or the Flight Follower on duty is advised of an overdue aircraft the Flight Follower will **conduct a communications search** making every effort to locate the aircraft.
 - Radio: Air Radio on 126.7 and 121.5 at ½ hour intervals (example 1200, 1230, 1300, 1330 etc)
 - Other aircraft radio contacts / Arctic Radio
 - Telephone: Base Camp or customer contacts, local RCMP, hotels
 - FSS or CARS Station
2. If the aircraft cannot be located, the Flight Follower will contact the Duty Officer who will initiate PHASE II (Missing Aircraft) and fill out a Flight Information Form - MUST be filled out - on the next page (also located in Appendix A).
3. If an aircraft accident has occurred, the Response Coordinator will complete PHASE II (Missing Aircraft) and initiate PHASE III - Aircraft Accident Off Airport (See page 9)
4. Under the direction of the Response Coordinator, high performance aircraft will be dispatched within 1 hour for search.

EMERGENCY RESPONSE PLAN

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Section ONE – Aircraft Emergencies

Phase I : Overdue Aircraft

FLIGHT INFORMATION FORM

Aircraft:	
Type:	Registration: Call Sign:
Capacity (Max): Actual/Estimates:	
Fuel:	
Endurance (Max): Estimated Max:	
Nav/Com:	
Radio Equipment:	
ELT Make and Model: Survival Equipment:	
Pilot (PIC) Last Name: First Name: Initial: D.O.B.: License Number: Hours Total: Last 90 Days: On Type:	Pilot (PIC) Last Name: First Name: Initial: D.O.B.: License Number: Hours Total: Last 90 Days: On Type:
Passengers: Department: Contact: Names On Manifest:	
Flight: Itinerary: Purpose:	
Last Known Contact:	

EMERGENCY RESPONSE PLAN

3 January 2006

Section ONE – Aircraft Emergencies
PHASE II – MISSING AIRCRAFT**PHASE II – Missing Aircraft**

1. Ensure PHASE I - OVERDUE AIRCRAFT section is complete.
2. The Duty Officer will initiate action to establish an Emergency Response Headquarters at the Arctic Sunwest Office.
3. The Duty Officer will select the RESPONSE COORDINATOR, which could be himself or any of the others listed below. The names and phone numbers for these and other important telephone numbers are also available in APPENDIX B.) The Duty Officer will remain in charge until the RESPONSE COORDINATOR arrives.

Response Coordinator:	Residence	Cellular	Pager
<i>Thom Pilgrim</i>	873-6726	444-0124	N/A
Alternate Response Coordinators:			
<i>Larry Burkowski</i>	669-0448	444-0125	N/A
<i>Terry Head</i>	765-0868	444-0126	N/A
<i>Marvin Robinson</i>	873-8750	444-0150	N/A
<i>Jim Robillard</i>	669-0618	444-0133	N/A
<i>Mike Dunn</i>	873-6575	444-0139	N/A

Once the RESPONSE CO-ORDINATOR has been selected, that individual will proceed to Dispatch/Executive Boardroom to "set up" the Emergency Response Headquarters. The doors to the Operations Office should be locked and only approved operational personnel should be allowed entry. After the headquarters is established, the Duty Officer will remain at the office to assist the RESPONSE COORDINATOR. All involved agencies/people must be informed who the Response Coordinator is and be given the 873-4464 phone number.

4. The Duty Officer will ensure that the Canadian Military Rescue Coordination Centre (RCC) has been notified. See "Search and Rescue Regions" Map next page. This can be done by contacting Yellowknife ATC at 873-4973.
5. All individuals at EMERGENCY RESPONSE HEADQUARTERS must immediately keep a compiled log of the activities that occur, including all telephone calls (refer to Appendix C).
6. Compile all available information on the situation. An accurate passenger manifest **must** be obtained.
7. Notify authorities in accordance with outline in AIM CANADA GEN 3-1 (see also Appendix D).
8. General media inquiries will be referred to the Response Coordinator or General Manager.

EMERGENCY RESPONSE PLAN

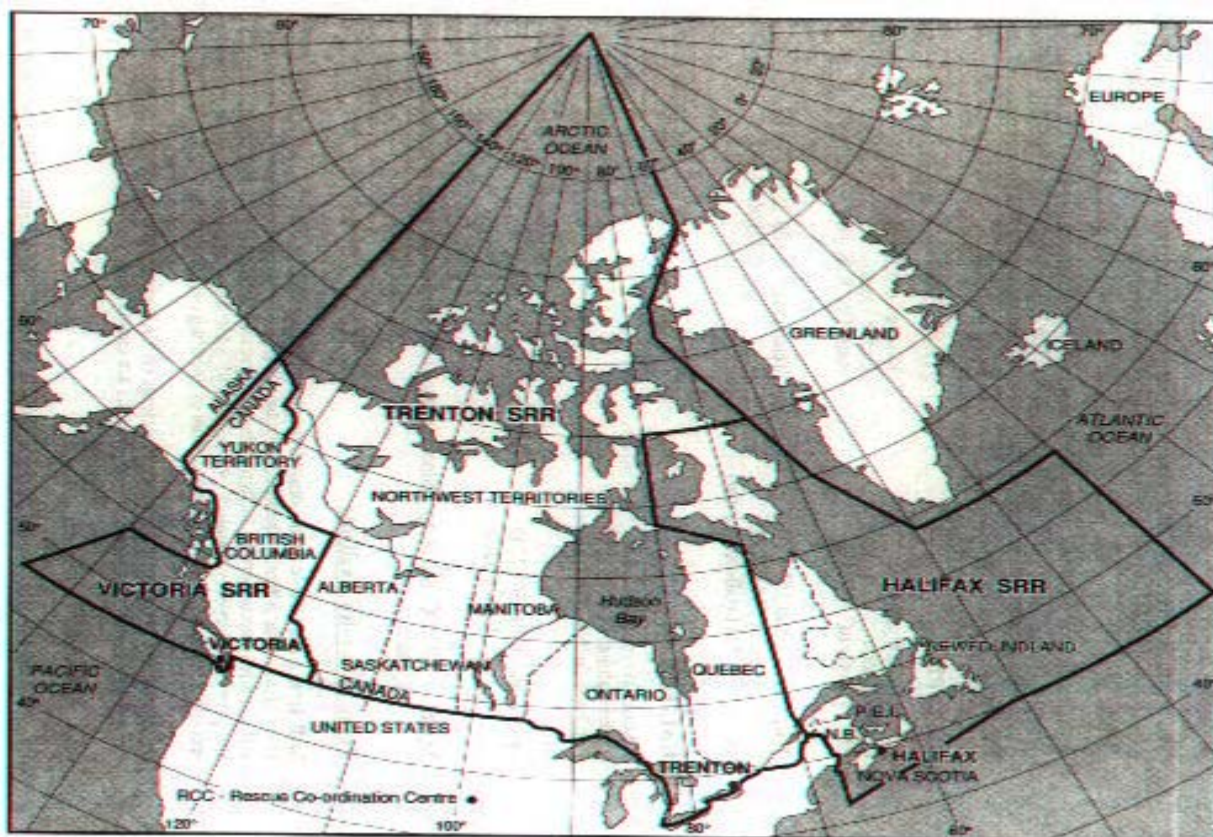
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Section ONE – Aircraft Emergencies

PHASE II – MISSING AIRCRAFT

NOTE: Discretion must be exercised at all times when dealing with the media.

9. Media inquiries regarding the search should be directed to the Canadian Military Rescue Co-ordination Centre (R.C.C.).

SEARCH AND RESCUE REGIONS MAP**Rescue Coordination Centre Telephone Numbers**

Victoria Centre Phone 1-800-567-5111 or 250-363-2992

* Trenton Centre Phone 1-800-267-7270 or 613-965-3870

Halifax Centre Phone 1-800-565-1582 or 902-427-8200

* Region ASC is located in

EMERGENCY RESPONSE PLAN

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Section ONE – Aircraft Emergencies
PHASE II – MISSING AIRCRAFT

10. The Headquarters must, as quickly as possible, collect the following information:
- Copy of the Operational Flight Plan.
 - Copy of the crew list
 - Copy of manifest. **Numerous reasons dictate that manifest information must be accurate.**
 - Employee information sheet files (Appendix E).
 - Any additional information regarding passengers or cargo.
 - Any additional information regarding the aircraft's last contact with ground services or other aircraft
 - Company Aircraft information File (found in Purple File Folders UNDER THE FRONT COUNTER IN DISPATCH)
11. Notification of Next of Kin (NOK).
- Passenger's NOK will be notified by contacting the Royal Canadian Mounted Police (Refer to PHASE III, number 6 for additional NOK information – next page)
 - There is no easy way to notify NOK and care should be taken to avoid leaving NOK alone with unfavourable news. Wherever possible encourage NOK to stay with their own support system and provide them with a telephone number to call for information. Assure them they will be kept up to date on search activities.
- Great care should be taken to ensure the media does not have or release information prior to NOK being notified.**
- If you have NOK waiting during a search, separate facilities should be set up to care for them. Attention should be paid to sheltering NOK from disconcerting or inappropriate activities and comments.
 - In a prolonged search regular daily briefings are a useful way to keep NOK informed.
 - Use Company Employee Information (Appendix E) to determine NOK for Arctic Sunwest personnel.
12. The Emergency Response Headquarters should establish a close contact with the Search Master and ensure ready communications with that person.
13. Time permitting the RESPONSE CO-ORDINATOR will ensure Arctic Sunwest Managers are informed of the emergency. In turn the managers will inform their staff of the emergency.
14. If the aircraft is found, the next step would normally be to move to Phase III (Aircraft Accident Off Airport).

PHASE III - AIRCRAFT ACCIDENT ON / OFF AIRPORT

1. Ensure Phase II is complete.
2. If a missing aircraft is found to be an accident the jurisdiction shifts from Search and Rescue to the Transportation Safety Board of Canada, RCMP and Fire and Ambulance. For some very complex reasons (legal, etc) Arctic Sunwest personnel must be very careful that incorrect or misleading information is not released.
3. The first priority should be care of the injured and uninjured passengers/crew. In addition, priority should be given to any Dangerous Goods issues.
4. Identification of deceased persons is the responsibility of the Medical Examiner's Office (Coroner). It is important to provide this office with as much information as possible.
5. Under no circumstances should anyone from Arctic Sunwest, including the press liaison designate, speculate on the cause of the accident to anyone including the press. (Refer to Preface; Note in box).
6. The Air Transport Association of Canada Major Accident Response Manual has very helpful information on the notification of NOK (Next Of Kin).

Some important elements of the process are:

- RCMP will notify the NOK in person if at all possible.
- The RCMP will take responsibility for notification and are quite willing to work with Arctic Sunwest officials.
- Try to ensure the notification is not given to someone who is alone with no support available to them.
- Offer someone to be with the bereaved if possible.
- DO NOT release the names of passengers/crew until NOK have been notified.

Next of kin in legal terms are as follows: *(note: for ASC staff - use Page 11 to help make decisions regarding this matter).*

(i) Married Person

Spouse
Adult Children
Parents
Brothers
Sisters

(ii) Single Person

Parents
Brothers
Sisters

7. Rescue of the crew and passengers will be the responsibility of the agency best able to handle the job. If the task is delegated to an agency other than the Response Coordinator, that agency must be told that they are responsible for keeping Canadian Military Rescue Co-ordination Centre and the Response Coordinator informed of progress.

Ensure all available ground service equipment and personnel report to the Staging Officer at the Airport Fire Hall when / if required.

PHASE IV - WIND DOWN

There are a number of NOK matters that should be addressed after the emergency. For example, Arctic Sunwest should ensure the NOK have adequate financial and psychological counselling.

A very important area that should be addressed is dealing with the effect that the emergency (or disaster) will have on remaining personnel. Monitoring the effect of the trauma and providing assistance to people is essential.

It is imperative that Arctic Sunwest be aware of the potential for flight safety problems arising from an emergency situation and its potential effects on other personnel involved in ongoing company operations.

Review the Emergency Response Plan and make necessary changes.

Claims and Insurance Procedures

All Claims and insurance inquiries are to be forwarded to the RTL/Arctic Sunwest Charters Insurance Manager, who will refer to the affiliated Insurer.

Aeroplane Wreckage Removal

In the event of an accident or incident where repairs to the aircraft cannot be made on site or is beyond repair the Aeroplane Wreckage and Removal will be the sole responsibility of Arctic Sunwest Charters.

Accident/Incident Investigation

In the event of an accident or incident investigation, Arctic Sunwest Charters will provide any information requested by the Transportation Safety Board of Canada (TSB) and will cooperate in the efforts by the TSB of prevention of recurrences.

Emergency Response Training

Emergency Response Training will take place as required for all applicable personnel and coordinated by the Operations Manager and the Safety Officer.

Section 2 – Facility Emergencies & Non-Aircraft Emergencies

Emergency Response Personnel

In the event of an emergency, the Emergency Response Coordinator will immediately contact the emergency response team personnel and direct them to meet at the Command Center, or a designated site, to affect the Emergency Response plan. The team may consist of, but not be limited to the president, the general manager, the director maintenance, the safety manager, the chief pilot, and the general counsel or their appointed designees.

Emergency Response Procedures

Structural Fires

- Implement fire orders and evacuation of facility (refer to maps of escape routes posted)
- Provide responders with information regarding hazardous materials.
- Prepare news release in cooperation with RCMP and GNWT Public Relations.

Upon discovering a fire, close the door to the room where the fire is located and immediately sound the building fire alarm by pulling the red alarm pull box. If the fire is small, extinguish it with a fire extinguisher. If able, use all extinguishers available (as required). Be sure you are using the proper extinguisher for the type of fire. If you are not sure, read the instructions on the extinguisher.

Call Dispatch at x503/526. Give your name, department, and the location and nature of the fire. Tell dispatch the severity of the fire and if assistance is required (i.e. for first aid or fire suppression). Dispatch will notify all company personal via the intercom system of the fire and if assistance is needed.

If the fire is large, very smoky, or rapid-spreading, evacuate the building immediately, using the nearest fire exit door or stairwell. Inform others in the building who may not have responded to the alarm to evacuate immediately. The alarm may not sound continuously. If the alarm stops, continue the evacuation. Warn others who may enter the building after the alarm stops.

The Large Hangar has a state-of-art Fire Suppression Foam Deluge sprinkler system. If a fire occurs that is too large to extinguish with handheld fire extinguishers, manually activate the Deluge sprinkler system by pulling the blue pull box. Visual and aural alarms will activate indicating the system is about to activate. Vacate the hangar and close the door. The suppression system may activate automatically due to the presence of smoke or a rapid rise in temperature.

NOTE: Upon activating the fire alarm system, the door connecting the Passenger Lounge and Shipping and Receiving will lock shut, to protect against the spread of fire.

Close office doors upon leaving. Walk; do not run to the nearest stairway exit. If you are disabled, proceed to the nearest stairwell and remain there until help arrives. Notify evacuating personnel of your situation.

Assist disabled persons in exiting the building. If these persons are unable to use the stairs, assist them to a stairwell where they will remain. Notify Public Safety officers (police, fire fighters) on the scene where these persons are located.

Evacuate to a distance of at least 500 feet from the building and out of the way of emergency personnel. Go immediately to the Muster Station. Buses will be provided for shelter, if required. Do not return to the building until instructed to do so by the Public Safety officers or authorized personnel.

Fire Wardens should assist Public Safety in evacuating all employees and passengers, and in checking rooms, lounges, bathrooms, etc. The Fire Wardens will go directly to the Muster Station to meet with the Chief Fire Warden. All of the fire wardens will compile a list of employees from their work areas that were in the building. The Chief Fire Warden will take this compiled list and take a head count of all employees present. He or she will also assess injuries. The Chief Fire Warden will then notify either the chief police officer or firefighter at the scene of who is not present, who is injured and where the location of the fire is in the building. Identify the person who reported the fire.

Whenever a fire alarm sounds, unless directed otherwise by Public Safety officers or the fire company, employees and passengers must evacuate the building until the cause of the alarm has been determined. A Public Safety officer will respond with the appropriate authorities to evaluate the situation. The Chief Fire Warden will receive approval from Public Safety or the fire company to re-enter the building.

Crime

In the event that you observe a crime in progress, believe a crime may be in progress, or are the victim of a crime, contact dispatch or the RCMP immediately. Report suspicious persons or activities. All calls are kept confidential. RCMP officers are trained to handle all situations and persons in a diplomatic and sensitive manner. When in doubt, report it.

Do not attempt to apprehend or interfere with the criminal except in cases of self-protection.

If safe to do so, take time to record a mental description of the suspect. Note height, weight, sex, colour, approximate age, clothing, method and direction of travel, and the person's name, if known. All this takes only a few seconds, and is of significant help to investigating officers. If the suspect is entering a vehicle, note the license number, make and model, color, and outstanding characteristics

Call dispatch. Give your name, location, and department. Advise them of the situation, and remain where you are until contacted by an officer.

Protect the crime scene; items which may have been handled by the perpetrator may bear fingerprints and should not be touched. Do not clean or disturb the area. In case of a serious crime, the room or area where

EMERGENCY RESPONSE PLAN

Section 2 – Facility Emergencies & Non Aircraft Emergencies

Accident

3 January 2006

the crime occurred should be sealed off immediately. Do not allow anyone to enter the area until Public Safety or the police have secured and examined the area.

In the event of civil disturbance, continue with your normal routine, if possible. If the disturbance is outside, stay away from doors and windows.

Do not interfere with those persons creating the disturbance, or with law enforcement authorities on the scene.

The dispatcher will initiate the proper notification procedure for contacting appropriate personnel when a crime occurs on or near facility.

Accident

In the event that an accident occurs on or near the facility, notify the RCMP immediately; then notify dispatch of the same.

Give your name, location and telephone number, if possible, and describe the nature of the accident for the authorities. Remain at this location until an officer arrives.

Advise the RCMP if the nature of the accident requires an ambulance, fire truck or police.

If there are possible injuries associated with the accident, follow the procedures described in Section VI., Number 3. for responding to serious injury / illness.

The dispatcher will initiate the proper notification procedure for contacting appropriate ASC personnel when an accident occurs on or near the facility.

A RCMP officer will respond with the appropriate authorities to evaluate the situation.

Bomb Threat

NOTE: COORDINATE ALL ACTIVITIES WITH THE RCMP AND AIRPORT MANAGER

General Information.

Bomb threats usually occur by telephone.

The person receiving a bomb threat call should remain calm and attempt to obtain as much information as possible from the caller by using the checklist given on the following page.

Call the RCMP and give your name, location, and telephone number. Inform them of the situation including any information you may have as to the location of the bomb, time it is set to explode, and the time when you received the call.

Inform your supervisor and/or department head and dispatch.

If you should spot a suspicious object, package, etc., report it to the authorities, but under no circumstances should you touch it, tamper with it, or move it in any way.

If instructed to evacuate, go to the muster station. If inclement weather conditions exist, buses will be provided for shelter, or you may move as a group to another building a safe distance away. Do not reenter the building until instructed that it is safe to do so by Public Safety or the proper authorities.

The dispatcher will initiate the proper notification procedure for contacting appropriate personnel when a bomb threat occurs on or near the facility.

A RCMP officer will respond with the appropriate authorities to evaluate the situation.

Bomb Threat - Aircraft – Actions of the Dispatchers

Coordinate with police, pilot-in-command and airport operator

Provide a passenger and crew manifest to the Emergency Coordination Centre

Provide details of any hazardous cargo to the Emergency Coordination Centre.

Deploy a senior company representative to the Emergency Coordination Centre.

Deploy company staff and equipment for evacuation and search of the aircraft.

Deplane passengers and transport them to a pre-designated search area.

Transport all baggage and cargo to the designated search area.

Search all baggage and cargo, as necessary.

Notify the Emergency Coordination Centre when the aircraft is ready to resume normal operations.

BOMB THREAT – BUILDINGS OR FACILITIES

Deploy a senior company representative to the Emergency Coordination Centre.

Prepare arrangements to evacuate and search the affected building.

Instruct company employees, as they evacuate, to quickly:

- 1) Search their immediate areas
- 2) Unlock drawers and cabinets for search crews
- 3) Do not touch anything suspicious
- 4) Report any suspicious objects to their supervisors

Supervisors report suspicious objects or “All Clear” to RCMP or Incident Commander.

When evacuation is ordered, tenants are responsible to evacuate all areas under their control including non-public areas.

Bomb Threat – Actions by the Flight Crew

The captain will be notified that there has been a bomb threat against his flight either by dispatch or by a person in the cabin.

Action by Captain – Bomb Threats Received on the Ground

- a) Evacuate or Deplane the Aircraft as necessary.
- b) Submit the aircraft to the authorities for search.

Action by Captain – Bomb Threats Received While Airborne

EMERGENCY RESPONSE PLAN

Section 2 – Facility Emergencies & Non Aircraft Emergencies
Bomb Threat

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- a) Inform Air Traffic Control of threat. SQUAWK CODE 7500, go to SQUAWK CODE 7700 if armed intervention is required for the situation becomes desperate.

Note: Compliance with perpetrator is recommended to ensure safety of flight.

- b) Proceed to nearest airport suitable for safe landing.
- c) Advise Air Traffic Control and dispatch of intentions regarding airport intended landing.
- d) Park aircraft at the location as directed by Air Traffic Control.
- e) Deplane / Evacuate passengers as necessary.

Note: Whenever possible, deplanement through the main entrance door should be employed, as less injury will occur to passengers and crew members as it would during an evacuation.

- f) Submit aircraft to authorities for bomb search for a Search of Aircraft
- g) With the exception of providing technical expertise, crewmembers will normally not participate in a search or inspection of the aircraft after deplanement. This search or inspection is the responsibility of airport authorities or bomb disposal experts who have received specific training.
- h) Every aircraft type is different; therefore, the personnel trained in bomb disposal may not be familiar with the particular aircraft involved. For this reason, crewmembers should make themselves available to provide aircraft specific information.
- i) After the authorities have released the aircraft, crewmembers shall conduct a thorough pre-flight check of the aircraft prior to the next flight.

Note: No crewmember should re-enter the aircraft until clearance is received from the authorities conducting the bomb search.

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Section 2 – Facility Emergencies & Non Aircraft Emergencies

Bomb Threat

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Bomb Threat call Checklist exact wording of the threat questions to ask:

1. When is the bomb going to explode?
2. Where is it right now?
3. What does it look like?
4. What kind of bomb is it ?
5. What will cause it to explode?
6. Did you place the bomb?
7. Why?
8. What is your address?
9. What is your name?

Callers Voice

- | | | | |
|----------------------------------|--|---|---|
| <input type="checkbox"/> Calm | <input type="checkbox"/> Laughing | <input type="checkbox"/> Lisp | <input type="checkbox"/> Disguised |
| <input type="checkbox"/> Angry | <input type="checkbox"/> Crying | <input type="checkbox"/> Raspy | <input type="checkbox"/> Accent |
| <input type="checkbox"/> Excited | <input type="checkbox"/> Normal | <input type="checkbox"/> Deep | <input type="checkbox"/> Familiar |
| <input type="checkbox"/> Slow | <input type="checkbox"/> Distinct | <input type="checkbox"/> Ragged | <input type="checkbox"/> Rapid |
| <input type="checkbox"/> Slurred | <input type="checkbox"/> Clearing throat | <input type="checkbox"/> Soft | <input type="checkbox"/> Nasal |
| <input type="checkbox"/> Loud | <input type="checkbox"/> Stutter | <input type="checkbox"/> Deep Breathing | <input type="checkbox"/> Cracking voice |

Background Sounds

- | | | | |
|---------------------------------|--|--|--|
| <input type="checkbox"/> Clear | <input type="checkbox"/> Street noises | <input type="checkbox"/> House noises | <input type="checkbox"/> Office Machinery |
| <input type="checkbox"/> Static | <input type="checkbox"/> Animal Noises | <input type="checkbox"/> Long distance | <input type="checkbox"/> Factory Machinery |
| <input type="checkbox"/> Local | <input type="checkbox"/> PA System | <input type="checkbox"/> Crockery | <input type="checkbox"/> Booth |
| <input type="checkbox"/> Voices | <input type="checkbox"/> Music | <input type="checkbox"/> Motor | <input type="checkbox"/> Other |

If the voice sounds familiar, who does it sound like?

Language of Threat

- | | | | |
|--------------------------------------|---|-------------------------------------|--------------------------------|
| <input type="checkbox"/> Well Spoken | <input type="checkbox"/> Foul | <input type="checkbox"/> Incoherent | <input type="checkbox"/> Taped |
| <input type="checkbox"/> Irrational | <input type="checkbox"/> Message read by a threat maker | | |

Report call immediately to the RCMP and Dispatch. 669-1111

Fill out completely, immediately after the bomb threat.

Date:

Phone:

Name:

Position:

HIJACKING

Note: Coordinate all activities with the senior RCMP Officer in the ECC

Actions of Emergency Response Coordinator

- (a) Assign a senior representative to the Emergency Coordination Centre.
- (b) Provide available staff, vehicles and ground servicing equipment, as required.
- (c) Provide passenger and crew manifest to the Emergency Coordination Centre.
- (d) Provide details of any hazardous cargo to the Emergency Coordination Centre.
- (e) Arrange for immediate transportation of the passengers as required.
- (f) Transport baggage and air cargo to the search area if required.
- (g) Determine the ownership of all baggage on board.
- (h) Search the aircraft.
- (i) Notify the Emergency Coordination Centre when the aircraft is ready to resume normal operations.

Actions of the Flight Crew

- a) In the event of unlawful interference, the flight crew shall endeavor to notify the appropriate ATS unit of this fact, any significant circumstances associated, and any deviation from the current flight plan necessitated by the circumstances. This information will enable the ATS unit to give priority to the aircraft and to minimize conflict with other aircraft.
- b) If subjected to unlawful interference, the flight crew shall endeavor to set the transponder to Mode A, Code 7500, to give an indication of the situation unless circumstances warrant the use of Code 7700.
- c) Unless circumstances dictate otherwise, the Captain should attempt to continue the flight on the assigned track and at the assigned altitude until able to notify an ATS unit or the aircraft is within radar coverage.
- d) When it is necessary to deviate from an assigned track and/or heading without contact with ATS, the flight crew should, whenever possible, attempt to transmit warnings on the VHF emergency frequency and/or other appropriate frequency.
- e) The purpose of hijackers is varied. Extortion, political causes and mental instability are the most common reasons for hijacking an aircraft. In all cases, they are desperate people. It is

EMERGENCY RESPONSE PLAN

Section 2 – Facility Emergencies & Non Aircraft Emergencies

Hijacking

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important for the safety of all on board that the hijacker is not ANTAGONIZED. A calm presence should be maintained as much as possible.

The Captain:

Should attempt to continue the flight on the assigned track and at the assigned altitude until able to notify an ATS unit or the aircraft is within radar coverage.

Ensure that no action is taken that will endanger the safety of the crew, passengers or aircraft

Procedures

All decisions as to the conduct of a flight should it be taken over by hijackers, must be made by the pilot-in-command according to his judgment and assessment of the situation. Time is an asset. Remember, the qualified personnel on the ground need time to gather information and support.

Once a hijacker has gained entry to an aircraft and declared his intent, control of the situation should be based on an understanding of the objectives which are:

1. Land the aircraft safely.
2. De-plane passengers and crew.

Hazardous Materials / Gas Leak

If any type of potentially hazardous gas or liquid appears to be leaking or posing a danger to persons, in the judgment of the person or persons responsible for such materials, the following steps should be taken.

Confine the fumes or fire by shutting the room door.

If possible, extinguish all flames and ignition sources. Refer to the appropriate MSDS and WHIMIS information for guidance.

Sound the building fire alarm so evacuation can begin. Evacuate immediately following the established evacuation plan.

Call the RCMP giving your name, department, location, and nature of the emergency. If possible, try to identify the type of material for the authorities.

Evacuate to a safe area at least 500 feet away from the building (muster station). Do not return to the building until instructed that it is safe to do so by Public Safety or the appropriate authority.

A RCMP officer will respond with the appropriate authorities to evaluate the situation.

The dispatcher will initiate the proper notification procedure for contacting appropriate personnel in coordination with direction from the safety manager or his/her designee.

NOTE: The Safety Manager will assume responsibility for notifying the appropriate local, state, and federal authorities of all hazardous materials emergencies that require such notification.

NATURAL DISASTERS

- (a) Notify Air Traffic Services and airport management if you are the first aware of an impending disaster.
- (b) Deploy personnel to secure company facilities.
- (c) Prepare evacuation of company facilities, if necessary.
- (d) Coordinate all activities through the Airport Manager or Emergency Coordination Centre.
- (e) Make personnel and equipment available to the airport authority.
- (f) Notify the Airport Managers/ERS or any hazardous materials stored in affected company facilities.

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Section 2 – Facility Emergencies & Non Aircraft Emergencies Hazardous Materials – Gas Leaks – Natural Disasters

- (g) Assemble any passengers away from danger in a facility identified in cooperation with the Airport Manager and RCMP.
- (h) Make arrangements to feed and transport passengers as necessary.
- (i) Deploy staff to register passengers in the holding facility.
- (j) Make arrangements for passengers to receive any additional medical services, commissary item, clothing, telephone facilities, etc.
- (k) Prepare news release in cooperation with the Airport Manager and the RCMP
- (l) Make arrangements for the removal of any disabled aircraft, or wreckage belonging to the company, after approval is received from the TSB.
- (m) Check company facilities for structural damage.

SECURITY EMERGENCIES

NOTE: COORDINATE ALL ACTIVITIES WITH THE RCMP AND AIRPORT MANAGER

- (a) Determine the credibility of the threat. Coordinate with police, pilot-in-command and airport manager
- (b) Provide a passenger and crew manifest if applicable to the Emergency Coordination Centre
- (c) Provide details of any hazardous cargo if applicable to the Emergency Coordination Centre
- (d) Deploy a senior company representative to the Emergency Coordination Centre.
- (e) Deploy company staff and equipment for evacuation and search of the aircraft if applicable.
- (f) Deplane passengers and transport them to a pre-designated security holding area if applicable.
- (g) Transport all baggage and cargo to the designated search area if applicable.
- (h) Search all baggage and cargo, as necessary if applicable.
- (i) Notify the Emergency Coordination Centre when the aircraft is ready to resume normal operations.

Severe Weather Emergency

In the event of a severe weather emergency warning or actual emergency on or near the facility, the dispatcher will receive advance notification from the RCMP as to the extent and nature of the impending weather emergency. The instructions and preparations for Arctic Sunwest Charters and surrounding communities will be relayed from the RCMP.

The president or the general manager, or their designee, will initiate the appropriate announcements concerning the emergency warning and the instructions for preparation and/or evacuation when and if necessary. The procedures outlined in Sections III. and IV., "Declaring a State of Emergency" and "Notification Procedures," will apply, including the establishment of an Emergency Command Center and the dissemination of information to employees and passengers.

In the event of a major weather emergency or disaster, the Emergency Response Coordinator will coordinate a timely notification procedure for all employees and passengers and surrounding communities with the members of the Emergency Response Team through the local media communications networks or through the dispatcher and the telephone switchboard.

Any member of the Arctic Sunwest Charters community, who discovers a flood problem or potential flood problem, resulting from weather conditions or facilities damage, should follow these procedures:

- Stay out of the area. Do not enter until electrical power has been turned off. There is an extreme danger of electrical shock if the water has contacted any electrical devices.
- Call the appropriate authorities and facility maintenance engineers. Describe the nature of the problem.
- Post people at all entrances to the flooded area to prevent entry by unauthorized personnel.
- the appropriate authorities and facility maintenance engineers will be responsible for pumping water out of the area.
- Identify a temporary shelter to house water-soaked materials.
- Do not return to the building or work area until instructed to do so by the appropriate authorities and facility maintenance engineers.
- The dispatcher will initiate the proper notification procedure for contacting appropriate personnel when a flood occurs on or near the facility.

In the event of extremely adverse weather conditions (severe weather emergency, snow storm, etc.), the decision to close the facility, evacuate or to disseminate appropriate instructions to the facility community will be the responsibility of the general manager or his/her designee, who will communicate this information to the Emergency Response Coordinator or his/her designees, the dispatcher and the reception. The

general manager will further authorize the communication of instructions to the local radio and television media for public announcement.

During normal business hours, the above authorities will contact all Arctic Sunwest Charters employees to advise them of the appropriate actions to be taken. The dispatcher and receptionist will serve as the contact source for Arctic Sunwest Charters employees and passengers. After business hours and on weekends, the sources of information will be the dispatcher and the local radio and television stations.

In all flood and emergency weather situations, EMERGENCY COMMAND CENTER will serve as the central coordinating center for all information and instructions within and outside the facility.

Snow/severe weather conditions - closing the facility. The following is Arctic Sunwest Charters policy on snow or other severe weather or weather-related conditions:

DELAYED OPENING OR EARLY CLOSING

When a severe storm occurs at night or in the early morning hours, and it becomes necessary to delay flights and the opening of offices or services, an announcement may be made over the local radio/TV stations.

Occasionally, when conditions warrant, Arctic Sunwest Charters may also have an early closing. Early closings are communicated through a public address and telephone tree and through electronic mail.

Essential Services

Several departments or services have been designated to provide essential services during snow storms or emergencies. These departments or services are expected to provide services in the case of delays, early closings, or suspension of operations.

These departments are Dispatch (flight followers), Customer Service, and Ramp staff. Within each of these departments, several positions have been designated as essential. Staff members in such positions are expected to stay on the job during snow or other emergencies, and Arctic Sunwest Charters will provide food and sleeping quarters if necessary. Staff in essential positions are also expected to get to the facility to assume job responsibilities unless doing so places them or their families in an unreasonably dangerous situation.

Other Related Information

When the facility is open, all staff members whose positions have not been designated as essential are expected to maintain normal schedules or resume a normal schedule by reporting to work as soon as it is

possible to do so. Arctic Sunwest Charters will not compensate employees for hours not worked. However, individuals in non-essential positions are not required to report to work, or remain at work, if they believe their safety is threatened by weather conditions. Hours missed on such occasions may be charged against "comp" time, or made up during the pay period. If a staff member chooses not to work a half or whole day, a vacation day can be used in half-day or full-day increments. These options are available at the discretion of the supervisor and may vary by department.

When an emergency closing is declared, those individuals (in essential and non-essential positions) who report to work will be entitled to take equivalent time off at some later date with approval of the supervisor. Such equivalent time off must be taken at the straight time rate, however, and overtime will not be credited for normal hours worked during the emergency. Vacation time or sick time will not be adjusted because a snow day was declared if an individual is on vacation or off due to illness.

Power Failure

In the event of a minor or major power failure occurring during regular working hours (8:00 a.m. through 5:00 p.m., Monday through Friday), immediately notify facility maintenance engineers and dispatch. After business hours, notify dispatch. They will instruct you as to what you are to do during the power failure.

If there is potential danger to building occupants, or if the power failure occurs after hours, weekends or holidays, notify the appropriate ASC authorities and facility maintenance engineers.

If a blackout occurs without warning:

- Turn off all light switches. The voltage may fluctuate and damage any lights that are on.
- Set all equipment and appliance switches to the OFF position. This is to protect against kicking out the circuit breakers, blowing fuses, or damaging equipment when the full surge or current hits as the power comes back on.
- Take measures to protect your equipment. Remember that air operated controls and water pressure may be affected.
- Extinguish all flames and sources of ignition in buildings.
- Increase ventilation by opening windows. If the failure lasts more than a few minutes, it will be necessary to evacuate persons from darkened areas (restroom, stairwells, or other areas with no windows or natural lighting).

To prevent the facility maintenance engineer's desk and dispatch from being overwhelmed with calls, only administrators should report power outages. If the failure is to be lengthy, administrators will decide on continued operations in their building.

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Section 2 – Facility Emergencies & Non Aircraft Emergencies
Power Failure

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If it becomes necessary to evacuate the premises during a blackout, be sure to protect all valuables and make sure that all equipment is safe when the power comes back on.

During periods of very heavy power usage, the area utility company may have to reduce voltage. In the event of a brownout, the following steps should be taken.

- Turn off all lights and equipment not necessary for safe operation.
- Identify equipment which may be sensitive to low voltage, and take positive steps to prevent its damage.
- Full cooperation during a brownout is extremely important. Such cooperation may possibly prevent the loss of all electrical power.

If an emergency exists, activate the building alarm. CAUTION: You must also report the emergency by phone to dispatch and the RCMP.

All building evacuations or localized evacuations will occur when an alarm sounds continuously and/or when an emergency occurs.

Lock office doors upon leaving. Walk; do not run to the nearest stairway exit. If you are disabled, yell for help to go down stairs.

Assist disabled persons in exiting the building. If these persons are unable to use the stairs, assist them to a stairwell where they will remain. Notify Public Safety officers on the scene where these persons are. They will assist them in evacuating the building.

Evacuate to a distance of at least 500 feet from the building and out of the way of emergency personnel. Go to the Muster Station. Do not return to the building until instructed to do so by Public Safety officers.

A RCMP officer will respond with the appropriate authorities to evaluate the situation and to supervise an evacuation or appropriate action.

The dispatcher will initiate the proper notification procedure for contacting appropriate personnel when a power failure occurs on or near the facility.

At present, building lighting may not provide sufficient illumination in corridors and stairs for safe exiting. It is therefore advisable to have a flashlight and portable radios available for emergencies.

Facility Evacuation

In the event that the evacuation of a building or area of the facility is required, the dispatcher will initiate the proper notification procedure for contacting appropriate personnel to advise them of the nature of the evacuation.

Safety Wardens will initiate and supervise the evacuation with the cooperation of individual area managers, supervisors or employees for the particular building or area of the facility.

Assist disabled persons in exiting the building. If these persons are unable to use the stairs, assist them to a stairwell where they will remain. Notify Public Safety officers on the scene where these persons are. They will assist in the evacuation of disabled persons. Quickly evacuate the building calmly and quietly. Walk; do not run to the nearest exit or stairwell

Evacuate to a distance of at least 500 feet from the building and out of the way of emergency personnel. Do not return to the building until instructed to do so by the Public Safety officers.

Use of ASC Facilities by External Agencies

In the event of an actual disaster emergency declared by the Government of the Northwest Territories, and upon request by the GNWT, Arctic Sunwest Charters will determine whether it will be possible or feasible to make the Hangars and/or office complex available as a mass care center. Such a determination will be dependent on the nature and scope of the disaster emergency, whether Arctic Sunwest Charters facilities are available elsewhere sufficient to meet emergency service needs. If an affirmative determination is made by Arctic Sunwest Charters, the company will use the following guidelines for mass care center use.

During a declared local or regional disaster emergency, Arctic Sunwest Charters wishes to continue to meet its voluntary community responsibilities to the extent possible by helping to support the activities of the Government of the Northwest Territories and the Canadian Red Cross (CRC). However, such assistance by Arctic Sunwest Charters must be controlled by its primary obligation to maintain the welfare of its employees and passengers and to limit Arctic Sunwest Charters exposure to potential damage or liability claims. With this in mind, Arctic Sunwest Charters is willing to assist in providing disaster emergency services to the community, subject to the conditions outlined below.

Emergency facility use will not commence until the primary responsibilities of employee and passenger welfare and safety have been resolved.

The Hangars and/or office complex site will be limited to 500 evacuees. The duration of use of the Hangars and/or office complex site will be determined prior to committing the facilities.

Arctic Sunwest Charters will maintain control of the facilities in coordination with the appropriate team manager from Government of the Northwest Territories and Canadian Red Cross.

Arctic Sunwest Charters will provide auxiliary support services (staff, communications, equipment, food, etc.) to the extent possible and as needed.

Facilities are to be used for sleeping and/or feeding purposes only.

Facilities will not be used in conjunction with disaster emergency drills.

If it is determined that Arctic Sunwest Charters cannot make the Hangars and/or office complex available in support of a declared disaster emergency, Arctic Sunwest Charters will consider providing other emergency services to the community, including staff and other personnel, communications and other emergency equipment, and other services that may be required and may be available at Arctic Sunwest Charters. Arctic Sunwest Charters stands ready to provide assistance to Government of the Northwest Territories and Canadian Red Cross in any way it can during a disaster emergency, subject to the condition that it must first provide for its employees and passengers and for the protection of its financial assets.

Post-Trauma Syndrome

The Safety Manager or the General Manager will arrange for appropriate follow-up evaluations and recommend the appropriate counselling sessions for all Arctic Sunwest Charters employees and passengers involved in a emergency to include utilization of the Employee Assistance Program where applicable.

Damage Survey / Evaluation / Training

The Safety Manager will convene a meeting of the Emergency Response Team members who participated in the Response plan within 24 hours of the resolution of the emergency. Affected ASC personnel will be contacted to begin the damage evaluation and recovery process. This may require coordination with internal departments and outside agencies. When and where possible, the team will use photographs and video cameras to record and assess damage.

The Safety Manager will convene a meeting with the Emergency Response Team members and the company's general counsel to assess damages and business interruptions to the company and to evaluate the company's insurance liability and coverage.

The Safety Manager will convene a training session of Emergency Response Personnel once a year to review emergency response procedures and to institute appropriate periodic training of key personnel and all new Arctic Sunwest Charters personnel.

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Section 2 – Facility Emergencies & Non Aircraft Emergencies
Safety Wardens

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Arctic Sunwest Charters Safety Wardens

Work Area	Safety Warden	Extension	Phone
Dispatch	Jay Dilley Chief Emergency Warden	544	765-0914
Upstairs Offices	Mary Delany Deputy Chief Warden	501	873-4464
North Hangar Main Floor	Nathan Ireland Director of Maintenance	522	873-4464
North Hangar Stores	Richard Luxon Stores Manager	512	873-4464
South Hangar	Al Hutchings Shipping and Receiving	514	873-4464
Ramp	Roger Briggs	Radio	873-4464

Safety wardens will notify all occupants in their work area of the emergency and initiate the evacuation. Each safety warden will then report to the Chief Emergency Warden the following;

1. the number of people working in their area
2. the number of people accounted for;
3. the number of disabled persons waiting for assistance to evacuate, and their location.

The Chief Emergency Warden will then report this information to the appropriate emergency personnel.

EMERGENCY RESPONSE PLAN

Section 2 – Facility Emergencies & Non Aircraft Emergencies
Appendix A

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Appendix A: FLIGHT INFORMATION FORM

Aircraft:			
Type:		Registration:	Call Sign:
Fuel:		Capacity (Max):	Actual/Estimates:
		Endurance (Max):	Estimated Max:
Nav/Com:			
Radio Equipment:		Survival Equipment:	
ELT Make and Model:			
<u>Pilot</u>		<u>Pilot</u>	
Last Name:		Last Name:	
First Name:	Initial:	First Name:	Initial:
License Number:	D.O.B:	License Number:	D.O.B:
<u>Hours</u>		<u>Hours</u>	
Total:		Total:	
Last 90 Days:		Last 90 Days:	
On Type:		On Type:	
Passengers:			
Department:		Contact:	
Names On Manifest:			
Flight:			
Itinerary:			
Purpose:			
Last Known Contact:			

APPENDIX B

Appendix B: IMPORTANT TELEPHONE NUMBERS

Upon implementation of the accident response plan, Company Accident Headquarters or a Company representative near the scene of the accident should locate the following resources and, if appropriate, notify same of the situation. (Notification is not necessarily required in the listed order).

	Phone #	Contacted By:	Time/Date
Rescue Coordination Centres			
Victoria Centre	800-567-5111 or 250-363-2992		
Trenton Centre	800-267-7270 or 613-965-3870		
Halifax Centre	800-565-1582 or 902-427-8200		
Nearest Fire Station	873-2222		
Hospitals	920-4111		
Ambulance	873-2222		
R.C.M.P.	669-1111		
Local Police	669-5100 non Emergency 669-5175 Fax		
Airport Authority (Duty Officer)	873-4680 or 669-1230(24/7)		
Yellowknife Air Traffic Control Facility (Emergency only)	873-3121		
Medical Examiner's Office (Coroner)	873-7460		
Canadian Transport Emergency Centre (if hazardous goods on board)	613-996-6666		
Department of Transportation Public Affairs	873-7712 (wk)/ 873-2132 (Res)/ 444-1195(Cell)/		

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Response Coordinator: Thom Pilgrim	873-6726 / 444-0124 (cell)		
Alternate Response Coordinators: Larry Burkowski Terry Head Marvin Robinson Jim Robillard Mike Dunn	669-0448 / 444-0125 (cell) 765-0868 / 444-0126 (cell) 873-8750 / 444-0150 (cell) 669-0618 / 920-5563 (Pgr) 873-6575 / 444-0139 (cell)		

NOTE: Initial notification to RCMP (for incident / accident within Canada) can be useful for quick notification to other authorities since the RCMP often have immediate access to these local contacts.

Appendix D: EXCERPT FROM AIP CANADA GEN 3-1**3.1 Aviation Safety Investigation**

The objective of an aviation safety investigation into an aircraft accident or aircraft incident is the prevention of recurrences. Hence, it is not the purpose of this activity to determine or apportion blame or liability. The Transportation Safety Board of Canada (TSB), established under the Canadian Transportation Accident Investigation and Safety Board Act, is responsible for investigating all transportation occurrences in Canada, including all aviation occurrences involving civil aircraft, both of Canadian and non-Canadian registry. A team of investigators is on 24-hour standby.

3.2 Definitions

"aviation occurrence" means

- (a) any accident or incident associated with the operation of aircraft; and
- (b) any situation or condition that the Board has reasonable grounds to believe could, if left unattended, induce an accident or incident described in paragraph. (a).

"dangerous goods" means dangerous goods as defined in the Transportation of Dangerous goods Act.

"reportable aviation accident" means an accident resulting directly from the operation of an aircraft, where

- (a) a person sustains a serious injury or is killed as a result of (i) being on board the aircraft, (ii) coming into contact with any part of the aircraft or its contents, or (iii) being directly exposed to the jet blast or rotor downwash of the aircraft;
- (b) the aircraft sustains damage or failure that adversely affects the structural strength, performance or flight characteristics of the aircraft and that requires major repair or replacement of any affected component part; or
- (c) the aircraft is missing or inaccessible.

"reportable aviation incident" means an incident resulting directly from the operation of an airplane having a maximum certificated takeoff weight greater than 5 700 kg, or from the operation of a rotorcraft having a maximum certificated takeoff weight greater than 2 250 kg, where

- (a) an engine fails or is shut down as a precautionary measure;
- (b) a transmission gearbox malfunction occurs;
- (c) smoke or fire occurs;
- (d) difficulties in controlling the aircraft are encountered owing to any aircraft system malfunction, weather phenomena, wake turbulence, uncontrolled vibrations or operations outside the flight envelope;
- (e) the aircraft fails to remain within the intended landing or takeoff area, lands with all or part of the landing gear retracted or drags a wing tip, an engine pod or any other part of the aircraft;
- (f) any crew member whose duties are directly related to the safe operation of the aircraft is unable to perform the crew member's duties as a result of a physical incapacitation that poses a threat to the safety of any person, property or the environment;
- (g) depressurization occurs that necessitates an emergency descent;

APPENDIX D

- (h) a fuel shortage occurs that necessitates a diversion or requires approach and landing priority at the destination of the aircraft;
- (i) the aircraft is refueled with the incorrect type of fuel or contaminated fuel;
- (j) a collision, a risk of collision or a loss of separation occurs;
- (k) a crew member declares an emergency or indicates any degree of emergency that requires priority handling by an air traffic control unit or the standing by of emergency response services;
- (l) a slung load is released unintentionally or as a precautionary or emergency measure from the aircraft; or
- (m) any dangerous goods are released in or from the aircraft.

3.3 Reporting an Aviation Occurrence

- 3.3.1 Where an accident occurs and it has not yet been reported to the Transportation Safety Board of Canada, the pilot-in-command, the operator, owner and any crew member of the aircraft involved shall, as soon as possible thereafter and by the quickest means of communication available, report to the Board the following information relative to this accident:
- (a) the type, model, nationality and registration marks of the aircraft;
 - (b) the names of the owner, operator and hirer, if any, of the aircraft;
 - (c) the name of the pilot-in-command;
 - (d) the date and time of the accident;
 - (e) the last point of departure and the point of intended landing of the aircraft;
 - (f) the position of the aircraft with reference to some easily defined geographical point, and the latitude and longitude;
 - (g) the number of crew members aboard, and how many were killed or sustained serious injury;
 - (h) the number of passengers aboard, and how many were killed or sustained serious injury;
 - (i) a description of the accident and the extent of damage to the aircraft;
 - (j) a detailed description of any dangerous goods aboard the aircraft;
 - (k) the name and address of the person making the report.
- 3.3.2 Where an aircraft is missing on a flight or is completely inaccessible and this accident has not yet been reported to the Transportation Safety Board of Canada, the owner and the operator of the aircraft shall, by the quickest means of communication available, report to the Board the following information relative to this aviation occurrence:
- (a) the type, model, nationality and registration marks of the aircraft;
 - (b) the names of the owner, operator and hirer, if any, of the aircraft;
 - (c) the name of the pilot-in-command;
 - (d) the last point of departure and the point of intended landing of the aircraft;
 - (e) the date and time of the last known takeoff of the aircraft;
 - (f) the last known position of the aircraft;
 - (g) the names and addresses of crew members and passengers aboard the aircraft;
 - (h) the action being taken to locate the aircraft;
 - (i) a detailed description of any dangerous goods aboard the aircraft; and
 - (j) the name and address of the person making the report.

APPENDIX D

- 3.3.3 Where a reportable incident occurs and this incident has not yet been reported to the Transportation Safety Board of Canada, the pilot-in-command, operator, owner and, in the case of a risk of collision, any air traffic controller having knowledge of the incident shall, as soon as possible thereafter and by the quickest means of communication available, report to the Board the following information relative to this reportable incident:
- (a) the type, model, nationality and registration marks of the aircraft;
 - (b) the names of the owner, operator and hirer, if any, of the aircraft;
 - (c) the name of the pilot-in-command;
 - (d) the date and time of the incident;
 - (e) the last point of departure and the point of intended landing of the aircraft;
 - (f) the location of the incident with reference to some easily defined geographical point, and the latitude and longitude;
 - (g) the number of crew members aboard, and how many were injured;
 - (h) the number of passengers aboard, and how many were injured;
 - (i) a description of the incident and the extent of damage, if any, to the aircraft;
 - (j) a detailed description of any dangerous goods aboard the aircraft; and
 - (k) the name and address of the person making the report.
- 3.3.4 Any other incident indicative of a deficiency or discrepancy in the Canadian air transportation system may be reported in writing to the TSB. Sufficient details concerning the incident should be provided to enable the identification of action required to remedy the deficiency or discrepancy.
- 3.3.5 Aircraft accidents, missing aircraft and reportable incidents are to be reported to the Regional TSB office at the telephone numbers in paragraph 3.7. Alternatively, occurrences may be reported through a NAV Canada ATS unit who will forward the report to the appropriate TSB office.
- For Canadian registered aircraft operating outside of Canada, in addition to the reporting required by the site of occurrence, a report shall be made to the TSB Regional office nearest the company's headquarters or, for private aircraft, nearest the homebase of the aircraft.
- The TSB-AIR regions have the same boundaries as Transport Canada Aviation.
- 3.4 **Protection of Occurrence Sites, Aircraft, Components and Documentation**
- 3.4.1 (1) No person shall displace, move or interfere with an aircraft involved in an accident, or the components or contents of any such aircraft, or interfere with or otherwise disrupt an occurrence site without first having obtained permission to do so from an investigator except to extricate any person, to prevent destruction by fire or other cause, or to avoid danger to any person or property.
- (2) Where an aircraft is to be displaced or moved pursuant to subsection (1), the person directing or otherwise supervising or arranging the action shall, as far as possible in the circumstances and prior to the moving of the aircraft or any component or contents thereof or disturbance of the site, record by the best means available the condition of the aircraft, aircraft contents and the occurrence site.
- 3.4.2 Where an accident occurs, the pilot-in-command, operator, owner and any crew member of the aircraft involved shall, as far as possible, preserve and protect
- (a) the aircraft or any component or contents thereof and the occurrence site

APPENDIX D

- until such time as an investigator otherwise authorizes;
- (b) the flight data and cockpit voice recorders and the information recorded thereon; and
 - (c) all other records, documents and all materials of any kind pertaining to
 - (i) the flight during which the accident occurred,
 - (ii) the crew members involved, and
 - (iii) the aircraft, its contents and components, and shall surrender on demand the recorders, information, records, documents and materials referred to in paragraphs (b) and (c) to an investigator.

- 3.4.3 Where a reportable incident occurs, the pilot-in-command, operator, owner and any crew member of the aircraft involved shall, as far as possible, preserve and protect
- (a) the flight data recorders and the information recorded thereon; and
 - (b) all other records, documents and materials of any kind pertaining to
 - (i) the flight during which the incident occurred,
 - (ii) the crew members involved, and
 - (iii) the aircraft, its contents and components, and shall surrender on demand the recorders, information, records, documents and materials referred to in paragraphs (a) and (b) to an investigator.

3.5 **Aviation Safety REFLEXIONS**

Aviation Safety REFLEXIONS is a safety digest providing feedback to the aviation transportation community on safety lessons learned, based on the circumstances of occurrences and the results of TSB investigations. Besides articles compiled from the official text of TSB reports, this publication provides lists of recently reported aviation occurrences and recently released investigation reports.

3.6 **SECURITAS Program**

The SECURITAS Program provides a means for individuals to report incidents and potentially unsafe acts or conditions relating to the Canadian transportation system that would not normally be reported through other channels. It should be noted that this multi-modal confidential safety reporting system replaces the Confidential Aviation Safety Reporting Program (CARSP).

Each report is analyzed by SECURITAS analysts. Pertinent information, minus the reporter's identity, is entered into SECURITAS data base. When a reported concern is validated as a safety deficiency, the TSB normally forwards the information, often with suggested corrective action, to the appropriate regulatory authority, or in some cases, the transportation company, organization, or agency. No information will be released that could reasonably be expected to reveal the reporter's identity without the reporter's written consent.

SECURITAS is primarily concerned with unsafe acts and conditions relating to commercial and public transportation systems. To submit a report: write, FAX, E-mail, or telephone SECURITAS at:

SECURITAS
P.O. Box 1996, Station "B"
Hull, Quebec J8X 3Z2
Internet: securitas@tsb.gc.ca

APPENDIX D

Telephone: 1-800-567-6865
Fax: 819-994-8065

From time to time, the safety lessons learned from confidential reports to SECURITAS will be summarized in a de-identified format in REFLEXIONS, the TSB's safety digest. Contact the TSB Communications division at the Headquarters' address listed in GEN 3.7.

3.7

Offices of the TSB

HEADQUARTERS: Place du Centre, 4th Floor
200 Promenade du Portage
Hull, Quebec K1A 1K8

Telephone: (819) 994-4252
(819) 994-3741 (24 Hr)
Fax: (819) 953-9586
E-mail: airops@tsb.gc.ca

REGIONAL OFFICES (AIR)**TSB - Pacific**

Regional Manager, TSB-AIR
4-3071 Number Five Rd.
Richmond, BC V6X 2T4

Telephone: (604) 666-5826 (24Hr)
Fax: (604) 666-7230
E-mail: air.pacific@tsb.gc.ca

TSB - Western

Regional Manager, TSB-AIR
17803 - 106 A Avenue
Edmonton, AB T5S 1V8
Telephone: (780) 495-3865 or
(780) 495-3999 (24Hr)
Fax: (780) 495-2079
E-mail: air.western@tsb.gc.ca

TSB - Central

Regional Manager, TSB-AIR
335-550 Century St.
Winnipeg, MB R3H 0Y1
Telephone: (204) 983-5548 (24 Hr)
Fax: (204) 983-8026
E-mail: air.central@tsb.gc.ca

TSB -Ontario

Regional Manager, TSB-AIR
23 East Wilmot Street
Richmond Hill, ON L4B 1A3

Telephone: (905) 771-7676 (24hr)
Fax: (905) 771-7709
E-mail: air.ontario@tsb.gc.ca

TSB - Quebec

Regional Manager, TSB-AIR
185 Dorval Ave, Suite 403
Dorval, QC H9S 5J9
Telephone: (514) 633-3246(24hr)
Fax: (514) 633-2944
E-mail: air.quebec@tsb.gc.ca

TSB - Atlantic

Regional Manager, TSB-AIR
150 Thorne Avenue
Dartmouth, NS B3B 1Z2
Telephone : (902) 426-2348
(506) 867-7173 (24 Hr)
Fax: (902) 426-5143
E-mail: air.atlantic@tsb.gc.ca

APPENDIX E

Appendix E: COMPANY EMPLOYEE INFORMATION

(From RED Pilot File)

Full Name:		Date of Birth:	
Address:		S.I.N.:	
		Phone No.:	
Licence No(s):			
Family Doctor:		Phone No.:	
Clinic Address:			
Occupational Health Physician:		Phone No.:	
Clinic Address:			
Dentist:		Phone No.:	
Clinic Address:			
Allergies:			
Identifying Marks:			

Next of Kin: (should include all next of kin you wish contacted in the event of a missing aircraft or accident. Please include any special instructions regarding how to handle contacting your next of kin)

Name:	Address:	Phone No.:
Spouse:		
Children:		
Father:		
Mother:		
Other:		

APPENDIX F

Appendix F: COMPANY AIRCRAFT INFORMATION FILE

(Found in PURPLE File Folder)

For each company aircraft the following information is kept on a quick reference file located by reception (on the wall):

1. – Type of ELT and it's location in the aircraft
2. – Emergency equipment on board (Survival Gear, Signal Gear, First Aid or Medical Gear)
3. – Description of paint scheme and if possible a photograph showing schemes
4. – Photocopy of Certificate of Airworthiness or Certificate of Registration
5. – Location of detailed maintenance record

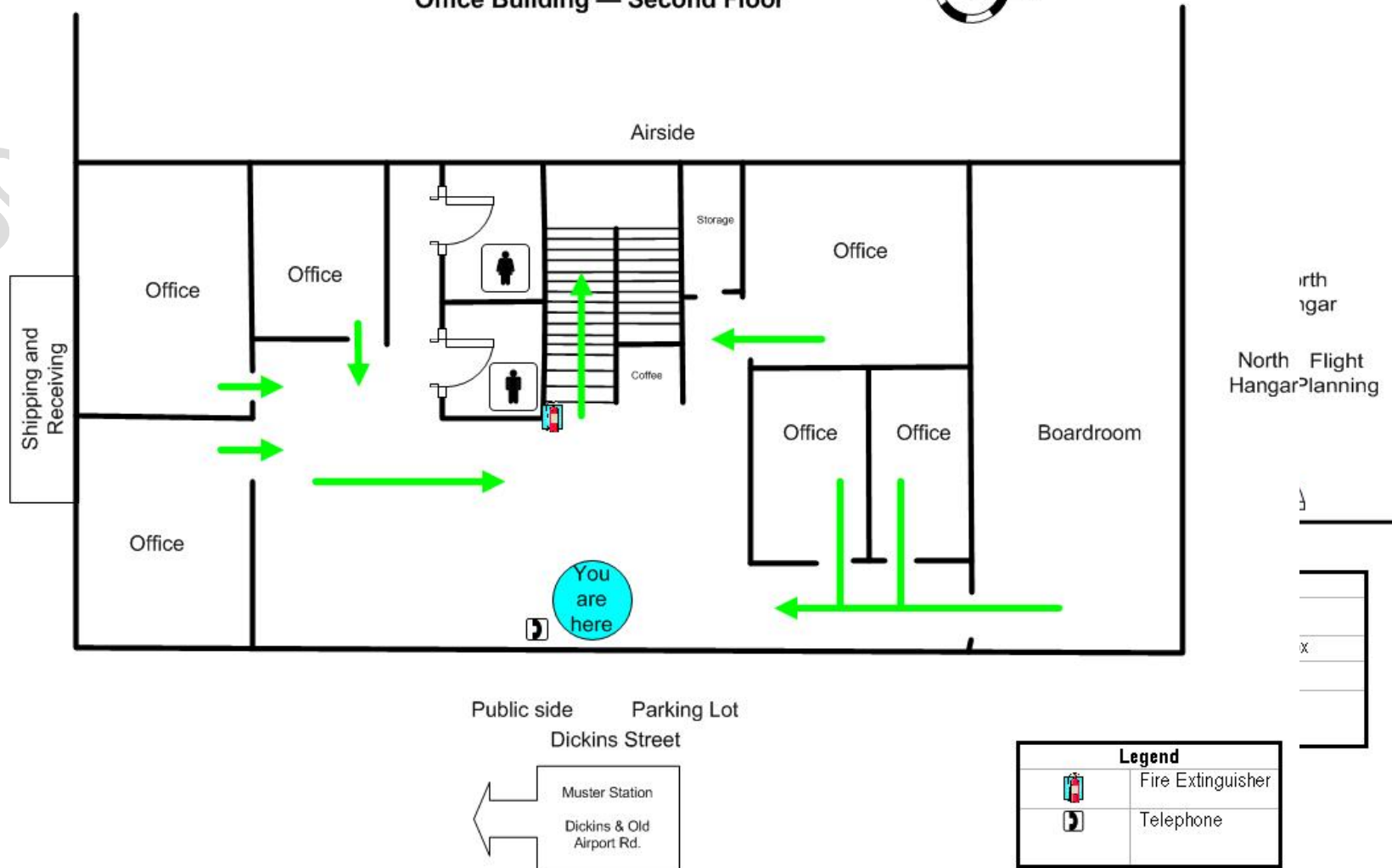
APPENDIX G

Emergency Evacuation Plan

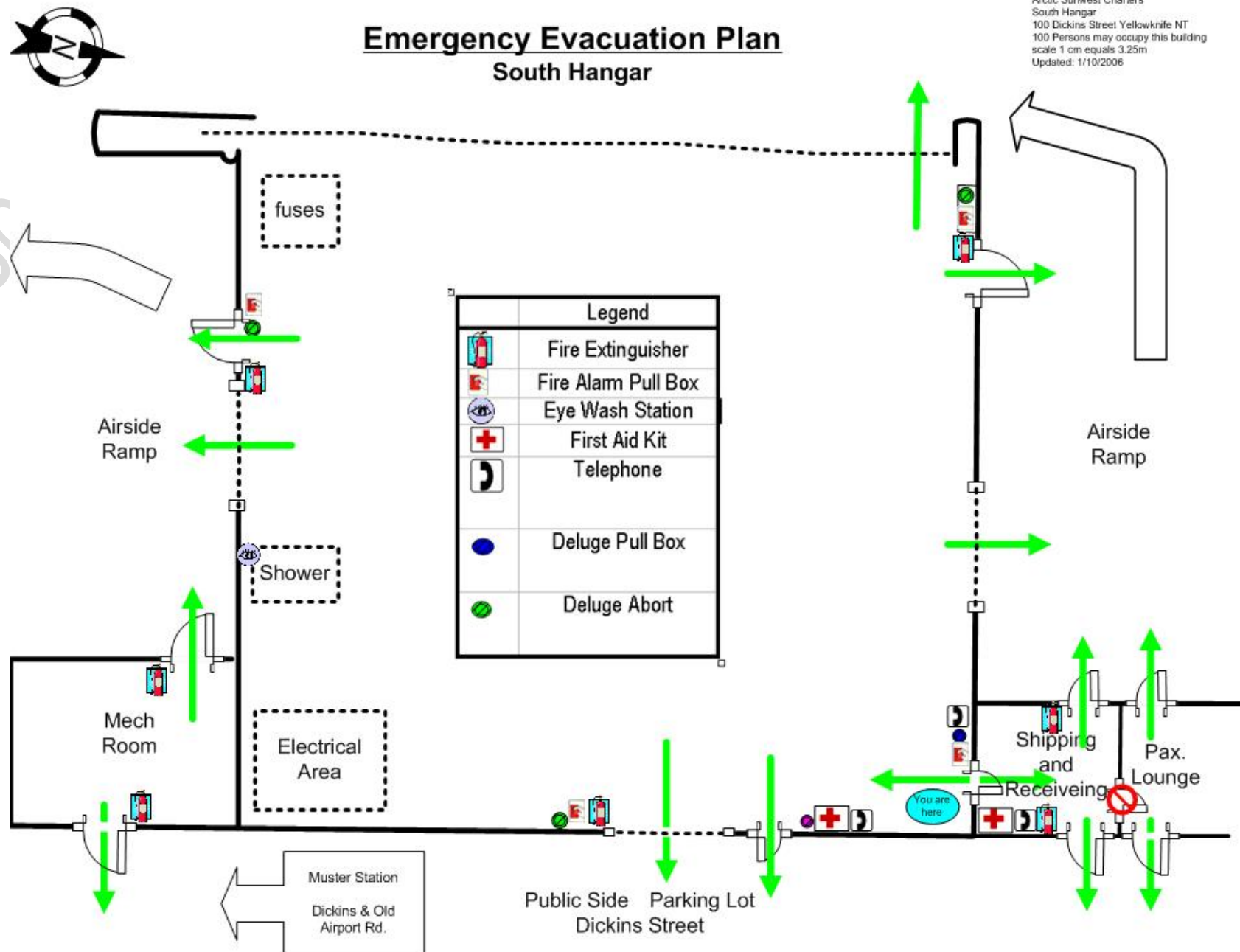
Office Building — Second Floor



Arctic Sunwest Charters
Office Building — Second Floor
100 Dickins Street Yellowknife NT
200 Persons may occupy this building
scale 1cm equals 3.25m
Updated: 1/10/2006



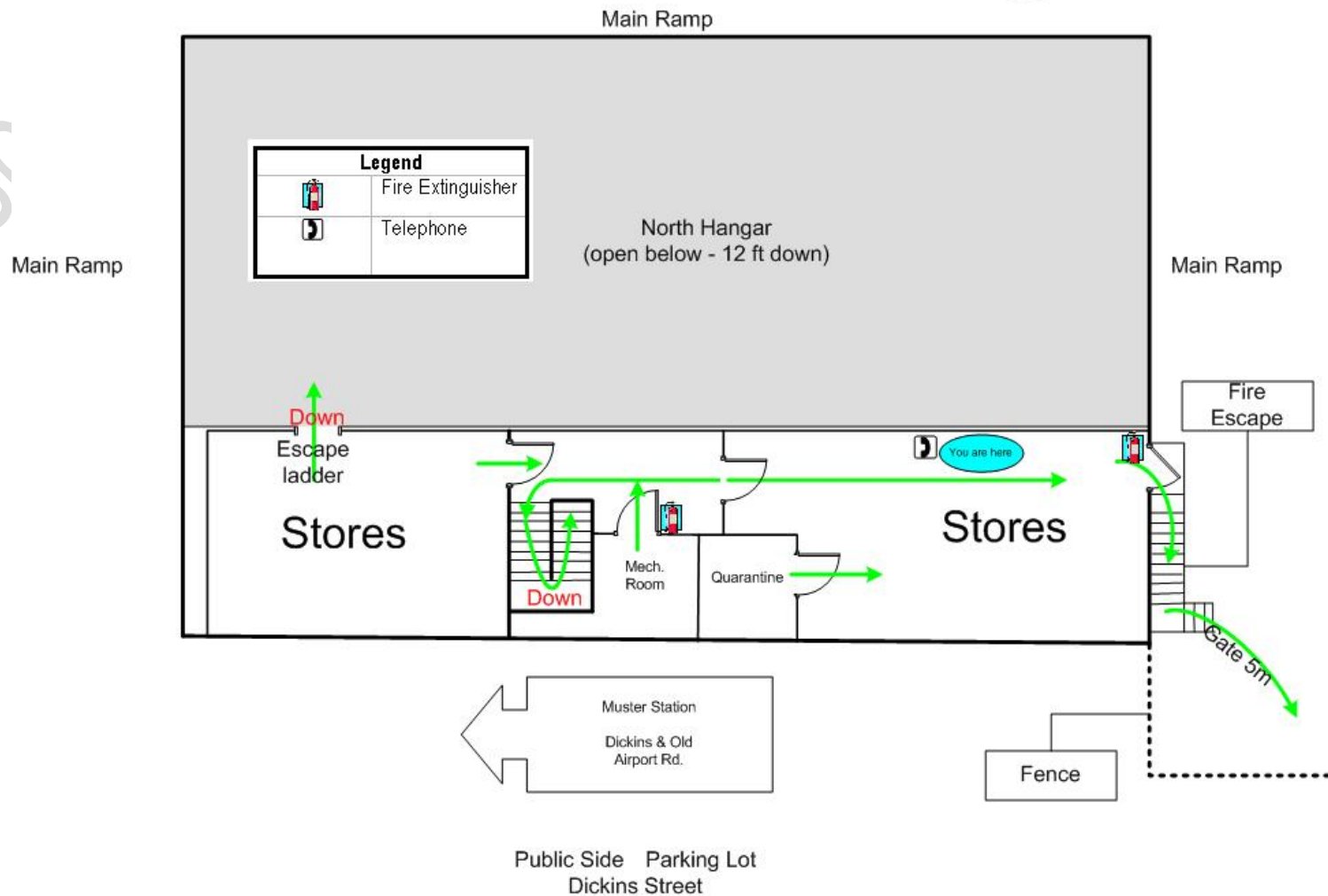
APPENDIX G



APPENDIX G

Emergency Evacuation Plan
North Hangar — Second Floor

Arctic Sunwest Charters
North Hangar — Second Floor
100 Dickins Street Yellowknife NT
100 Persons may occupy this building
scale 1cm equals 3.25m
Updated: 1/10/2006



Emergency Evacuation Plan

North Hangar — Main Floor

Arctic Sunwest Charters
North Hangar — Main Floor
100 Dickens Street Yellowknife NT
100 Persons may occupy this building
scale 1cm equals 3.25m
Updated: 1/10/2006



APPENDIX F

MSDS

NOTE: The MSDS in this section are for reference only;
Current MSDS are kept in binders at clearly marked MSDS stations.

AMERADA HESS -- REGULAR UNLEADED GASOLINE

AMERADA HESS -- REGULAR UNLEADED GASOLINE

MATERIAL SAFETY DATA SHEET

NSN: 913000N023616

Manufacturer's CAGE: 4N717

Part No. Indicator: A

Part Number/Trade Name: REGULAR UNLEADED GASOLINE

General Information

Company's Name: AMERADA HESS CORP

Company's Street: 1 HESS PLAZA

Company's City: WOODBRIDGE

Company's State: NJ

Company's Country: US

Company's Zip Code: 07095

Company's Emerg Ph #: 800-424-9300(CHEMTREC)

Company's Info Ph #: 201-750-6000

Record No. For Safety Entry: 001

Tot Safety Entries This Stk#: 001

Status: SMJ

Date MSDS Prepared: 13JAN89

Safety Data Review Date: 08JAN92

MSDS Serial Number: BLZXH

Hazard Characteristic Code: F2

Ingredients/Identity Information

Proprietary: NO

Ingredient: GASOLINE

Ingredient Sequence Number: 01

Percent: 100

NIOSH (RTECS) Number: LX3300000

CAS Number: 8006-61-9

OSHA PEL: 300 PPM;500 PPM STEL

ACGIH TLV: 300 PPM;500 PPM STEL

Proprietary: NO

Ingredient: TERT-AMYL METHYL ETHER (BLEND OF ING 2&3 FOR A TOTAL OF 15% OF PRODUCT)

Ingredient Sequence Number: 02

Percent: MIX

NIOSH (RTECS) Number: 1007422AM

CAS Number: 994-05-8

OSHA PEL: NOT APPLICABLE

ACGIH TLV: NOT APPLICABLE

Proprietary: NO

Ingredient: ETHER,TERT-BUTYL METHYL; (METHYL TERT-BUTYL ETHER)

Ingredient Sequence Number: 03
Percent: MIX
NIOSH (RTECS) Number: KNS525000
CAS Number: 1634-04-4
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Proprietary: NO
Ingredient: TOLUENE
Ingredient Sequence Number: 04
Percent: 6-<3015
NIOSH (RTECS) Number: XS5250000
CAS Number: 108-88-3
OSHA PEL: 200 PPM/150 STEL
ACGIH TLV: 50 PPM; 9293

Proprietary: NO
Ingredient: XYLENE
Ingredient Sequence Number: 05
Percent: 8.5-<15
NIOSH (RTECS) Number: ZE2100000
CAS Number: 1330-20-7
OSHA PEL: 100 PPM;150 PPM STEL
ACGIH TLV: 100 PPM;150 PPM STE

Proprietary: NO
Ingredient: BENZENE
Ingredient Sequence Number: 06
Percent: 0.1-<5
NIOSH (RTECS) Number: CY1400000
CAS Number: 71-43-2
OSHA PEL: 1 PPM; 5 STEL (MFR)
ACGIH TLV: 10 PPM

Proprietary: NO
Ingredient: BENZENE, ETHYL; (ETHYL BENZENE)
Ingredient Sequence Number: 07
Percent: <3
NIOSH (RTECS) Number: DA0700000
CAS Number: 100-41-4
OSHA PEL: 100 PPM;125 PPM STEL
ACGIH TLV: 100 PPM;125 PPM STEL

Proprietary: NO
Ingredient: BENZENE,1,2,4-TRIMETHYL-; (1,2,4-TRIMETHYLBENZENE)
Ingredient Sequence Number: 08
NIOSH (RTECS) Number: DC3325000
CAS Number: 95-63-6

OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Proprietary: NO

Ingredient: SUPP DATA:IN AIR. HVR/AIR VAP CAN FLOW ALONG SURF TO DISTANT
SOURCES OF IGNIT/FLASHBACK. FLOW GASOLINE CAN BE (ING 10)

Ingredient Sequence Number: 09
NIOSH (RTECS) Number: 9999999ZZ

OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Proprietary: NO

Ingredient: ING 9:IGNITED BY SELF-GENERATED STATIC ELEC. RUNOFF TO SEWERS
MAY CREATE FIRE &/OR EXPLOS HAZ.

Ingredient Sequence Number: 10
NIOSH (RTECS) Number: 9999999ZZ

OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Proprietary: NO

Ingredient: EFTS OF OVEREXP:WILL FATG OLFACTORY SENSES. IMMED DANGER TO
HLTH/LIFE IS REPRESENTED BY 2 THOUSANDS(2000)PPM. (ING 12)

Ingredient Sequence Number: 11
NIOSH (RTECS) Number: 9999999ZZ

OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Proprietary: NO

Ingredient: ING 11:INGEST/INHAL OF LIQ &/OR EXCESS VAP CAN HAVE AN ANESTH
EFT, CAUSING VERTIGO, BLURRED VISION, VOMIT & (ING 13)

Ingredient Sequence Number: 12
NIOSH (RTECS) Number: 9999999ZZ

OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Proprietary: NO

Ingredient: ING 12:CYANOSIS. OVEREXP MAY CAUSE CNS DEPRESSION.

Ingredient Sequence Number: 13
NIOSH (RTECS) Number: 9999999ZZ

OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Proprietary: NO

Ingredient: SPILL PROC:ACQUATIC LIFE. CAUTION-EVACUATE ALL NON-ESSENTIAL
PERS. SPILLED MATL MAY CAUSE SLIPPERY CNDTN. OPEN (ING 15)

Ingredient Sequence Number: 14
NIOSH (RTECS) Number: 9999999ZZ

OSHA PEL: NOT APPLICABLE

ACGIH TLV: NOT APPLICABLE

Proprietary: NO

Ingredient: ING 14:SPILLS MAY EMIT FLAM VAP. APPROACH FROM UPWIND IF POSS.
AVOID BRTHG EMITTED VAP. WEAR SCBA IF REQ TO PVNT(ING 16)

Ingredient Sequence Number: 15

NIOSH (RTECS) Number: 9999999ZZ

OSHA PEL: NOT APPLICABLE

ACGIH TLV: NOT APPLICABLE

Proprietary: NO

Ingredient: ING 15:INHAL OF VAPORS.

Ingredient Sequence Number: 16

NIOSH (RTECS) Number: 9999999ZZ

OSHA PEL: NOT APPLICABLE

ACGIH TLV: NOT APPLICABLE

Proprietary: NO

Ingredient: WASTE DISP METH:FLAMMABLE, VAPORS.

Ingredient Sequence Number: 17

NIOSH (RTECS) Number: 9999999ZZ

OSHA PEL: NOT APPLICABLE

ACGIH TLV: NOT APPLICABLE

Proprietary: NO

Ingredient: HNDLG/STOR PREC:BONDED/GROUNDED TO PVNT POTNTL ACCUMULATION OF
STATIC ELEC. NO SMOKING IN AREAS OF HNDLG/STOR. (ING 19)

Ingredient Sequence Number: 18

NIOSH (RTECS) Number: 9999999ZZ

OSHA PEL: NOT APPLICABLE

ACGIH TLV: NOT APPLICABLE

Proprietary: NO

Ingredient: ING 18:STOR SHOULD BE TIGHTLY CLSD CONTR IN COOL/DRY/ISOLATED
& WELL VENTD AREA AWAY FROM POTNTL SOURCES OF IGNITION.

Ingredient Sequence Number: 19

NIOSH (RTECS) Number: 9999999ZZ

OSHA PEL: NOT APPLICABLE

ACGIH TLV: NOT APPLICABLE

Proprietary: NO

Ingredient: OTHER PREC:REGULAR/FREQUENT BASIS. VENT MUST BE SUFFICIENT TO
PVNT ACCUMULATION OF TOX/FLAM CONC OF VAP IN AIR. (ING 21)

Ingredient Sequence Number: 20

NIOSH (RTECS) Number: 9999999ZZ

OSHA PEL: NOT APPLICABLE

ACGIH TLV: NOT APPLICABLE

Proprietary: NO
Ingredient: ING 20:EMPTY CONTR MAY CNTN TOX/FLAM/COMBUST RESIDUE/VAP. DO
NOT CUT/GRIND/DRILL/WELD OR REUSE CONTR UNLESS ADEQ(ING 22)
Ingredient Sequence Number: 21
NIOSH (RTECS) Number: 9999999ZZ
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Proprietary: NO
Ingredient: ING 21:PRECAUTIONS AGAINST THESE HAZARDS ARE TAKEN.
Ingredient Sequence Number: 22
NIOSH (RTECS) Number: 9999999ZZ
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Proprietary: NO
Ingredient: HYGIENE PRACT: UPPWIND OF VAPOR OR MIST RELEASE, SPILL OR
LEAK.
Ingredient Sequence Number: 23
NIOSH (RTECS) Number: 9999999ZZ
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE
=====

Physical/Chemical Characteristics

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Appearance And Odor: CLEAR LIQ W/STRONG AROMATIC HYDROCARBON ODOR. MAY BE
DYED CHARACTERISTIC(SUPDAT)
Boiling Point: 85.0F,29.4C
Vapor Pressure (MM Hg/70 F): SUPP DATA
Vapor Density (Air=1): 3.0-4.0
Specific Gravity: 0.76
Evaporation Rate And Ref: 10-11(BUTYL ACETATE=1)
Solubility In Water: SLIGHT
Percent Volatiles By Volume: 100
=====

Fire and Explosion Hazard Data

=====

Flash Point: -40F,-40C
Flash Point Method: TCC
Lower Explosive Limit: 1.4%
Upper Explosive Limit: 7.4%
Extinguishing Media: ANY APPRVD EXTING AGENT FOR CLASS B FIRES/DRY CHEM/
FOAM/CO*2 OR HALON. H*2O IS NOT ORD EFT. HOWEVER, H*2O FOG(SUPP DATA)
Special Fire Fighting Proc: NIOSH/MSHA APPRVD SCBA & FULL PROT EQUIP(FP
N). AVOID INHAL OF VAP. H*2O SHOULD BE USED TO KEEP EXPOS CONTR COOL.
APPROACH FROM UPWIND IF POSSIBLE.
Unusual Fire And Expl Hazrds: CLASS 1A FLAM LIQ. KEEP AWAY FROM HEAT/
SOURCES OF IGNIT/OXIDIZERS. BURN MAY CAUSE EMISSION OF TOX PROD OF COMBUST.

EMPTY PROD CONTR/VESSELS MAY CNTN (SUPP DATA)

Reactivity Data

Stability: YES

Cond To Avoid (Stability): AVOID HANDLING OR STORING NEAR HEAT, SPARKS OR OPEN FLAME.

Materials To Avoid: OXIDIZING AGENTS. COMBUSTION OF NITRIC AND SULFURIC ACIDS.

Hazardous Decomp Products: CONTACT W/NITRIC & SULFURIC ACIDS WILL FORM NITROCRESOLS THAT CAN DECOMPOSE VIOLENTLY.

Hazardous Poly Occur: NO

Conditions To Avoid (Poly): NOT RELEVANT.

Health Hazard Data

LD50-LC50 Mixture: LD50:ORAL(RBT)5 ML/KG

Route Of Entry - Inhalation: YES

Route Of Entry - Skin: NO

Route Of Entry - Ingestion: YES

Health Haz Acute And Chronic: ACUTE/CHRONIC:HARMFUL/FATAL IF SWALLOW/ASPIRATED. LONG TERM EXPOS TO VAP HAS CAUSED CANCER IN SOME LAB ANIMALS. INGEST MAY CAUSE GI DISTURB. ASPIR INTO LUNGS MAY CAUSE PNEUM. PRLNG CONT W/SKIN MAY RSLT IN DEFAT/RED/ITCH/INFLAM/CRACK & POSS SECONDARY INFECTION. HAS LOW ORDER OF ACUTE ORAL TOX IF (EFTS OF OVEREXP)

Carcinogenicity - NTP: YES

Carcinogenicity - IARC: YES

Carcinogenicity - OSHA: YES

Explanation Carcinogenicity: GASOLINE - IARC 2B; BENZENE, A CONSTITUENT OF GASOLINE:OSHA REGULATED, GROUP 1 (IARC,NTP).

Signs/Symptoms Of Overexp: HLTH HAZ:INGESTED, BUT MIN AMT ASPIR DURING SUCH INGEST MAY CAUSE DEATH. HIGH PRESS SKIN INJECTIONS ARE SERIOUS MED EMER. RPTD/PRLNG EXPOS TO VAP CNTN HIGH CONC OF BENZENE MAY CAUSE ANEMIA & OTHER BLOOD DISEASES, INCL LEUKEMIA. INHAL TO 100PPM MAY CAUSE SLIGHT DROW/HDCH. 100-200PPM MAY CAUSE FATG/NAUS/ITCH & (ING 11)

Med Cond Aggravated By Exp: OPEN WOUNDS, SKIN DISORDERS, CHRONIC RESPIRATORY DISEASE OR PRE-EXISTING CENTRAL NERVOUS SYSTEM DISEASE.

Emergency/First Aid Proc: INHAL:REMOVE TO FRESH AIR, PROVIDE O*2 THERAPY &/OR RESUSCITATION AS INDICATED. SKIN: REMOVE CONTAMINATED CLOTHING AND FLUSH WITH SOAP AND WATER. EYE: FLUSH WITH WATER FOR AT LEAST 15 MIN. INGEST: RINSE MOUTH WITH WATER. KEEP CALM AND WARM. DO NOT INDUCE VOMIT! ASPIRATION OF MATERIAL INTO LUNGS MAY CAUSE CHEMICAL PNEUMONIA. CALL PHYS IMMED.

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: CNTN ALL SPILLS. ABSORB ALL FREE LIQ. REMOVE ALL IGNIT SOURCES/SAFELY STOP FLOW OF SPILL. PVNT FROM ENTER ALL BODIES OF

H*2O. COMPLY W/ALL APPLIC LAWS/REGS. ABSORB MATL/PADS/SAND/EARTH MAY BE USED. CONTAMD H*2O/SOIL MAY BE HAZ TO ANIMAL/ (ING 14)

Neutralizing Agent: NONE SPECIFIED BY MANUFACTURER.

Waste Disposal Method: DISPOSE OF PROD/CONTAMD MATL AS EPA "IGNITABLE HAZ WASTE". USE ONLY APPRVD TRTMT TRANSPORTERS & DISP SITE IN COMPLIANCE W/ALL APPLICA FED/ST/LOC REGS. MAINTAIN SURVEILLANCE OF ABSORBED MATL UNTIL FINAL DISP TO OBSERVE FOR EMISSION OF VOLAT, (ING 17)

Precautions-Handling/Storing: KEEP AWAY FROM HEAT/SPARKS/OPEN FLAME. AVOID BRTHG VAP/MIST. AVOID SKIN/EYE CONT. KEEP CONTR CLSD & PLAINLY LBLD. TRANSFER LINES MUST BE (ING 17)

Other Precautions: USE ONLY AS MOTOR FUEL. HNDL/TRANSPORT/STORE IN ACCORD W/APPLIC LAWS/REGS. ELEC EQUIP SHOULD BE APPRVD FOR CLASSIFIED AREA. REMOVE SOILED CLTHG/LAUNDER BEFORE RE-USE. DISCARD OIL SOAKED SHOES. WEAR FULL LNGTH CLTHG/LAUNDER ON (ING 18)

Control Measures

Respiratory Protection: USE NIOSH/MSHA APPROVED SCBA IN CONFINED SPACES OR WHEN EXPOSED TO HEAVY MIST.

Ventilation: LOCAL EXHAUST:GENERALLY NOT REQUIRED. MECH(GEN): EXPLOSION PROOF(APPROVED FOR CLASSIFIED AREA).

Protective Gloves: IMPERVIOUS GLOVES.

Eye Protection: CHEMICAL WORKERS GOGGLES (FP N).

Other Protective Equipment: IMPERVIOUS CLOTHING, EYEWASH/BATH.

Work Hygienic Practices: WASH SKIN THORO W/SOAP/H*2O BEFORE EAT/DRINK/ SMOKING. VENT MAY BE USED TO CTRL/REDUCE AIRBORNE CONC. STAND (ING 23)

Suppl. Safety & Health Data: VP: 275-475@68F. APPEAR/ODOR:COLOR FOR IDENTIFICATION(CLEAR RED/BRONZE/YELLOW ARE TYPICAL). EXTING MEDIA:MAY BE USED BY EXPER FIRE FIGHT FOR INTENSITY CTRL/TO COOL EXPOS AREAS. EXPLOS HAZ:EXPLOS VAP. DO NOT PRESSURIZE/CUT/HEAT/WELD/EXPOSE SUCH CONTR OR VESSELS TO SOURCES OF IGNIT. VAP CAN READILY FORM EXPLOS MIX(ING 9)

Transportation Data

Trans Data Review Date: 92072

DOT PSN Code: GTN

DOT Proper Shipping Name: GASOLINE

DOT Class: 3

DOT ID Number: UN1203

DOT Pack Group: II

DOT Label: FLAMMABLE LIQUID

IMO PSN Code: HRV

IMO Proper Shipping Name: GASOLINE

IMO Regulations Page Number: 3141

IMO UN Number: 1203

IMO UN Class: 3.1

IMO Subsidiary Risk Label: -

IATA PSN Code: RMF

AMERADA HESS -- REGULAR UNLEADED GASOLINE

IATA UN ID Number: 1203
IATA Proper Shipping Name: MOTOR SPIRIT
IATA UN Class: 3
IATA Label: FLAMMABLE LIQUID
AFI PSN Code: MUC
AFI Prop. Shipping Name: GASOLINE
AFI Class: 3
AFI ID Number: UN1203
AFI Pack Group: II
AFI Basic Pac Ref: 7-7

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Disposal Data

=====

=====

Label Data

=====

Label Required: YES
Label Status: G
Common Name: REGULAR UNLEADED GASOLINE
Special Hazard Precautions: ACUTE/CHRONIC:HARMFUL/FATAL IF SWALLOW/
ASPIRATED. LONG TERM EXPOS TO VAP HAS CAUSED CANCER IN SOME LAB ANIMALS.
INGEST MAY CAUSE GI DISTURB. ASPIR INTO LUNGS MAY CAUSE PNEUM. PRLNG CONT
W/SKIN MAY RSLT IN DEFAT/RED/ITCH/INFLAM/CRACK & POSS SECONDARY INFECTION.
HAS LOW ORDER OF ACUTE ORAL TOX IF (EFTS OF OVEREXP) HLTH HAZ: INGESTED,
BUT MIN AMT ASPIR DURING SUCH INGEST MAY CAUSE DEATH. HIGH PRESS SKIN
INJECTIONS ARE SERIOUS MED EMER. RPTD/PRLNG EXPOS TO VAP CNTN HIGH CONC OF
BENZENE MAY CAUSE ANEMIA & OTHER BLOOD DISEASES, INCL LEUKEMIA. INHAL TO
100PPM MAY CAUSE SLIGHT DROW/HDCH. 100-200PPM MAY CAUSE FATG/NAUS/ ITCH &
(ING 11)
Label Name: AMERADA HESS CORP
Label Street: 1 HESS PLAZA
Label City: WOODBRIDGE
Label State: NJ
Label Zip Code: 07095
Label Country: US
Label Emergency Number: 00-424-9300(CHEMTREC)

ARCHER DANIELS MIDLAND CO -- CITRIC ACID ANHYDROUS USP/FCC

=====

MSDS Safety Information

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FSC: 6810

NIIN: 00-141-2942

MSDS Date: 11/20/2000

MSDS Num: CKYFH

Product ID: CITRIC ACID ANHYDROUS USP/FCC

MFN: 01

Responsible Party

Cage: 84168

Name: ARCHER DANIELS MIDLAND CO

Address: 4666 E FARIES PKWY

Box: 1470

City: DECATUR IL 62526-5666

Info Phone Number: 217-424-5200/7418

Emergency Phone Number: 910-457-5011

=====

Item Description Information

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Item Manager: S9G

Item Name: CITRIC ACID,ANHYDROUS,TECHNICAL

Specification Number: A-A-59147

Type/Grade/Class: NONE

Unit of Issue: DR

Quantitative Expression: 00000000050LB

UI Container Qty: 0

Type of Container: DRUM

=====

Ingredients

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Cas: 77-92-9

RTECS #: GE7350000

Name: CITRIC ACID, 2-HYDROXY-1,2,3-PROPANETRICARBOXYLIC ACID

=====

Health Hazards Data

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LD50 LC50 Mixture: LD50 (ORAL, RAT) 11,700 MG/KG

Route Of Entry Inds - Inhalation: YES

Skin: YES

Ingestion: YES

Carcinogenicity Inds - NTP: NO

IARC: NO

OSHA: NO

Effects of Exposure: PROLONGED CONTACT WITH THE PRODUCT MAY CAUSE IRRITATION.

Explanation Of Carcinogenicity: NONE

Signs And Symptions Of Overexposure: MAY BE SLIGHT EYE IRRITANT, LONG-TERM EXPOSURE TO SKIN COULD BE A MILD IRRITANT.

Medical Cond Aggravated By Exposure: NO INFORMATION AVAILABLE.

First Aid: EYES-IMMEDIATELY FLUSH WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES. CALL A PHYSICIAN. SKIN-WASH AREA WITH WATER, REMOVE CONTMINATED CLOTHING AND LAUNDER BEFORE REUSE.

=====
Handling and Disposal

=====
Spill Release Procedures: RECOVER BY VACUUM OR BROOM AND SHOVELL. FLUSH AREA WITH WATER TO REMOVE FINAL TRACES.

Waste Disposal Methods: CONFORM TO APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS. LANDFILL OR NEUTRALIZE AND FLUSH TO DRAIN. MATERIAL IS BIODEGRADABLE IN WASTE TREATMENT FACILITY.

Handling And Storage Precautions: STORE IN A DRY AREA.

Other Precautions: AQUEOUS SOLUTIONS OF CITRIC ACID CAN, IF IN CONTACT WITH REACTIVE METAL (IRON, ZINC, ALUMINUM) FORM HYDROGEN WHICH FORM EXPLOSIVE MIXTURES.

=====
Fire and Explosion Hazard Information

=====
Autoignition Temp: =1000.C, 1832.F
Autoignition Temp Text: -1020C

Extinguishing Media: WATER, CARBON DIOXIDE, FOAM, POWDER EXTINGUISHER.

Fire Fighting Procedures: FIRE FIGHTERS WEAR PROTECTIVE CLOTHING AND NIOSH APPROVED RESPIRATOR.

Unusual Fire/Explosion Hazard: NONE-AT OPTIMUM AIR CONCENTRATION BUREAU OF MINES RELATIVE: EXPLOSIVE RATING=WEAK.

=====
Control Measures

=====
Respiratory Protection: NIOSH APPROVED CHEMICAL RESPIRATOR WITH DUST AND MIST FILTER WHILE HANDLING CRYSTALLINE MATERIAL AND CONCENTRATED SOLUTIONS.

Ventilation: LOCAL EXHAUST SUFFICENT TO CONTROL DUST.

Protective Gloves: STANDARD WORK GLOVES.

Eye Protection: SAFETY GLASSES.

Other Protective Equipment: NONE.

Work Hygienic Practices: AVOID CONTACT WITH SKIN, EYES, CLOTHING. AVOID INHALTION.

Supplemental Safety and Health: 1 DR=50 LBS NET EA . ABBREVIATION: N/A=NOT APPLICABLE OR NOT AVAILABLE. N/K=UNKNOWN. N/P=NOT PROVIDED. N/R=NOT RELEVANT. N/D=NOT DETERMINED. N/E=NOT ESTABLISHED. GI=GASTROINTESTINAL.

=====
Physical/Chemical Properties

=====
HCC: N1

NRC/State LIC No: NOT RELEVANT

Melt/Freeze Pt: =153.C, 307.4F

Decomp Text: NOT PROVIDED

Vapor Pres: N/A-SOLID

Spec Gravity: 1.665

PH: NOT PROVIDED

Solubility in Water: GREATER THAN 50%

Appearance and Odor: WHITE ODORLESS POWDER AND/OR GRANULES

Corrosion Rate: NOT PROVIDED

=====
Reactivity Data

=====
Stability Indicator: YES

Stability Condition To Avoid: NONE KNOWN.

Materials To Avoid: ?? ITRATES AND STRONG OXIDIZERS

Hazardous Decomposition Products: NONE KNOWN.

Hazardous Polymerization Indicator: NO

Conditions To Avoid Polymerization: NONE

=====
Toxicological Information

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Toxicological Information: NOT PROVIDED

=====
Ecological Information

=====
Ecological: NOT PROVIDED

=====
MSDS Transport Information

=====
Transport Information: NOT PROVIDED

=====
Regulatory Information

=====
Sara Title III Information: NOT PROVIDED

Federal Regulatory Information: NOT PROVIDED

State Regulatory Information: NOT PROVIDED

=====
Other Information

=====
Other Information: DANGER! IRRITATING TO SKIN/RESPIRATORY TRACT; SEVERELY
IRRITATING TO EYES. ALSO CAUSES GI IRRITATION, HYPOCALCEMIA. CHRONIC: TOOTH
ENAMEL EROSION. EXPLOSIVE! FLAMMABLE.

=====
Transportation Information

=====
Responsible Party Cage: 84168

Trans ID NO: 155914

Product ID: CITRIC ACID ANHYDROUS USP/FCC

MSDS Prepared Date: 11/20/2000

Review Date: 02/01/2001

MFN: 1
Net Unit Weight: 50 LBS
Multiple KIT Number: 0
Unit Of Issue: DR
Container QTY: 0
Type Of Container: DRUM
=====

Detail DOT Information
=====

DOT PSN Code: ZZZ
DOT Proper Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION
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Detail IMO Information
=====

IMO PSN Code: ZZZ
IMO Proper Shipping Name: NOT REGULATED FOR THIS MODE OF TRANSPORTATION
=====

Detail IATA Information
=====

IATA PSN Code: ZZZ
IATA Proper Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION
=====

Detail AFI Information
=====

AFI PSN Code: ZZZ
AFI Proper Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION
=====

HAZCOM Label
=====

Product ID: CITRIC ACID ANHYDROUS USP/FCC
Cage: 84168
Company Name: ARCHER DANIELS MIDLAND CO
Street: 4666 E FARIES PKWY
PO Box: 1470
City: DECATUR IL
Zipcode: 62526-5666
Health Emergency Phone: 910-457-5011
Label Required IND: Y
Date Of Label Review: 02/01/2001
Status Code: A
MFG Label NO: NOT PROVIDED
Label Date: 11/20/2000
Year Procured: 2001
Origination
Eye Protection IND: YES
Skin Protection IND: YES
Signal Word: CAUTION
Respiratory Protection IND: NO

Health Hazard: Slight

Contact Hazard: Slight

Fire Hazard: None

Reactivity Hazard: None

Hazard And Precautions: TARGET ORGANS: NOT PROVIDED. AVOID CONTACT WITH SKIN, EYES OR CLOTHING. FIRST AID: INHALATION: REMOVE TO FRESH AIR AND SUPPORT BREATHING AS NEEDED. EYES/SKIN: IMMEDIATELY REMOVE CONTAMINATED CLOTHING. RINSE WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES. CALL A PHYSICIAN. INGESTION: CONSULT PHYSICIAN BEFORE INDUCING VOMITING.

=====

Disclaimer (provided with this information by the compiling agencies): This information is formulated for use by elements of the Department of Defense. The United States of America in no manner whatsoever expressly or implied warrants, states, or intends said information to have any application, use or viability by or to any person or persons outside the Department of Defense nor any person or persons contracting with any instrumentality of the United States of America and disclaims all liability for such use. Any person utilizing this instruction who is not a military or civilian employee of the United States of America should seek competent professional advice to verify and assume responsibility for the suitability of this information to their particular situation regardless of similarity to a corresponding Department of Defense or other government situation.

AGE REFINING & MARKETING -- DIESEL FUEL OIL - DIESEL FUEL

MATERIAL SAFETY DATA SHEET

NSN: 9140002865295

Manufacturer's CAGE: 0T116

Part No. Indicator: A

Part Number/Trade Name: DIESEL FUEL OIL

General Information

Item Name: DIESEL FUEL

Company's Name: AGE REFINING AND MARKETING

Company's Street: 7811 S PRESA

Company's City: SAN ANTONIO

Company's State: TX

Company's Country: US

Company's Zip Code: 78223-3531

Company's Emerg Ph #: 512-532-5300

Company's Info Ph #: 512-532-5300

Record No. For Safety Entry: 020

Tot Safety Entries This Stk#: 092

Status: SE

Date MSDS Prepared: 13APR92

Safety Data Review Date: 11AUG93

Supply Item Manager: KY

MSDS Serial Number: BRJJH

Specification Number: VV-F-800

Spec Type, Grade, Class: GRADE DF-2

Hazard Characteristic Code: F4

Unit Of Issue: DR

Unit Of Issue Container Qty: 5 GAL

Type Of Container: CAN

Net Unit Weight: 33.8 LBS

Ingredients/Identity Information

Proprietary: NO

Ingredient: LIGHT HYDROCARBON BLEND, CAS NO. 8008-20-6 CAS NO. 64741-44-2

CAS NO. 64742-88-7

Ingredient Sequence Number: 01

Percent: 100%

NIOSH (RTECS) Number: 1000011HC

OSHA PEL: UNKNOWN

ACGIH TLV: UNKNOWN

Other Recommended Limit: NONE RECOMMENDED

Physical/Chemical Characteristics

Appearance And Odor: CLEAR TO YELLOW, TYPICAL HYDROCARBON ODOR.

Boiling Point: 360-572F
Melting Point: NA
Vapor Pressure (MM Hg/70 F): 0.1
Vapor Density (Air=1): NA
Specific Gravity: 0.81-0.86
Decomposition Temperature: NA
Evaporation Rate And Ref: NA
Solubility In Water: TRACE
Percent Volatiles By Volume: 100
pH: NA
Corrosion Rate (IPY): NA

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Fire and Explosion Hazard Data

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Flash Point: 100F,38C
Flash Point Method: PMCC
Lower Explosive Limit: 1
Upper Explosive Limit: 5
Extinguishing Media: FOAM, DRY CHEMICAL, CARBON DIOXIDE. WATER MAY BE INEFFECTIVE. USE WATER TO COOL & PROTECT MATERIAL & MEN, FLUSH SPILL.
Special Fire Fighting Proc: MINIMIZE BREATHING GASES, VAPOR, FUMES OR DECOMPOSITION PRODUCTS. USE SUPPLIED AIR BREATHING APPARATUS IN ENCLOSED OR CONFINED AREAS OR AS OTHERWISE NEEDED.
Unusual Fire And Expl Hazrds: NA

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Reactivity Data

=====

Stability: YES
Cond To Avoid (Stability): UNDER NORMAL CONDITIONS, THE MATERIAL IS STABLE.
Materials To Avoid: STRONG OXIDANTS SUCH AS LIQUID CHLORINE, CONCENTRATED OXYGEN, SODIUM HYPOCHLORITE OR CALCIUM HYPOCHLORITE.
Hazardous Decomp Products: FUMES, SMOKE, CARBON MONOXIDE, ALDEHYDES AND OTHER DECOMPOSITION PRODUCTS.
Hazardous Poly Occur: NO
Conditions To Avoid (Poly): MATERIAL IS NOT KNOWN TO POLYMERIZE.

=====

Health Hazard Data

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LD50-LC50 Mixture: ORAL LD50 (RAT) IS = 5-15 G/KG
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: YES
Route Of Entry - Ingestion: YES
Health Haz Acute And Chronic: ACUTE: CENTRAL NERVOUS SYSTEM DEPRESSION WITH EXTREME EXPOSURE; EFFECTS MAY INCLUDE ANESTHESIA, COMA, RESPIRATORY ARREST, AND IRREGULAR HEART RATE. OXYGEN DEPRIVATION IS POSSIBLE IF WORKING IN A CONFINED AREA. CHRONIC: NO KNOWN MAJOR CUMULATIVE OR LATENT EFFECTS HAVE BEEN REPORTED.

Carcinogenicity - NTP: NO

Carcinogenicity - IARC: NO

Carcinogenicity - OSHA: NO

Explanation Carcinogenicity: NOT CARCINOGENIC.

Signs/Symptoms Of Overexp: INHALATION-IRRITATION OF THE UPPER RESPIRATORY TRACT, DEPRESSION, DIZZINESS, HEADACHE, UNCOORDINATION, ANESTHESIA, COMA & RESPIRATORY ARREST. SKIN-DEFATTING, IRRITATION & BURNING SENSATION & SWELLING OF LIDS. EYE-SEVERE BURNING SENSATION. INGESTION- IRRITATION OF THROAT, ESOPHAGUS & STOMACH, VOMITING.

Med Cond Aggravated By Exp: NONE SPECIFIED BY MANUFACTURER.

Emergency/First Aid Proc: EYES-FLUSH EYES WITH LARGE AMOUNTS OF WATER FOR 15 MIN. SEEK MEDICAL ATTENTION. SKIN-WASH WITH SOAP AND WATER. REMOVE CONTAMINATED CLOTHES & FOOTWARE. SEEK MEDICAL ATTENTION. INHALATION-REMOVE TO FRESH AIR; RESTORE BREATHING IF NEEDED; ADMINISTER OXYGEN; SEEK MEDICAL HELP. INGESTION-DO NOT INDUCE VOMITING. IF VOMITING OCCURS, KEEP AIRWAY CLEAR. SEEK MEDICAL ATTENTION IMMEDIATELY.

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: ELIMINATE SOURCES OF IGNITION. CONFINE AREA TO CLEANUP PERSONNEL. VENTILATE CONFINED AREAS. USE EXPLOSION PROOF EQUIPMENT. ABSORB &/OR CONFINE LIQUID WITH SAND, EARTH OR OTHER SUITABLE MATERIAL. KEEP PRODUCT OUT OF SEWERS OR WATERCOURSES.

Waste Disposal Method: DISPOSAL OF WASTE MATERIAL ARE REGULATED AND ACTION TO HANDLE OR DISPOSE OF SPILLED OR RELEASED MATERIALS MUST MEET ALL APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS.

Precautions-Handling/Storing: PROTECT AGAINST PHYSICAL DAMAGE. OUTSIDE OR DETACHED STORAGE PREFERRED. STORE IN COOL, WELL-VENTILATED AREA AWAY FROM IGNITION SOURCES & OXIDIZERS.

Other Precautions: TO PREVENT FIRE OR EXPLOSION RISK FROM STATIC ACCUMULATION & DISCHARGE, GROUND PRODUCT TRANSFER SYSTEM IN ACCORDANCE WITH THE NATIONAL FIRE PROTECTION ASSOCIATION FOR PETROLEUM PRODUCTS.

Control Measures

Respiratory Protection: RESPIRATORY PROTECTION NOT REQUIRED UNDER NORMAL USE. USE NIOSH.MSHA APPROVED ORGANIC VAPOR RESPIRATOR FOLLOWING MANUFACTURERS RECOMMENDATIONS WHERE SPRAY, MIST OR VAPORS MAY CAUSE SUGGESTED TLV TO BE EXCEEDED.

Ventilation: WORK IN VENTILATED AREAS. SPECIAL VENTILATION IS NOT REQUIRED UNDER NORMAL USE.

Protective Gloves: IMPERVIOUS GLOVES.

Eye Protection: FACE SHIELD & GOGGLES, CHEMICAL GOGGLES.

Other Protective Equipment: STANDARD WORK CLOTHING. CLOTHES OR FOOTWARE THAT CANNOT BE DECONTAMINATED SHOULD BE DISCARDED.

Work Hygienic Practices: SHOWER AND EYE WASH FACILITIES SHOULD BE ACCESSIBLE.

Suppl. Safety & Health Data: NOTE TO PHYSICIAN-GASTRIC LAVAGE ONLY IF

LARGE QUANTITIES HAVE BEEN INGESTED. GUARD AGAINST ASPIRATION INTO LUNGS WHICH MAY RESULT IN CHEMICAL PNEUMONITIS. IRREGULAR HEART BEAT MAY OCCUR; USE OF ADRENALIN IS NOT ADVISABLE. TREAT SYMPTOMATICALLY.

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Transportation Data

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Trans Data Review Date: 93223

DOT PSN Code: GJL

DOT Proper Shipping Name: FLAMMABLE LIQUIDS, N.O.S.

DOT Class: 3

DOT ID Number: UN1993

DOT Pack Group: III

DOT Label: FLAMMABLE LIQUID

IMO PSN Code: HIA

IMO Proper Shipping Name: FLAMMABLE LIQUID, N.O.S. o

IMO Regulations Page Number: 3345

IMO UN Number: 1993

IMO UN Class: 3.3

IMO Subsidiary Risk Label: -

IATA PSN Code: MCA

IATA UN ID Number: 1993

IATA Proper Shipping Name: FLAMMABLE LIQUID, N.O.S. *

IATA UN Class: 3

IATA Label: FLAMMABLE LIQUID

AFI PSN Code: MCA

AFI Prop. Shipping Name: FLAMMABLE LIQUIDS, N.O.S.

AFI Class: 3

AFI ID Number: UN1993

AFI Pack Group: III

AFI Basic Pac Ref: 7-7

MMAC Code: NR

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Disposal Data

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Label Data

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Label Required: YES

Technical Review Date: 11AUG93

Label Status: F

Common Name: DIESEL FUEL OIL

Chronic Hazard: YES

Signal Word: WARNING!

Acute Health Hazard-Moderate: X

Contact Hazard-Slight: X

Fire Hazard-Moderate: X

Reactivity Hazard-None: X

Special Hazard Precautions: IN CASE OF SPILL: ELIMINATE SOURCES OF

IGNITION. CONFINE AREA TO CLEANUP PERSONNEL. VENTILATE CONFINED AREAS. USE EXPLOSION PROOF EQUIPMENT. ABSORB &/OR CONFINE LIQUID WITH SAND, EARTH OR OTHER SUITABLE MATERIAL. KEEP PRODUCT OUT OF SEWERS OR WATERCOURSES. FIRST AID: EYES-FLUSH EYES WITH LARGE AMOUNTS OF WATER FOR 15 MIN. SEEK MEDICAL ATTENTION. SKIN-WASH WITH SOAP AND WATER. REMOVE CONTAMINATED CLOTHES & FOOTWEAR. SEEK MEDICAL ATTENTION. INHALATION-REMOVE TO FRESH AIR; RESTORE BREATHING IF NEEDED; ADMINISTER OXYGEN; SEEK MEDICAL HELP. INGESTION-DO NOT INDUCE VOMITING. IF VOMITING OCCURS, KEEP AIRWAY CLEAR. SEEK MEDICAL ATTENTION IMMEDIATELY.

Protect Eye: Y

Protect Skin: Y

Label Name: AGE REFINING AND MARKETING

Label Street: 7811 S PRESA

Label City: SAN ANTONIO

Label State: TX

Label Zip Code: 78223-3531

Label Country: US

Label Emergency Number: 512-532-5300

SHIELDALLOY METALLURGICAL -- FERROSILICON

MATERIAL SAFETY DATA SHEET

NSN: 963000N052684

Manufacturer's CAGE: IN758

Part No. Indicator: A

Part Number/Trade Name: FERROSILICON

General Information

Company's Name: SHIELDALLOY METALLURGICAL CORP

Company's Street: 12 WEST BLVD

Company's P. O. Box: 768

Company's City: NEWFIELD

Company's State: NJ

Company's Country: US

Company's Zip Code: 08344

Company's Emerg Ph #: 800-424-9300 (CHEMTREC)

Record No. For Safety Entry: 001

Tot Safety Entries This Stk#: 001

Status: SMJ

Date MSDS Prepared: 01SEP89

Safety Data Review Date: 06SEP94

MSDS Serial Number: BVMSN

Hazard Characteristic Code: NK

Ingredients/Identity Information

Proprietary: NO

Ingredient: IRON

Ingredient Sequence Number: 01

Percent: BALANCE

NIOSH (RTECS) Number: NO4565500

CAS Number: 7439-89-6

OSHA PEL: N/K (FP N)

ACGIH TLV: N/K (FP N)

Proprietary: NO

Ingredient: SILICON

Ingredient Sequence Number: 02

Percent: 47-76

NIOSH (RTECS) Number: VW0400000

CAS Number: 7440-21-3

OSHA PEL: 10 MG/M3 TDUST

ACGIH TLV: 10 MG/M3 TDUST

Physical/Chemical Characteristics

Appearance And Odor: SILVER METALLIC, POWDER, ODORLESS

Boiling Point: N/A
Melting Point: >2192F,>120
Vapor Pressure (MM Hg/70 F): N/A
Vapor Density (Air=1): N/A
Specific Gravity: 2-5
Evaporation Rate And Ref: NOT APPLICABLE
Solubility In Water: INSOLUBLE/NEGLIGIBLE
Percent Volatiles By Volume: N/A

=====

Fire and Explosion Hazard Data

=====

Flash Point: N/A
Lower Explosive Limit: N/A
Upper Explosive Limit: N/A
Extinguishing Media: CLASS D FIRE:DO NOT USE WATER. USE DRY CHEMICAL, DRY SAND OR CO*2 TO SMOTHER FIRE.
Special Fire Fighting Proc: NIOSH/MSHA APPRVD SCBA & FULL PROT EQUIP (FP N).FIRE MAY BE ISOLATED & ALLOWED TO BURN ITSELF OUT. DO NOT DISTURB BURNING METAL WHILE EXTING THE FIRE.
Unusual Fire And Expl Hazrds: FIRES/EXPLOSIONS MAY BE INITIATED BY EXPOSING ANY CONCENTRATED DUST SUSPENSION IN AN ENCLOSED AREA TO SPARK/FLAME.

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Reactivity Data

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Stability: YES
Cond To Avoid (Stability): NOT APPLICABLE
Materials To Avoid: ACIDS, STRONG OXIDIZERS, STRONG BASES.
Hazardous Decomp Products: NONE.
Hazardous Poly Occur: NO
Conditions To Avoid (Poly): NOT RELEVANT.

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Health Hazard Data

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LD50-LC50 Mixture: NONE SPECIFIED BY MANUFACTURER.
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: NO
Route Of Entry - Ingestion: NO
Health Haz Acute And Chronic: ACUTE:EFFECTS ASSOCIATED W/OVEREXPOSURE TO METAL DUSTS MAY INCLUDE RESPIRATORY IRRITATION, CONJUNCTIVITIS, PNEUMOCONIOSIS, ETC.
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: NOT RELEVANT.
Signs/Symptoms Of Overexp: SEE HEALTH HAZARDS.
Med Cond Aggravated By Exp: NONE SPECIFIED BY MANUFACTURER.
Emergency/First Aid Proc: INGEST:CALL MD IMMEDIATELY (FP N). INHAL:IF

IRRITATION OCCURS, REMOVE TO FRESH AIR. CONT PHYS. SKIN:IF IRRITATION OCCURS, WASH SKIN. CONT PHYS. EYES:IF IRRITATION OCCURS, FLUSH EYES FOR AT LEAST 15 MINUTES. CONT PHYS.

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: NO SPECIAL STEPS NECESSARY.

Neutralizing Agent: NONE SPECIFIED BY MANUFACTURER.

Waste Disposal Method: DISPOSE OF IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL REGULATIONS.

Precautions-Handling/Storing: AVOID AND CONTROL OPERATIONS WHICH CREATE DUSTING.

Other Precautions: NONE SPECIFIED BY MANUFACTURER.

Control Measures

Respiratory Protection: IN DUSTY AREAS, USE NIOSH/MSHA APPROVED SCHEDULED 21-C RESPIRATOR.

Ventilation: LOCAL EXHAUST:RECOMMENDED WHERE DUSTING MAY OCCUR. MECHANICAL (GENERAL):USE FOR GENERAL AREA CONTROL.

Protective Gloves: IMPERVIOUS GLOVES (FP N).

Eye Protection: ANSI APPRVD CHEM WORKERS GOGGLES (FP N).

Other Protective Equipment: NONE SPECIFIED BY MANUFACTURER.

Work Hygienic Practices: NONE SPECIFIED BY MANUFACTURER.

Suppl. Safety & Health Data: NONE SPECIFIED BY MANUFACTURER.

Transportation Data

Trans Data Review Date: 94249

Disposal Data

Label Data

Label Required: YES

Technical Review Date: 06SEP94

Label Date: 08SEP94

Label Status: G

Common Name: FERROSILICON

Chronic Hazard: YES

Signal Word: WARNING!

Acute Health Hazard-Moderate: X

Contact Hazard-Slight: X

Fire Hazard-None: X

Reactivity Hazard-None: X

Special Hazard Precautions: ACUTE:EFFECTS ASSOCIATED WITH OVEREXPOSURE TO METAL DUST MAY INCLUDE RESPIRATORY IRRITATION, CONJUNCTIVITIS, AND

SHIELDALLOY METALLURGICAL -- FERROSILICON

PNEUMOCONIOSIS (LUNG DISEASE-BLACK LUNG). CHRONIC:LUNG DISEASE.

Protect Eye: Y

Protect Skin: Y

Protect Respiratory: Y

Label Name: SHIELDALLOY METALLURGICAL CORP

Label Street: 12 WEST BLVD

Label P.O. Box: 768

Label City: NEWFIELD

Label State: NJ

Label Zip Code: 08344

Label Country: US

Label Emergency Number: 800-424-9300 (CHEMTREC)

EAGLE-PICHER INDUSTRIES -- FLOOR DRY, CELATOM

EAGLE-PICHER INDUSTRIES -- FLOOR DRY, CELATOM

MATERIAL SAFETY DATA SHEET

NSN: 962000N030696

Manufacturer's CAGE: 0PXU6

Part No. Indicator: B

Part Number/Trade Name: FLOOR DRY, CELATOM

General Information

Company's Name: EAGLE-PICHER INDUSTRIES INC

Company's Street: 1755 E PLUMB LANE SUITE 151

Company's City: RENO

Company's State: NV

Company's Country: US

Company's Zip Code: 89510

Company's Emerg Ph #: 702-333-7600

Company's Info Ph #: 702-322-3331; 702-333-7632

Record No. For Safety Entry: 002

Tot Safety Entries This Stk#: 002

Status: SMJ

Date MSDS Prepared: 01JUL93

Safety Data Review Date: 14JUL95

MSDS Preparer's Name: PATRICK T. FLYNN, JR.

Preparer's Company: SAME

MSDS Serial Number: BXZPX

Ingredients/Identity Information

Proprietary: NO

Ingredient: DIATOMACEOUS EARTH (DIATOMACEOUS SILICA); (DIATOMACEOUS EARTH, CALCINED)

Ingredient Sequence Number: 01

Percent: 100

NIOSH (RTECS) Number: 1000784CE

CAS Number: 91053-39-3

OSHA PEL: N/K (FP N)

ACGIH TLV: N/K (FP N)

Proprietary: NO

Ingredient: SILICA, CRYSTALLINE - CRISTOBALITE; (CRYSTALLINE SILICA (CRISTOBALITE))

Ingredient Sequence Number: 02

Percent: <1

NIOSH (RTECS) Number: VV7325000

CAS Number: 14464-46-1

OSHA PEL: N/K (FP N)

ACGIH TLV: 0.05 MG/M3 RDUST

Proprietary: NO
Ingredient: SILICA, CRYSTALLINE - QUARTZ; (CRYSTALLINE SILICA (QUARTZ))
Ingredient Sequence Number: 03
Percent: <1
NIOSH (RTECS) Number: VV7330000
CAS Number: 14808-60-7
OSHA PEL: N/K (FP N)
ACGIH TLV: 0.1 MG/M3 RDUST

Proprietary: NO
Ingredient: SUPDAT: MOST IMPORTANT CONTRIBUTORS TO EXCESS IN NMRD & LUNG
CANCER. ALSO, IMPROVEMENTS IN DUST CTL IN INDUSTRY (ING 5)
Ingredient Sequence Number: 04
NIOSH (RTECS) Number: 9999999ZZ
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Proprietary: NO
Ingredient: ING 4: APPEAR TO HAVE ABATED EXCESS RISK OF SILICOSIS & LUNG
CANCER IN TODAY'S WORK ENVIRON. TARGET ORGAN: LUNGS.
Ingredient Sequence Number: 05
NIOSH (RTECS) Number: 9999999ZZ
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Proprietary: NO
Ingredient: RESP PROT: DUST CONC IS GREATER THAN 10 TIMES & LESS THAN 100
TIMES PEL USE FULL FACEPLATE RESP W/REPLACEABLE (ING 7)
Ingredient Sequence Number: 06
NIOSH (RTECS) Number: 9999999ZZ
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Proprietary: NO
Ingredient: ING 6: DUST FILTER; IF GREATER THAN 100 & LESS THAN 200 TIMES
PEL USE POWER AIR-PURIFYING (POS PRESS) RESP (ING 8)
Ingredient Sequence Number: 07
NIOSH (RTECS) Number: 9999999ZZ
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Proprietary: NO
Ingredient: ING 7: W/REPLACEABLE FILTER; IF GREATER THAN 200 TIMES PEL USE
TYPE C, SUPPLIED-AIR RESP, CONTINUOUS FLOW TYPE (ING 9)
Ingredient Sequence Number: 08
NIOSH (RTECS) Number: 9999999ZZ
OSHA PEL: NOT APPLICABLE
ACGIH TLV: NOT APPLICABLE

Proprietary: NO

Ingredient: ING 8: (POS PRESS) WITH FULL FACEPIECE, HOOD OR HELMET.

Ingredient Sequence Number: 09

NIOSH (RTECS) Number: 9999999ZZ

OSHA PEL: NOT APPLICABLE

ACGIH TLV: NOT APPLICABLE

=====

Physical/Chemical Characteristics

=====

Appearance And Odor: ODORLESS, GRANULAR PRODUCT, BUFF TO OFF-WHITE.

Boiling Point: N/A

Vapor Pressure (MM Hg/70 F): N/A

Vapor Density (Air=1): N/A

Specific Gravity: 2.2

Solubility In Water: <2%

pH: SUPDAT

=====

Fire and Explosion Hazard Data

=====

Extinguishing Media: MEDIA SUITABLE FOR SURROUNDING FIRE (FP N).

Special Fire Fighting Proc: USE NIOSH/MSHA APPROVED SCBA AND FULL
PROTECTIVE EQUIPMENT (FP N).

Unusual Fire And Expl Hazrds: NONE SPECIFIED BY MANUFACTURER.

=====

Reactivity Data

=====

Stability: YES

Cond To Avoid (Stability): NONE SPECIFIED BY MANUFACTURER.

Materials To Avoid: HYDROFLUORIC ACID; PRODUCTS CONTAINING SILICA MAY
REACT VIOLENTLY WITH HYDROFLUORIC ACID.

Hazardous Decomp Products: NOT APPLICABLE.

Hazardous Poly Occur: NO

Conditions To Avoid (Poly): NOT RELEVANT

=====

Health Hazard Data

=====

LD50-LC50 Mixture: NONE SPECIFIED BY MANUFACTURER.

Route Of Entry - Inhalation: YES

Route Of Entry - Skin: NO

Route Of Entry - Ingestion: NO

Health Haz Acute And Chronic: ACUTE: INHAL: UPPER RESP IRRIT. MAY CAUSE
COUGH/THROAT IRRIT. CAN CAUSE DRYNESS OF NASAL PASSAGES & CONGESTION OF
UPPER RESP TRACT. SKIN: NOT ABSORBED BY SKIN. MAY CAUSE DRYNESS. EYES: MAY
CAUSE IRRIT/INFLAMM. INGEST: SHORT-TERM EXPOS NOT CONSIDERED HARMFUL.
CHRONIC:INHAL OF CRYSTALLINE SILICA DUST IN (EFTS OF OVEREXP)

Carcinogenicity - NTP: YES

Carcinogenicity - IARC: YES

Carcinogenicity - OSHA: NO

IARC MONO, SUPP, VOL 7, PG 341, 1987:GRP 2A. NTP 7TH ANNUAL RPT (SUPDAT)

Signs/Symptoms Of Overexp: HLTH HAZ: EXCESS OF TLV/PEL OVER EXTENDED
NUMBER OF YRS MAY CAUSE SILICOSIS, PROGRESSIVE SOMETIMES FATAL LUNG
DISEASE. MFR W/OTHER MEMBERS OF INTERNATL DIATOMITE PRODUCERS ASSOC
SPONSORED STUDY TO EXAMINE LONG TERM HLTH EFTS AMONG CERTAIN WORKERS IN
DIATOMACEOUS EARTH (DE) INDUSTRY. REPORT CONCLUDED AN INCR IN (SUPDAT)
Med Cond Aggravated By Exp: PRE-EXISTING DISEASES OF THE UPPER RESPIRATORY
TRACT AND LUNG SUCH AS BRONCHITIS, EMPHYSEMA AND ASTHMA.

Emergency/First Aid Proc: SKIN: USE MOISTURE RENEWING LOTIONS IF DRYNESS
OCCURS. EYES: WASH WITH GENEROUS QUANTITIES OF WATER FOR AT LEAST 15
MINUTES. CONSULT MD IF IRRITATION PERSISTS. INHAL: REMOVE TO FRESH AIR.
INGEST: DRINK GENEROUS AMOUNTS OF WATER TO REDUCE BULK AND DRYING EFFECTS.

=====
Precautions for Safe Handling and Use
=====

Steps If Matl Released/Spill: VACUUM CLEAN SPILLAGE, WET SWEEP OR WASH
AWAY. AVOID CREATING DUST.

Neutralizing Agent: NONE SPECIFIED BY MANUFACTURER.

Waste Disposal Method: DISPOSAL MUST BE IN ACCORDANCE WITH FEDERAL, STATE
AND LOCAL REGULATIONS (FP N). NON-BIODEGRADABLE. USE SOLID WASTE DISPOSAL
COMMON TO LANDFILL TYPE OPERATIONS OR IN SLURRY TO DUMPS. NOT CONSIDERED A
HAZARDOUS WASTE UNDER RCRA (40 CFR PART 261).

Precautions-Handling/Storing: AVOID CREATING DUST. REPAIR OR PROPERLY
DISPOSE OF BROKEN BAGS. STORE IN A DRY PALCE TO MAINTAIN PRODUCT QUALITY.

Other Precautions: MAINTENANCE OF CRYSTALLINE SILICA DUST CONCENTRATIONS
AT OR BELOW LEVELS SET BY OCCUPATIONAL STANDARD SETTING AGENCIES WILL
MINIMIZE/ELIMINATE POTENTIAL RISK OF NON-MALIGNANT RESPIRATORY DISEASE
(NMRD) OR LUNG CANCER.

=====
Control Measures
=====

Respiratory Protection: NIOSH/MSHA APPRVD RESPS FOR PROT AGAINST
PNEUMOCONIOSIS PRODUCING DUSTS RECOM WHEN DUST IS PRESENT. IF DUST CONC IS
LESS THAN 10 TIMES PEL USE QUARTER OR HALF MASK RESP W/REPLACEMENT DUST
FILTER/SINGLE USE DUST RESP W/VALVE. IF (ING 6)

Ventilation: LOCAL. CONTROL W/IN RECOM TLV/PEL. REFER TO ACGIH PUB
"INDUSTRIAL VENT" OR SIMILAR PUBS FOR DESIGN OF VENT SYSTEMS.

Protective Gloves: IMPERVIOUS GLOVES (FP N).

Eye Protection: ANSI APPRVD CHEM WORKERS GOGGLES (FP N).

Other Protective Equipment: PROTECTIVE CLOTHING/FOOTWEAR NOT NORMALLY
NECESSARY.

Work Hygienic Practices: NONE SPECIFIED BY MANUFACTURER.

Suppl. Safety & Health Data: PH: 7 (10% SLURRY). EXPLAN OF CARCIN: ON
CARCINS, 1994:ANTIC TO BE CARCIN. EFTS OF OVEREXP: NON-MALIGNANT RESP
DISEASE (NMRD) & LUNG CANCER INCIDENCE AMONG DE WORKERS STUDIED WHEN
COMPARED TO NATL & REGIONAL POPULATIONS. IT FURTHER CONCLUDED RELATIVELY
INTENSE EXPOS THAT OCCURRED BEFORE 1950'S WERE PROBABLY (ING 4)

=====

Transportation Data

=====

=====

Disposal Data

=====

=====

Label Data

=====

Label Required: YES
Technical Review Date: 13JUL95
Label Date: 03JUL95
Label Status: G
Common Name: FLOOR DRY, CELATOM
Chronic Hazard: YES
Signal Word: CAUTION!
Acute Health Hazard-Slight: X
Contact Hazard-Slight: X
Fire Hazard-None: X
Reactivity Hazard-None: X
Special Hazard Precautions: ACUTE: INHALATION: UPPER RESPIRATORY TRACT
IRRITANT. MAY CAUSE COUGHING OR THROAT IRRITATION. SKIN: MAY CAUSE DRYNESS.
EYES: MAY CAUSE IRRITATION OR INFLAMMATION. CHRONIC: CANCER HAZARD.
CONTAINS SILICA, CRYSTALLINE-CRISTOBALITE AND -QUARTZ WHICH ARE LISTED AS
ANIMAL LUNG CARCINOGENS (FP N). CRYSTALLINE SILICA MAY CAUSE SILICOSIS, A
PROGRESSIVE SOMETIMES FATAL LUNG DISEASE.
Protect Eye: Y
Protect Skin: Y
Protect Respiratory: Y
Label Name: EAGLE-PICHER INDUSTRIES INC
Label Street: 1755 E PLUMB LANE SUITE 151
Label City: RENO
Label State: NV
Label Zip Code: 89510
Label Country: US
Label Emergency Number: 702-333-7600



ETHYLENE GLYCOL

MSDS Number: E5125 --- *Effective Date: 02/25/99*

1. Product Identification

Synonyms: 1,2-Ethanediol; glycol; 1,2-Dihydroxyethane; Ethylene Alcohol; Ethulene Dihydrate

CAS No.: 107-21-1

Molecular Weight: 62.07

Chemical Formula: CH₂OHCH₂OH

Product Codes:

J.T. Baker: 5387, 5574, 5845, 9140, 9298, 9300, 9346, 9349, 9356, L715

Mallinckrodt: 5001, 5037

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
-----	-----	-----	-----
Ethylene Glycol	107-21-1	99 - 100%	Yes

3. Hazards Identification

Emergency Overview

WARNING! HARMFUL OR FATAL IF SWALLOWED. HARMFUL IF INHALED OR ABSORBED THROUGH SKIN. MAY CAUSE ALLERGIC SKIN REACTION. MAY CAUSE IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT. AFFECTS CENTRAL NERVOUS SYSTEM.

J.T. Baker SAF-T-DATA^(tm) Ratings (Provided here for your convenience)

Health Rating: 2 - Moderate

Flammability Rating: 1 - Slight

Reactivity Rating: 1 - Slight

Contact Rating: 2 - Moderate

Lab Protective Equip: GOGGLES; LAB COAT; VENT HOOD; PROPER GLOVES

Storage Color Code: Orange (General Storage)

Potential Health Effects

Inhalation:

Vapor inhalation is generally not a problem unless heated or misted. Exposure to vapors over an extended time period has caused throat irritation and headache. May cause nausea, vomiting, dizziness and drowsiness. Pulmonary edema and central nervous system depression may also develop. When heated or misted, has produced rapid, involuntary eye movement and coma.

Ingestion:

Initial symptoms in massive dosage parallel alcohol intoxication, progressing to CNS depression, vomiting, headache, rapid respiratory and heart rate, lowered blood pressure, stupor, collapse, and unconsciousness with convulsions. Death from respiratory arrest or cardiovascular collapse may follow. Lethal dose in humans: 100 ml (3-4 ounces).

Skin Contact:

Minor skin irritation and penetration may occur.

Eye Contact:

Splashes may cause irritation, pain, eye damage.

Chronic Exposure:

Repeated small exposures by any route can cause severe kidney problems. Brain damage may also occur. Skin allergy can develop. May damage the developing fetus.

Aggravation of Pre-existing Conditions:

Persons with pre-existing skin disorders, eye problems, or impaired liver, kidney, or respiratory function may be more susceptible to the effects of this substance.

4. First Aid Measures

Inhalation:

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

Ingestion:

Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention.

Skin Contact:

Remove any contaminated clothing. Wash skin with soap and water for at least 15 minutes. Get medical attention if irritation develops or persists.

Eye Contact:

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

Note to Physician:

Give sodium bicarbonate intravenously to treat acidosis. Urinalysis may show low specific gravity, proteinuria, pyuria, cylindruria, hematuria, calcium oxalate, and hippuric acid crystals. Ethanol can be used in antidotal treatment but monitor blood glucose when administering ethanol because it can cause hypoglycemia. Consider infusion of a diuretic such as mannitol to help prevent or control brain edema and hemodialysis to remove ethylene glycol from circulation.

5. Fire Fighting Measures

Fire:

Flash point: 111C (232F) CC

Autoignition temperature: 398C (748F)

Flammable limits in air % by volume:

lel: 3.2; uel: 15.3

Slight to moderate fire hazard when exposed to heat or flame.

Explosion:

Above flash point, vapor-air mixtures are explosive within flammable limits noted above. Containers may explode when involved in a fire.

Fire Extinguishing Media:

Dry chemical, foam or carbon dioxide. Water or foam may cause frothing. Water spray may be used to extinguish surrounding fire and cool exposed containers. Water spray will also reduce fume and irritant gases.

Special Information:

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. Toxic gases and vapors may be released if involved in a fire.

6. Accidental Release Measures

Ventilate area of leak or spill. Remove all sources of ignition. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Use non-sparking tools and equipment. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer! US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Separate from acids and oxidizing materials. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:

-OSHA Permissible Exposure Limit (PEL):

50 ppm Ceiling

-ACGIH Threshold Limit Value (TLV):

50 ppm Ceiling (vapor)

Ventilation System:

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Personal Respirators (NIOSH Approved):

If the exposure limit is exceeded, a half-face respirator with an organic vapor cartridge and particulate filter (NIOSH type P95 or R95 filter) may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece respirator with an organic vapor cartridge and particulate filter (NIOSH P100 or R100 filter) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. Please note that N series filters are not recommended for this material. For emergencies or instances where the exposure levels are not known, use a full-face piece positive-pressure, air-supplied respirator. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Skin Protection:

Wear protective gloves and clean body-covering clothing.

Eye Protection:

Use chemical safety goggles. Maintain eye wash fountain and quick-drench facilities in work area.

9. Physical and Chemical Properties

Appearance:

Clear oily liquid.

Odor:

Odorless.

Solubility:

Miscible in water.

Specific Gravity:

1.1 @20C/4C

pH:

No information found.

% Volatiles by volume @ 21C (70F):

100

Boiling Point:

197.6C (388F)

Melting Point:

-13C (9F)

Vapor Density (Air=1):

2.14

Vapor Pressure (mm Hg):

0.06 @ 20C (68F)

Evaporation Rate (BuAc=1):

No information found.

10. Stability and Reactivity

Stability:

Stable under ordinary conditions of use and storage.

Hazardous Decomposition Products:

Carbon dioxide and carbon monoxide may form when heated to decomposition. May produce acrid smoke and irritating fumes when heated to decomposition.

Hazardous Polymerization:

Will not occur.

Incompatibilities:

Strong oxidizing agents. Reacts violently with chlorosulfonic acid, oleum, sulfuric acid, perchloric acid. Causes ignition at room temperature with chromium trioxide, potassium permanganate and sodium peroxide; causes ignition at 212F(100C) with ammonium dichromate, silver chlorate, sodium chloride and uranyl nitrate.

Conditions to Avoid:

Heat, flames, ignition sources, water (absorbs readily) and incompatibles.

11. Toxicological Information

Toxicological Data:

Oral rat LD50: 4700 mg/kg; skin rabbit LD50: 9530 mg/kg.
Irritation - skin rabbit: 555mg(open), mild; eye rabbit: 500mg/24H, mild.
Investigated as a tumorigen, mutagen, reproductive effector.

Reproductive Toxicity:

Has shown teratogenic effects in laboratory animals.

-----\Cancer Lists\-----			
---NTP Carcinogen---			
Ingredient	Known	Anticipated	IARC Category
-----	-----	-----	-----
Ethylene Glycol (107-21-1)	No	No	None

12. Ecological Information

Environmental Fate:

When released into the soil, this material is expected to readily biodegrade. When released into the soil, this material is expected to leach into groundwater. When released into the soil, this material is not expected to evaporate significantly. When released into water, this material is expected to readily biodegrade. When released into the water, this material is expected to have a half-life between 1 and 10 days. This material is not expected to significantly bioaccumulate. This material has a log octanol-water partition coefficient of less than 3.0. When released into water, this material is not expected to evaporate significantly. When released into the air, this material is expected to be readily degraded by reaction with photochemically produced hydroxyl radicals. When released into the air, this material is expected to have a half-life between 1 and 10 days.

Environmental Toxicity:

The LC50/96-hour values for fish are over 100 mg/l.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

Not regulated.

15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----

Ingredient	TSCA	EC	Japan	Australia
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Ethylene Glycol (107-21-1)	Yes	Yes	Yes	Yes
----------------------------	-----	-----	-----	-----

-----\Chemical Inventory Status - Part 2\-----

--Canada--

Ingredient	Korea	DSL	NDSL	Phil.
------------	-------	-----	------	-------

Ethylene Glycol (107-21-1)	Yes	Yes	No	Yes
----------------------------	-----	-----	----	-----

-----\Federal, State & International Regulations - Part 1\-----

-SARA 302- -----SARA 313-----

Ingredient	RQ	TPQ	List	Chemical Catg.
------------	----	-----	------	----------------

Ethylene Glycol (107-21-1)	No	No	Yes	No
----------------------------	----	----	-----	----

-----\Federal, State & International Regulations - Part 2\-----

-RCRA- -TSCA-

Ingredient	CERCLA	261.33	8(d)
------------	--------	--------	------

Ethylene Glycol (107-21-1)	5000	No	No
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Chemical Weapons Convention: No TSCA 12(b): No CDTA: No

SARA 311/312: Acute: Yes Chronic: Yes Fire: No Pressure: No

Reactivity: No (Pure / Liquid)

Australian Hazchem Code: No information found.

Poison Schedule: No information found.

WHMIS:

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. Other Information

NFPA Ratings: Health: **1** Flammability: **1** Reactivity: **0**

Label Hazard Warning:

WARNING! HARMFUL OR FATAL IF SWALLOWED. HARMFUL IF INHALED OR ABSORBED THROUGH SKIN. MAY CAUSE ALLERGIC SKIN REACTION. MAY CAUSE IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT. AFFECTS CENTRAL NERVOUS SYSTEM.

Label Precautions:

Do not breathe vapor or mist.

Use only with adequate ventilation.

Keep container closed.

Avoid contact with eyes, skin and clothing.

Wash thoroughly after handling.

Label First Aid:

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, immediately flush skin or eyes with plenty of water for at least 15 minutes. Call a physician if irritation develops or persists. If swallowed, give water or milk to drink and induce vomiting. Never give anything by mouth to an unconscious person. In all cases call a physician.

Product Use:

Laboratory Reagent.

Revision Information:

MSDS Section(s) changed since last revision of document include: 8.

Disclaimer:

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ETHYLENE GLYCOL

Prepared by: Strategic Services Division
Phone Number: (314) 539-1600 (U.S.A.)



Division of Facilities Services

DOD Hazardous Material Information (ANSI Format) For Cornell University Convenience Only

RPM AUTOMOTIVE GREASE EP NLGI 2, CPS250411

Section 1 - Product and Company Identification	Section 9 - Physical & Chemical Properties
Section 2 - Composition/Information on Ingredients	Section 10 - Stability & Reactivity Data
Section 3 - Hazards Identification Including Emergency Overview	Section 11 - Toxicological Information
Section 4 - First Aid Measures	Section 12 - Ecological Information
Section 5 - Fire Fighting Measures	Section 13 - Disposal Considerations
Section 6 - Accidental Release Measures	Section 14 - MSDS Transport Information
Section 7 - Handling and Storage	Section 15 - Regulatory Information
Section 8 - Exposure Controls & Personal Protection	Section 16 - Other Information

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Section 1 - Product and Company Identification **RPM AUTOMOTIVE GREASE EP NLGI 2, CPS250411**

Product Identification: RPM AUTOMOTIVE GREASE EP NLGI 2, CPS250411

Date of MSDS: 02/09/1991 **Technical Review Date:** 01/12/1993

FSC: 9150 **NIIN:** LIIN: 00N037800

Submitter: N EN

Status Code: C

MFN: 01

Article: N

Kit Part: N

Manufacturer's Information

Manufacturer's Name: CHEVRON

Post Office Box: 4054

Manufacturer's Address1:

Manufacturer's Address2: RICHMOND, CA 94804

Manufacturer's Country: US

General Information Telephone: 800-582-3835

Emergency Telephone: 800-457-2022;800-424-9300(CHEMTREC)

Emergency Telephone: 800-457-2022;800-424-9300(CHEMTREC)

MSDS Preparer's Name: N/P

Proprietary: N

Reviewed: N

Published: Y

CAGE: 0AHD1

Special Project Code: N

Contractor Information

Contractor's Name: CHEVRON ENVIRONMENTAL HEALTH CENTER INC

Post Office Box: 4054

Contractor's Address1: 15299 SAN PABLO AVE

Contractor's Address2: RICHMOND, CA 94804

Contractor's Telephone: 800-582-3835

Contractor's CAGE: 0AHD1

Section 2 - Compositon/Information on Ingredients **RPM AUTOMOTIVE GREASE EP NLGI 2, CPS250411**

Ingredient Name: ADDITIVES (INCLUDING INGS 3 & 4)

Ingredient CAS Number: **Ingredient CAS Code:** X

RTECS Number: **RTECS Code:** X

=WT: **=WT Code:**

=Volume: =Volume Code:
>WT: >WT Code:
>Volume: >Volume Code:
<WT: <WT Code:
<Volume: <Volume Code:
% Low WT: % Low WT Code:
% High WT: % High WT Code:
% Low Volume: % Low Volume Code:
% High Volume: % High Volume Code:
% Text: <40
% Enviromental Weight:
Other REC Limits: N/K
OSHA PEL: NOT APPLICABLE OSHA PEL Code: M
OSHA STEL: OSHA STEL Code:
ACGIH TLV: NOT APPLICABLE ACGIH TLV Code: M
ACGIH STEL: N/P ACGIH STEL Code:
EPA Reporting Quantity:
DOT Reporting Quantity:
Ozone Depleting Chemical:

Ingredient Name: CALCIUM HYDROXIDE
Ingredient CAS Number: 1305-62-0 Ingredient CAS Code: M
RTECS Number: EW2800000 RTECS Code: M
=WT: =WT Code:
=Volume: =Volume Code:
>WT: >WT Code:
>Volume: >Volume Code:
<WT: <WT Code:
<Volume: <Volume Code:
% Low WT: % Low WT Code:
% High WT: % High WT Code:
% Low Volume: % Low Volume Code:
% High Volume: % High Volume Code:
% Text: 20
% Enviromental Weight:
Other REC Limits: N/K
OSHA PEL: 15 MG/M3 TDUST OSHA PEL Code: M
OSHA STEL: OSHA STEL Code:
ACGIH TLV: 5 MG/M3; 9293 ACGIH TLV Code: M
ACGIH STEL: N/P ACGIH STEL Code:
EPA Reporting Quantity:
DOT Reporting Quantity:
Ozone Depleting Chemical: N

Ingredient Name: LUBRICATING BASE OIL MIXTURE (MULTIPLE CAS NUMBERS)

Ingredient CAS Number: **Ingredient CAS Code:** X

RTECS Number: **RTECS Code:** X

=WT: **=WT Code:**

=Volume: **=Volume Code:**

>WT: **>WT Code:**

>Volume: **>Volume Code:**

<WT: **<WT Code:**

<Volume: **<Volume Code:**

% Low WT: **% Low WT Code:**

% High WT: **% High WT Code:**

% Low Volume: **% Low Volume Code:**

% High Volume: **% High Volume Code:**

% Text: >60

% Enviromental Weight:

Other REC Limits: N/K

OSHA PEL: NOT APPLICABLE **OSHA PEL Code:** M

OSHA STEL: **OSHA STEL Code:**

ACGIH TLV: NOT APPLICABLE **ACGIH TLV Code:** M

ACGIH STEL: N/P **ACGIH STEL Code:**

EPA Reporting Quantity:

DOT Reporting Quantity:

Ozone Depleting Chemical:

Ingredient Name: NITROUS ACID, SODIUM SALT; (SODIUM NITRITE) (SARA III)

Ingredient CAS Number: 7632-00-0 **Ingredient CAS Code:** M

RTECS Number: RA1225000 **RTECS Code:** M

=WT: **=WT Code:**

=Volume: **=Volume Code:**

>WT: **>WT Code:**

>Volume: **>Volume Code:**

<WT: **<WT Code:**

<Volume: **<Volume Code:**

% Low WT: **% Low WT Code:**

% High WT: **% High WT Code:**

% Low Volume: **% Low Volume Code:**

% High Volume: **% High Volume Code:**

% Text: 1

% Enviromental Weight:

Other REC Limits: N/K

OSHA PEL: NOT APPLICABLE **OSHA PEL Code:** M

OSHA STEL: **OSHA STEL Code:**

ACGIH TLV: NOT APPLICABLE **ACGIH TLV Code:** M

ACGIH STEL: N/P **ACGIH STEL Code:**

EPA Reporting Quantity: 100 LBS

DOT Reporting Quantity: 100 LBS

Ozone Depleting Chemical: N

Section 3 - Hazards Identification, Including Emergency Overview

RPM AUTOMOTIVE GREASE EP NLGI 2, CPS250411

Health Hazards Acute & Chronic: EYE:NOT EXPECTED TO CAUSE PRLNG/SIGNIFICANT IRRIT. SKIN:NOT EXPECTED TO CAUSE PRLNG/SIGNIFICANT IRRIT. TOX HAS NOT BEEN DETERMINED. HOWEVER, IT SHLD BE PRACT NON-TOX TO INTERNAL ORGANS. INHAL/INGEST:T OX HAS NOT BEEN DETERMINED. HOWEVER, ITSHLD BE PRACT NON-TOX TO INTERNAL ORGANS. PROD CONTAINS PETRO (EFTS OF OVEREXP)

Signs & Symptoms of Overexposure:

HLTH HAZ:BASE OILS WHICH MAY BE REFINED BY VARIOUS PROCESSES INCL SEV SOLV EXTRACTION, SEV HYDROCRACKING/SEV HYDROTREATING. NONE OF THE OILS REQS CANCER WARNING UNDER OSHA STD (29 CFR 1910.1200).

Medical Conditions Aggravated by Exposure:

NONE SPECIFIED BY MANUFACTURER.

LD50 LC50 Mixture: NONE SPECIFIED BY MANUFACTURER.

Route of Entry Indicators:

Inhalation: YES

Skin: NO

Ingestion: NO

Carcenogenicity Indicators

NTP: NO

IARC: NO

OSHA: NO

Carcinogenicity Explanation: NOT RELEVANT

Section 4 - First Aid Measures

RPM AUTOMOTIVE GREASE EP NLGI 2, CPS250411

First Aid:

EYE:FLUSH W/FRESH WATER FOR @ LST 15 MINS. REMOVE CONT LENSES IF WORN. SKIN:WASH THORO W/SOAP & WATER. REMOVE & WASH CONTAM CLTHG. INHAL:

REMOVE TO FRESH AIR. SUPPORT BRTHG (GIVE O*2/ARTF RESP) (FP N). INGEST:GIVE WATER/MILK TO DRINK & TELEPHONE FOR MED ADVICE. CONSULT MED PERS BEFORE INDUCING VOMIT. IF MED ADVICE CANNOT BE OBTAINED, THEN TAKE PERS & PROD CNTNR TO NEAREST MED EMER TREATMENT(SUPDAT)

Section 5 - Fire Fighting Measures

RPM AUTOMOTIVE GREASE EP NLGI 2, CPS250411

Fire Fighting Procedures:

WEAR NIOSH/MSHA APPROVED SCBA & FULL PROTECTIVE EQUIPMENT (FP N).

Unusual Fire or Explosion Hazard:

COMBUSTION PRODUCTS:NORMAL COMBUSTION FORMS CARBON DIOXIDE, WATER VAPOR & MAY PRODUCE OXIDES OF NITROGEN. INCOMPLETE COMBUSTION CAN PRODUCE CARBON MONOXIDE.

Extinguishing Media:

CO*2, DRY CHEMICAL, FOAM & WATER FOG.

Flash Point: **Flash Point Text:** 392F,200C

Autoignition Temperature:

Autoignition Temperature Text: N/A

Lower Limit(s): N/A

Upper Limit(s): N/A

Section 6 - Accidental Release Measures

RPM AUTOMOTIVE GREASE EP NLGI 2, CPS250411

Spill Release Procedures:

THIS MATERIAL IS NOT EXPECTED TO PRESENT ANY ENVIRONMENTAL PROBLEMS OTHER THAN THOSE ASSOCIATED W/OIL SPILLS. CLEAN UP SPILLS IMMEDIATELY.

Section 7 - Handling and Storage

RPM AUTOMOTIVE GREASE EP NLGI 2, CPS250411

Handling and Storage Precautions:

Other Precautions:

Section 8 - Exposure Controls & Personal Protection

RPM AUTOMOTIVE GREASE EP NLGI 2, CPS250411

Respiratory Protection:

USE NIOSH/MSHA APPROVED RESPIRATOR APPROPRIATE FOR EXPOSURE OF CONCERN (FP N). NO SPECIAL RESPIRATORY PROTECTION IS NORMALLY REQUIRED.

Ventilation:

NO SPECIAL VENTILATION IS NECESSARY.

Protective Gloves:

IMPERVIOUS GLOVES (FP N).

Eye Protection: CHEMICAL WORKERS GOGGLES (FP N).

Other Protective Equipment: SKIN CONTACT CAN BE MINIMIZED BY WEARING PROTECTIVE CLOTHING.

Work Hygienic Practices: NONE SPECIFIED BY MANUFACTURER.

Supplemental Health & Safety Information: FIRST AID PROC: CENTER OR HOSPITAL.

Section 9 - Physical & Chemical Properties
RPM AUTOMOTIVE GREASE EP NLGI 2, CPS250411

HCC:

NRC/State License Number:

Net Property Weight for Ammo:

Boiling Point: Boiling Point Text: N/A

Melting/Freezing Point: Melting/Freezing Text: N/A

Decomposition Point: Decomposition Text: N/K

Vapor Pressure: N/A Vapor Density: N/A

Percent Volatile Organic Content:

Specific Gravity: 1.08

Volatile Organic Content Pounds per Gallon:

pH: N/K

Volatile Organic Content Grams per Liter:

Viscosity: N/P

Evaporation Weight and Reference: NOT APPLICABLE

Solubility in Water: INSOLUBLE

Appearance and Odor: DARK GREEN GREASE.

Percent Volatiles by Volume: N/A

Corrosion Rate: N/K

Section 10 - Stability & Reactivity Data
RPM AUTOMOTIVE GREASE EP NLGI 2, CPS250411

Stability Indicator: YES

Materials to Avoid:

MAY REACT W/STRONG OXIDIZING AGENTS, SUCH AS CHLORATES, NITRATES, PEROXIDES, ETC.

Stability Condition to Avoid:

NONE SPECIFIED BY MANUFACTURER.

Hazardous Decomposition Products:

NOT APPLICABLE

Hazardous Polymerization Indicator: NO

Conditions to Avoid Polymerization:

NOT RELEVANT

Section 11 - Toxicological Information

RPM AUTOMOTIVE GREASE EP NLGI 2, CPS250411

Toxicological Information:

N/P

Section 12 - Ecological Information

RPM AUTOMOTIVE GREASE EP NLGI 2, CPS250411

Ecological Information:

N/P

Section 13 - Disposal Considerations

RPM AUTOMOTIVE GREASE EP NLGI 2, CPS250411

Waste Disposal Methods:

PLACE CONTAMINATED MATERIALS IN DISPOSABLE CONTAINERS & DISPOSE OF IN A MANNER CONSISTENT W/APPLICABLE REGULATIONS. CONTACT LOCAL, STATE & FEDERAL ENVIRONMENTAL OR HEALTH AUTHORITIES FOR APPROVED DISPOSAL OF THIS MATERIAL.

Section 14 - MSDS Transport Information

RPM AUTOMOTIVE GREASE EP NLGI 2, CPS250411

Transport Information:

N/P

Section 15 - Regulatory Information

RPM AUTOMOTIVE GREASE EP NLGI 2, CPS250411

SARA Title III Information:

N/P

Federal Regulatory Information:

N/P

State Regulatory Information:

N/P

Section 16 - Other Information

RPM AUTOMOTIVE GREASE EP NLGI 2, CPS250411

Other Information:

N/P

HAZCOM Label Information

Product Identification: RPM AUTOMOTIVE GREASE EP NLGI 2, CPS250411

CAGE: 0AHD1

Assigned Individual: N

Company Name: CHEVRON ENVIRONMENTAL HEALTH CENTER INC

Company PO Box: 4054

Company Street Address1: 15299 SAN PABLO AVE

Company Street Address2: RICHMOND, CA 94804 US

Health Emergency Telephone: 800-457-2022;800-424-9300(CHEMTREC)

Label Required Indicator: Y

Date Label Reviewed: 01/12/1993

Status Code: C

Manufacturer's Label Number:

Date of Label: 01/12/1993

Year Procured: N/K

Organization Code: G

Chronic Hazard Indicator: N

Eye Protection Indicator: YES

Skin Protection Indicator: YES

Respiratory Protection Indicator: YES

Signal Word: CAUTION

Health Hazard: None

Contact Hazard: None

Fire Hazard: Slight

Reactivity Hazard: None

8/8/2002 7:18:59 PM

AMOCO OIL -- HYDRAULIC FLUID - HYDRAULIC FLUID, PETROLEUM BASE

MATERIAL SAFETY DATA SHEET

NSN: 9150001181112

Manufacturer's CAGE: 15965

Part No. Indicator: A

Part Number/Trade Name: HYDRAULIC FLUID

General Information

Item Name: HYDRAULIC FLUID, PETROLEUM BASE

Company's Name: AMOCO OIL CO

Company's Street: 200 EAST RANDOLPH DRIVE

Company's City: CHICAGO

Company's State: IL

Company's Country: US

Company's Zip Code: 60601

Company's Emerg Ph #: 800-447-8735, CHEMTREC 800-424-9300

Company's Info Ph #: 312-856-3907

Distributor/Vendor # 1: FERGUSON ALEX C CO ()

Distributor/Vendor # 1 Cage: 72391

Distributor/Vendor # 2: MASSEY-FERGUSON INC. GEAR AND SHIFT PLAN

Distributor/Vendor # 2 Cage: 14398

Record No. For Safety Entry: 001

Tot Safety Entries This Stk#: 005

Status: SE

Date MSDS Prepared: 24JUL89

Safety Data Review Date: 13NOV91

Supply Item Manager: CX

MSDS Preparer's Name: GERALD BRESNICK

MSDS Serial Number: BLHFX

Spec Type, Grade, Class: TYPE II

Hazard Characteristic Code: N1

Unit Of Issue: DR

Unit Of Issue Container Qty: 55.0 GALLONS

Type Of Container: DRUM

Net Unit Weight: 407.6 LBS

Ingredients/Identity Information

Proprietary: NO

Ingredient: REFINED HEAVY PARAFFINIC DISTILLATES

Ingredient Sequence Number: 01

NIOSH (RTECS) Number: 1003331RP

CAS Number: 64741-88-4

OSHA PEL: 5 MG/M3 (OIL MIST)

ACGIH TLV: 5 MG/M3 (OIL MIST)
Other Recommended Limit: NONE SPECIFIED

Proprietary: NO
Ingredient: ZINC DIALKYL DITHIOPHOSPHATE
Ingredient Sequence Number: 02
NIOSH (RTECS) Number: 1001213ZD
CAS Number: 68457-79-4
OSHA PEL: NOT ESTABLISHED
ACGIH TLV: NOT ESTABLISHED
Other Recommended Limit: NONE SPECIFIED
=====

Physical/Chemical Characteristics

=====

Appearance And Odor: DARK OILY WITH MINERAL OIL ODOR
Specific Gravity: 0.890
Decomposition Temperature: UNKNOWN
Solubility In Water: NEGLIGIBLE,<0.1%
Corrosion Rate (IPY): UNKNOWN
=====

Fire and Explosion Hazard Data

=====

Flash Point: >90F,>32C
Flash Point Method: COC
Extinguishing Media: USE WATER FOG, CARBON DIOXIDE, FOAM, DRY CHEMICAL,
EARTH OR SAND.
Special Fire Fighting Proc: WEAR FIRE FIGHTING PROTECTIVE EQUIPMENT AND
FULL FACED SELF CONTAINED BREATHING APPARATUS. COOL FIRE EXPOSED CONTAINERS
WI WATER SPRAY. CONTAIN RUNOFF.
Unusual Fire And Expl Hazrds: DENSE SMOKE
=====

Reactivity Data

=====

Stability: YES
Cond To Avoid (Stability): OPEN FLAMES
Materials To Avoid: STRONG OXIDIZERS SUCH AS HYDROGEN PEROXIDE, BROMINE,
AND CHROMIC ACID.
Hazardous Decomp Products: CARBON MONOXIDE, CARBON DIOXIDE, OXIDES OF
PHOSPHOROUS, SULFUR, AND POSSIBLY HYDROGEN SULFIDE.
Hazardous Poly Occur: NO
Conditions To Avoid (Poly): NOT APPLICABLE
=====

Health Hazard Data

=====

LD50-LC50 Mixture: UNKNOWN
Route Of Entry - Inhalation: NO

Route Of Entry - Skin: YES

Route Of Entry - Ingestion: NO

Health Haz Acute And Chronic: ACUTE-INHALATION OF MIST MAY CAUSE IRRITATION. INGESTION:NO ILL EFFECTS EXPECTED. MINUTE AMOUNTS ASPIRATED INTO LUNGS MAY CAUSE PULMONARY INJURY. EYE: IRRITATION. SKIN: NOT NORMALLY EXPECTED TO CAUSE ILL EFFECTS. CHRONIC-PROLONGED/REPEATED SKIN CONTACT MAY CAUSE IRRITATION.

Carcinogenicity - NTP: NO

Carcinogenicity - IARC: NO

Carcinogenicity - OSHA: NO

Explanation Carcinogenicity: NONE OF THE COMPOUNDS IN THIS PRODUCT IS LISTED BY IARC, NTP, OR OSHA AS A CARCINOGEN.

Signs/Symptoms Of Overexp: SKIN AND EYE IRRITATION.

Med Cond Aggravated By Exp: NONE SPECIFIED BY MANUFACTURER.

IMMEDIATELY FLUSH WITH PLENTY OF WATER FOR 15 MINUTES HOLDING EYELIDS OPEN. GE MEDICAL ATTENTION. SKIN: REMOVE EXCESS WITH CLOTH OR PAPER. WASH THOUROUGHLY WITH SOAP AND WATER. INGESTION: GET IMMEDIATE MEDICAL ATTENTION. DO NOT INDUCE VOMITING.

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: RECOVER BULK OF MIXTURE INTO ANOTH CONTAINER. ABSORB RESIDUE WITH AN INERT MATERIAL SUCH AS EARTH, SAND, OR VERMICULITE. SWEEP UP AND DISPOSE AS SOLID WASTE.

Neutralizing Agent: NOT APPLICABLE.

Waste Disposal Method: DISPOSAL SHOULD BE MADE IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL LAWS AND REGULATIONS.

Precautions-Handling/Storing: KEEP CONTAINER CLOSED UNTIL READY FOR USE.

Other Precautions: NONE

Control Measures

Respiratory Protection: NONE REQUIRED UNDER NORMAL USE. IF MIST IS BEING GENERATED OR VAPORS ARE BEING PRODUCED AT HIGH TEMPERATURES, USE NIOSH APPROVED ORGANIC VAPOR MASK.

Ventilation: NONE

Protective Gloves: NONE

Eye Protection: SAFETY GOGGLES WITH OPTIONAL FACE SHIELD

Other Protective Equipment: NONE

Work Hygienic Practices: OBSERVE GOOD PERSONAL HYGIENE PRACTICES AND RECOMMENDED PROCEDURES. DO NOT WEAR CONTAMINATED CLOTHING OR FOOTWEAR.

Suppl. Safety & Health Data: NONE

Transportation Data

Trans Data Review Date: 91317

DOT PSN Code: ZZZ
 DOT Proper Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION
 IMO PSN Code: ZZZ
 IMO Proper Shipping Name: NOT REGULATED FOR THIS MODE OF TRANSPORTATION
 IATA PSN Code: ZZZ
 IATA Proper Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION
 AFI PSN Code: ZZZ
 AFI Prop. Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION
 Additional Trans Data: NON-HAZARDOUS PER MFR.

=====

Disposal Data

=====

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Label Data

=====

Label Required: NO
 Technical Review Date: 13NOV91
 MFR Label Number: UNDATED
 Label Status: F
 Common Name: HYDRAULIC FLUID
 Signal Word: CAUTION!
 Acute Health Hazard-Slight: X
 Contact Hazard-Slight: X
 Fire Hazard-Slight: X
 Reactivity Hazard-None: X
 Special Hazard Precautions: ACUTE-INGESTION:NO ILL EFFECTS EXPECTED.
 INHALATION OF MIST MAY CAUSE IRRITATION. MINUTE AMOUNTS ASPIRATED INTO
 LUNGS MAY CAUSE PULMONARY INJURY. EYE: IRRITATION. SKIN: NOT NORMALLY
 EXPECTED TO CAUSE ILL EFFECTS. CHRONIC-PROLONGED/REPEATED SKIN CONTACT MAY
 CAUSE IRRITATION,DERMATITIS. RECOVER FREE PRODUCT, OR ABSORB WITH
 DIATOMACEOUS EARTH OR OTHER INERT MATERIAL. STORE IN APPROPRIATE CONTAINER
 FOR DISPOSAL. AVOID STORAGE NEAR OPEN FLAME OR OTHER SOURCES OF IGNITION,
 AND STRONG OXIDANTS. DANGEROUS TO REUSE EMPTY CONTAINER.FIRST AID-EYE:FLUSH
 WITH WATER FOR 15 MIN. SKIN:WASH WITH SOAP AND WATER. INGESTION:CONSULT A
 PHYSICIAN.
 Protect Eye: Y
 Protect Skin: Y
 Label Name: AMOCO OIL CO
 Label Street: 200 EAST RANDOLPH DRIVE
 Label City: CHICAGO
 Label State: IL
 Label Zip Code: 60601
 Label Country: US
 Label Emergency Number: 800-447-8735, CHEMTREC 800-424-9300
 Year Procured: 1991



HYDROCHLORIC ACID, 33 - 40%

MSDS Number: H3880 --- *Effective Date: 11/17/99*

1. Product Identification

Synonyms: Muriatic acid; hydrogen chloride, aqueous

CAS No.: 7647-01-0

Molecular Weight: 36.46

Chemical Formula: HCl

Product Codes:

J.T. Baker: 5367, 5537, 5575, 5800, 5814, 5839, 6900, 7831, 9529, 9530, 9534, 9535, 9536, 9537, 9538, 9539, 9540, 9544, 9548

Mallinckrodt: 2062, 2612, 2624, 2626, 5587, H611, H613, H615, V078, V628

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
-----	-----	-----	-----
Hydrogen Chloride	7647-01-0	33 - 40%	Yes
Water	7732-18-5	60 - 67%	No

3. Hazards Identification

Emergency Overview

POISON! DANGER! CORROSIVE. LIQUID AND MIST CAUSE SEVERE BURNS TO ALL BODY TISSUE. MAY BE FATAL IF SWALLOWED OR INHALED. INHALATION MAY CAUSE LUNG DAMAGE.

J.T. Baker SAF-T-DATA^(tm) Ratings (Provided here for your convenience)

Health Rating: 3 - Severe (Poison)

Flammability Rating: 0 - None

Reactivity Rating: 2 - Moderate

Contact Rating: 3 - Severe (Corrosive)

Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES

Storage Color Code: White (Corrosive)

Potential Health Effects

Inhalation:

Corrosive! Inhalation of vapors can cause coughing, choking, inflammation of the nose, throat, and upper respiratory tract, and in severe cases, pulmonary edema, circulatory failure, and death.

Ingestion:

Corrosive! Swallowing hydrochloric acid can cause immediate pain and burns of the mouth, throat, esophagus and gastrointestinal tract. May cause nausea, vomiting, and diarrhea. Swallowing may be fatal.

Skin Contact:

Corrosive! Can cause redness, pain, and severe skin burns. Concentrated solutions cause deep ulcers and discolor skin.

Eye Contact:

Corrosive! Vapors are irritating and may cause damage to the eyes. Contact may cause severe burns and permanent eye damage.

Chronic Exposure:

Long-term exposure to concentrated vapors may cause erosion of teeth. Long term exposures seldom occur due to the corrosive properties of the acid.

Aggravation of Pre-existing Conditions:

Persons with pre-existing skin disorders or eye disease may be more susceptible to the effects of this substance.

4. First Aid Measures

Inhalation:

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Ingestion:

DO NOT INDUCE VOMITING! Give large quantities of water or milk if available. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Skin Contact:

In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

Eye Contact:

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

5. Fire Fighting Measures

Fire:

Extreme heat or contact with metals can release flammable hydrogen gas.

Explosion:

Not considered to be an explosion hazard.

Fire Extinguishing Media:

If involved in a fire, use water spray. Neutralize with soda ash or slaked lime.

Special Information:

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. Structural firefighter's protective clothing is ineffective for fires involving hydrochloric acid. Stay away from ends of tanks. Cool tanks with water spray until well after fire is out.

6. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Neutralize with alkaline material (soda ash, lime), then absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer! US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

J. T. Baker NEUTRASORB(R) or TEAM(R) 'Low Na+' acid neutralizers are recommended for spills of this product.

7. Handling and Storage

Store in a cool, dry, ventilated storage area with acid resistant floors and good drainage. Protect from physical damage. Keep out of direct sunlight and away from heat, water, and incompatible materials. Do not wash out container and use it for other purposes. When diluting, the acid should always be added slowly to water and in small amounts. Never use hot water and never add water to the acid. Water added to acid can cause uncontrolled boiling and splashing. When opening metal containers, use non-sparking tools because of the possibility of hydrogen gas being present. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:

-OSHA Permissible Exposure Limit (PEL):

5 ppm Ceiling

-ACGIH Threshold Limit Value (TLV):

5 ppm Ceiling

Ventilation System:

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Personal Respirators (NIOSH Approved):

If the exposure limit is exceeded, a full facepiece respirator with an acid gas cartridge may be worn up to 50 times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. **WARNING:** Air purifying respirators do not protect workers in oxygen-deficient atmospheres.

Skin Protection:

Rubber or neoprene gloves and additional protection including impervious boots, apron, or coveralls, as needed in areas of unusual exposure to prevent skin contact.

Eye Protection:

Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

9. Physical and Chemical Properties

Appearance:

Colorless, fuming liquid.

Odor:

Pungent odor of hydrogen chloride.

Solubility:

Infinite in water with slight evolution of heat.

Density:

1.18

pH:

For HCL solutions: 0.1 (1.0 N), 1.1 (0.1 N), 2.02 (0.01 N)

% Volatiles by volume @ 21C (70F):

100

Boiling Point:

53C (127F) Azeotrope (20.2%) boils at 109C (228F)

Melting Point:

-74C (-101F)

Vapor Density (Air=1):

No information found.

Vapor Pressure (mm Hg):

190 @ 25C (77F)

Evaporation Rate (BuAc=1):

No information found.

10. Stability and Reactivity

Stability:

Stable under ordinary conditions of use and storage. Containers may burst when heated.

Hazardous Decomposition Products:

When heated to decomposition, emits toxic hydrogen chloride fumes and will react with water or steam to produce heat and toxic and corrosive fumes. Thermal oxidative decomposition produces toxic chlorine fumes and explosive hydrogen gas.

Hazardous Polymerization:

Will not occur.

Incompatibilities:

A strong mineral acid, concentrated hydrochloric acid is incompatible with many substances and highly reactive with strong bases, metals, metal oxides, hydroxides, amines, carbonates and other alkaline materials. Incompatible with materials such as cyanides, sulfides, sulfites, and formaldehyde.

Conditions to Avoid:

Heat, direct sunlight.

11. Toxicological Information

Inhalation rat LC50: 3124 ppm/1H; oral rabbit LD50: 900 mg/kg (Hydrochloric acid concentrated); investigated

HYDROCHLORIC ACID, 33 - 40%
as a tumorigen, mutagen, reproductive effector.

-----\Cancer Lists\-----			
---NTP Carcinogen---			
Ingredient	Known	Anticipated	IARC Category
-----	-----	-----	-----
Hydrogen Chloride (7647-01-0)	No	No	3
Water (7732-18-5)	No	No	None

12. Ecological Information

Environmental Fate:
When released into the soil, this material is not expected to biodegrade. When released into the soil, this material may leach into groundwater.

Environmental Toxicity:
This material is expected to be toxic to aquatic life.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

Domestic (Land, D.O.T.)

Proper Shipping Name: HYDROCHLORIC ACID
Hazard Class: 8
UN/NA: UN1789
Packing Group: II
Information reported for product/size: 475LB

International (Water, I.M.O.)

Proper Shipping Name: HYDROCHLORIC ACID
Hazard Class: 8
UN/NA: UN1789
Packing Group: II
Information reported for product/size: 475LB

15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----

Ingredient	TSCA	EC	Japan	Australia
-----	----	---	-----	-----
Hydrogen Chloride (7647-01-0)	Yes	Yes	Yes	Yes
Water (7732-18-5)	Yes	Yes	Yes	Yes

-----\Chemical Inventory Status - Part 2\-----

	--Canada--			
Ingredient	Korea	DSL	NDSL	Phil.
-----	-----	---	----	-----
Hydrogen Chloride (7647-01-0)	Yes	Yes	No	Yes
Water (7732-18-5)	Yes	Yes	No	Yes

-----\Federal, State & International Regulations - Part 1\-----

	-SARA 302-		-----SARA 313-----	
Ingredient	RQ	TPQ	List	Chemical Catg.
-----	---	-----	----	-----
Hydrogen Chloride (7647-01-0)	5000	500*	Yes	No
Water (7732-18-5)	No	No	No	No

-----\Federal, State & International Regulations - Part 2\-----

	-RCRA-		-TSCA-	
Ingredient	CERCLA	261.33	8(d)	
-----	-----	-----	-----	
Hydrogen Chloride (7647-01-0)	5000	No	No	

Water (7732-18-5)

No

No

No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: Yes

SARA 311/312: Acute: Yes Chronic: Yes Fire: No Pressure: No

Reactivity: No (Mixture / Liquid)

Australian Hazchem Code: 2R**Poison Schedule:** No information found.**WHMIS:**

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. Other Information

NFPA Ratings: Health: 3 Flammability: 0 Reactivity: 0**Label Hazard Warning:**

POISON! DANGER! CORROSIVE. LIQUID AND MIST CAUSE SEVERE BURNS TO ALL BODY TISSUE. MAY BE FATAL IF SWALLOWED OR INHALED. INHALATION MAY CAUSE LUNG DAMAGE.

Label Precautions:

Do not get in eyes, on skin, or on clothing.

Do not breathe vapor or mist.

Use only with adequate ventilation.

Wash thoroughly after handling.

Store in a tightly closed container.

Remove and wash contaminated clothing promptly.

Label First Aid:

In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In all cases get medical attention immediately.

Product Use:

Laboratory Reagent.

Revision Information:

No changes.

Disclaimer:

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Prepared by: Strategic Services Division
Phone Number: (314) 539-1600 (U.S.A.)



Division of Facilities Services

DOD Hazardous Material Information (ANSI Format) For Cornell University Convenience Only

JET FUEL A

Section 1 - Product and Company Identification	Section 9 - Physical & Chemical Properties
Section 2 - Composition/Information on Ingredients	Section 10 - Stability & Reactivity Data
Section 3 - Hazards Identification Including Emergency Overview	Section 11 - Toxicological Information
Section 4 - First Aid Measures	Section 12 - Ecological Information
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Section 7 - Handling and Storage	Section 15 - Regulatory Information
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Section 1 - Product and Company Identification **JET FUEL A**

Product Identification: JET FUEL A

Date of MSDS: 06/30/1994 **Technical Review Date:** 12/14/1994

FSC: 9130 **NIIN:** 00-359-2026

Submitter: D DG

Status Code: C

MFN: 01

Article: N

Kit Part: N

Manufacturer's Information

Manufacturer's Name: ULTRAMAR INC

Post Office Box: 93102

Manufacturer's Address1: 1111 WEST OCEAN BLVD SUITE 1400

Manufacturer's Address2: LONG BEACH, CA 90809-3102

Manufacturer's Country: US

General Information Telephone: 310-495-5300/5832

Emergency Telephone: 310-491-6795/310-435-5832

Emergency Telephone: 310-491-6795/310-435-5832

MSDS Preparer's Name: N/P

Proprietary: N

Reviewed: Y

Published: Y

CAGE: 0VZA7

Special Project Code: N

Item Description

Item Name: TURBINE FUEL,AVIATION

Item Manager:

Specification Number: ASTM D1655

Type/Grade/Class: JET A

Unit of Issue: GL

Unit of Issue Quantity: X

Type of Container: BULK

Preparer Information

Preparer's Name: ULTRAMAR INC

Post Office Box: 93102

Preparer's Address1: 1111 WEST OCEAN BLVD SUITE 1400

Preparer's Address2: LONG BEACH, CA 90809-3102

Preparer's CAGE: 0VZA7

Assigned Individual: N

Contractor Information

Contractor's Name: ULTRAMAR INC

Post Office Box: 93102

Contractor's Address1: 1111 WEST OCEAN BLVD SUITE 1400

Contractor's Address2: LONG BEACH, CA 90809-3102

Contractor's Telephone: 310-495-5300

Contractor's CAGE: 0VZA7

Section 2 - Compositon/Information on Ingredients

JET FUEL A

Ingredient Name: ALIPHATIC PETROLEUM SOLVENT(JET FUEL A, C8-C16).

Ingredient CAS Number: 8008-20-6 **Ingredient CAS Code:** M

RTECS Number: OA5500000 **RTECS Code:** M

=WT: =WT Code:

=Volume: =Volume Code:

>WT: >WT Code:

>Volume: >Volume Code:

<WT: <WT Code:

<Volume: <Volume Code:

% Low WT: % Low WT Code:

% High WT: % High WT Code:

% Low Volume: % Low Volume Code:

% High Volume: % High Volume Code:

% Text: 99.83

% Enviromental Weight:

Other REC Limits: NONE RECOMMENDED

OSHA PEL: NOT ESTABLISHED **OSHA PEL Code:** M

OSHA STEL: OSHA STEL Code:

ACGIH TLV: NOT ESTABLISHED **ACGIH TLV Code:** M

ACGIH STEL: N/P **ACGIH STEL Code:**

EPA Reporting Quantity:

DOT Reporting Quantity:

Ozone Depleting Chemical: N

Section 3 - Hazards Identification, Including Emergency Overview

JET FUEL A

Health Hazards Acute & Chronic: MAY IRRIT RESP TRACT & EYES.MAY DAMAGE NERVES & AFFECT CENTRAL NERVOUS SYSTEM. INHAL:NARCOTIC,IRRIT UPPER RESP TRACT,HI CONCEN RESULTS IN CHEM PNEUITIS,CNS DEPRESSION.SKIN:NO INFO AVAILABLE ON SIGNIFI CANT ADVERSE EFFECTS.CHRONIC CONTACT:DEFAT,DRYNESS,DERM.INGEST: MOUTH/THROAT/STOMACEH IRRIT,LUNG & KIDNEY DAMAGE.

Signs & Symptoms of Overexposure:

INHAL:LACK OF APPETITE, NAU, HEADACHE, WEAKNESS, DRUNKENESS, GIDDINESS, LUNG DAMAGE, UNCONSCIOUSNESS, ANXIETY, NERVE DAMAGE. SKIN:REDNESS, SWELLING, LACK OF APPETITE. INGEST:COUGHING, NAU, VOMIT, DIA RR, DIFFICULTY BREATHING, DRUNKENESS, BLUISH SKIN COLOR, LUNG & KIDNEY DAMAGE. DEATH/ FATAL. CNS DEPRESSION.

Medical Conditions Aggravated by Exposure:

PERSONS WITH CHRONIC SKIN OR RESP DISEASE. TARGET ORGANS:CENTRAL NERVOUS SYSTEM DEPRESSANT.

LD50 LC50 Mixture: LD50 ORAL, RAT 25GM/KG

Route of Entry Indicators:

Inhalation: YES

Skin: YES

Ingestion: YES

Carcenogenicity Indicators

NTP: NO

IARC: NO

OSHA: NO

Carcinogenicity Explanation: PER MSDS:CARCINOGEN STATUS:OSHA/NTP/IARC:NO. CARCINOGEN STATUS:NONE.

Section 4 - First Aid Measures
JET FUEL A

First Aid:

INHAL:REMOVE TO FRESH AIR. IMMED.PERFORM ART RESP IF NECESSARY.MAINTAIN AIRWAY,BLOOD PRESSURE,RESP.KEEP WARM/@REST.TREAT SYMPTOMATICALLY/ SUPPORTIVELY.QUAL MED PER SHOULD CONSIDER GIVING OXY.SKIN:REMOV E CONTAMIN CLOTH/SHOES IMMED.WASH W/SOAP OR MILD DETERGENT & LG AMTS OF WATER @ LEAST 15-20MINS.EYE:WASH IMMED W/LG AMTS OF WATER OR NORMAL SALINE LIFTING EYELIDS @ LEAST 15-20MINS.INGEST:SEE SUPPLEM

Section 5 - Fire Fighting Measures

JET FUEL A

Fire Fighting Procedures:

MOVE CNTNR FROM FIRE W/O RISK.COOL CNTNR SIDES EXPO TO FLAMES W/WATER.
HUGE FIRE IN CARGO:UNMANNED HOSE HOLDER/MONITOR NOZ.LEAVE IMMED IF
RISING SOUND FROM VE

Unusual Fire or Explosion Hazard:

MODERATE FIRE HAZ WHEN EXPO TO HEAT/FLAME.VAP HEAVIER THAN AIR;MAY
TRAVEL CONSIDERABLE DISTANCE TO IGN SOURCE & FLASHBACK.VAP/AIR MIXTURES
ARE EXPLO >FLASHPOINT

Extinguishing Media:

DRY CHEMICAL, CARBON DIOXIDE, WATER SPRAY OR REGULAR FOAM.LG FIRES:
WATER SPRAY, FOG OR REGULAR FOAM.FLAMM CLASS:II(OSHA)

Flash Point: Flash Point Text: 120F,49C

Autoignition Temperature:

Autoignition Temperature Text: N/K

Lower Limit(s): 0.7

Upper Limit(s): N/K

Section 6 - Accidental Release Measures

JET FUEL A

Spill Release Procedures:

SHUT OFF IGN SOURCES.STOP LEAK W/O RISK.USE WATERSPRAY TO REDUCE VAP.SM:
TAKE UP W/SAND/OTHER ABSORBENT MATL.PLACE INTO CNTNR.LG:DIKE FOR LATER
DISPOSAL.NO SMOKING/FLAMES/FLARES IN HAZ AREA.KEEP PEOPLE AWAY.ISOLATE
AREA.

Section 7 - Handling and Storage

JET FUEL A

Handling and Storage Precautions:**Other Precautions:**

Section 8 - Exposure Controls & Personal Protection

JET FUEL A

Respiratory Protection:

WEAR SPECIFIC RESP BASED ON CONTAMIN LEVELS IN WORKPLACE,SPECIFIC

OPERATOR, DOES NOT EXCEED WORKING LIMITS OF RESP & APPROVED BY NIOSH/MSHA. REQUIRED FOR FIREFIGHTING & OTHER IMMEDIATE DANGEROUS TO LIFE/HEALTH CONDITIONS.

Ventilation:

PROVIDE LOCAL EXHAUST/GENERAL DILUTION VENTILATION TO MEET PUBLISHED EXPOSURE LIMITS. EXPLOSION-PROOF IF EXPLOSION CONCENTRATION OF DUST/VAPOR/FUME PRESENT

Protective Gloves:

IMPERVIOUS GLOVES.

Eye Protection: SPLASH-PROOF, DUST-RESISTANT SAFETY GOGGLES

Other Protective Equipment: EYEWASH FOUNTAIN. WEAR APPROPRIATE PROTECTIVE IMPERVIOUS CLOTHING/EQUIPMENT TO PREVENT SKIN CONTACT.

Work Hygienic Practices: WASH THOROUGHLY AFTER HANDLING. WASH CONTAMINATED CLOTHING PRIOR TO REUSE.

Supplemental Health & Safety Information: 1ST AID: PREVENT ASPIRATION. GASTRIC LAVAGE WITH CUFFED ENDOTRACHEAL TUBE IN PLACE SHOULD BE DONE WITHIN 15 MINUTES. ABSENCE OF DEPRESSION/CONVULSIONS/IMPAIRED GAG REFLEX, EMESIS CAN BE INDUCED USING SYRUP OF IPECAC WITH/OUT INCREASING HAZARD OF ASPIRATION. TREAT SYMPTOMATICALLY/SUPPORTIVELY. IN ALL CASES GET MEDICAL ATTENTION.

Section 9 - Physical & Chemical Properties

JET FUEL A

HCC: F4

NRC/State License Number: N/R

Net Property Weight for Ammo: N/R

Boiling Point: Boiling Point Text: >315F, >157C

Melting/Freezing Point: Melting/Freezing Text: -40F, -40C

Decomposition Point: Decomposition Text: N/K

Vapor Pressure: N/K **Vapor Density:** >1

Percent Volatile Organic Content:

Specific Gravity: 0.62

Volatile Organic Content Pounds per Gallon:

pH: N/K

Volatile Organic Content Grams per Liter:

Viscosity: N/K

Evaporation Weight and Reference: N/K

Solubility in Water: INSOLUBLE

Appearance and Odor: CLEAR, WHITE OR LIGHT STRAW-COLORED LIQUID WITH ODOR LIKE DEROSENE.

Percent Volatiles by Volume: NIL

Corrosion Rate: N/K

Section 10 - Stability & Reactivity Data

JET FUEL A

Stability Indicator: YES

Materials to Avoid:

OXIDIZERS (STRONG):FIRE/EXPLOSION HAZARD.

Stability Condition to Avoid:

AVOID CONTACT W/HEAT/SPARKS/FLAMES/OTHER SOURCES OF IGNITION.AVOID OVERHEATING CNTNRS.AVOID CONTAMIN OF WATER SOURCES.

Hazardous Decomposition Products:

THERMAL DECOMP PROD MAY INCLUDE TOXIC OXIDES OF CARBON.

Hazardous Polymerization Indicator: NO

Conditions to Avoid Polymerization:

NOT APPLICABLE

Section 11 - Toxicological Information

JET FUEL A

Toxicological Information:

N/P

Section 12 - Ecological Information

JET FUEL A

Ecological Information:

N/P

Section 13 - Disposal Considerations

JET FUEL A

Waste Disposal Methods:

OBSERVE ALL LOCAL, STATE AND FEDERAL REGULATIONS WHEN DISPOSING OF THIS SUBSTANCE.DISPOSAL MUST BE IAW STANDARDS APPLICABLE TO GENERATORS OF HAZ WASTE 40CFR262. EPA HAZ WASTE #:D001. 100 LBS CERCLA SE C 103 RQ.

Section 14 - MSDS Transport Information

JET FUEL A

Transport Information:

N/P

Section 15 - Regulatory Information

JET FUEL A

SARA Title III Information:

N/P

Federal Regulatory Information:

N/P

State Regulatory Information:

N/P

Section 16 - Other Information

JET FUEL A

Other Information:

N/P

HMIS Transportation Information

Product Identification: JET FUEL A

Transportation ID Number: 70119

Responsible Party CAGE: 0VZA7

Date MSDS Prepared: 06/30/1994

Date MSDS Reviewed: 12/14/1994

MFN: 12/14/1994

Submitter: D DG

Status Code: C

Container Information

Unit of Issue: GL

Container Quantity: X

Type of Container: BULK

Net Unit Weight: BULK

Article without MSDS: N

Technical Entry NOS Shipping Number:

Radioactivity:

Form:

Net Explosive Weight:

Coast Guard Ammunition Code:

Magnetism: N/P

AF MMAC Code:

DOD Exemption Number:

Limited Quantity Indicator:

Multiple Kit Number: 0

Kit Indicator: N

Kit Part Indicator: N

Review Indicator: Y

Additional Data:

PER MSDS:US DOT SHIPPING NAME:FUEL,AVIATIN,TURBINE ENGINE, UN1863, 3 FLAMM

LIQ, PG I. NO CODE FOR IA TA THEREFORE USED CODE FOR PG II.

Department of Transportation Information

DOT Proper Shipping Name: FUEL, AVIATION, TURBINE ENGINE

DOT PSN Code: GNY

Symbols:

DOT PSN Modifier:

Hazard Class: 3

UN ID Number: UN1863

DOT Packaging Group: I

Label: FLAMMABLE LIQUID

Special Provision(s): T7

Packaging Exception: 150

Non Bulk Packaging: 201

Bulk Packaging: 243

Maximum Quantity in Passenger Area: 1 L

Maximum Quantity in Cargo Area: 30 L

Stow in Vessel Requirements: E

Requirements Water/Sp/Other:

IMO Detail Information

IMO Proper Shipping Name: FUEL, AVIATION, TURBINE ENGINE

IMO PSN Code: HNV

IMO PSN Modifier:

IMDG Page Number: 3271

UN Number: 1863

UN Hazard Class: 3.2

IMO Packaging Group: I/II

Subsidiary Risk Label: -

EMS Number: 3-07

Medical First Aid Guide Number: 311

IATA Detail Information

IATA Proper Shipping Name: FUEL, AVIATION, TURBINE ENGINE

IATA PSN Code: MMA

IATA PSN Modifier:

IATA UN Id Number: 1863

IATA UN Class: 3

Subsidiary Risk Class:

UN Packaging Group: II

IATA Label: FLAMMABLE LIQUID

Packaging Note for Passengers: 305

Maximum Quantity for Passengers: 5L

Packaging Note for Cargo: 307

Maximum Quantity for Cargo: 60L

Exceptions:

AFI Detail Information

AFI Proper Shipping Name: FUEL, AVIATION, TURBINE ENGINE

AFI Symbols:

AFI PSN Code: MMB

AFI PSN Modifier:

AFI UN Id Number: UN1863

AFI Hazard Class: 3

AFI Packing Group: I

AFI Label:

Special Provisions: P3

Back Pack Reference: A7.3

HAZCOM Label Information

Product Identification: JET FUEL A

CAGE: 0VZA7

Assigned Individual: N

Company Name: ULTRAMAR INC

Company PO Box: 93102

Company Street Address1: 1111 WEST OCEAN BLVD SUITE 1400

Company Street Address2: LONG BEACH, CA 90809-3102 US

Health Emergency Telephone: 310-491-6795/310-435-5832

Label Required Indicator: Y

Date Label Reviewed: 12/14/1994

Status Code: C

Manufacturer's Label Number:

Date of Label: 12/14/1994

Year Procured: N/K

Organization Code: F

Chronic Hazard Indicator: N/P

Eye Protection Indicator: YES

Skin Protection Indicator: YES

Respiratory Protection Indicator: YES

Signal Word: WARNING

Health Hazard: Moderate

Contact Hazard: Slight

Fire Hazard: Moderate

Reactivity Hazard: None

8/7/2002 10:41:32 PM



Material Safety Data Sheet

WHMIS / ANSI Z400.1-2004 Compliant

MSDS date: 10-Apr-2006

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: MAGNAFLOC 156
Product Number: 2331043

Chemical Family: Copolymer of sodium acrylate and acrylamide.

Intended Use: Flocculant

Manufacturer/Supplier: Ciba Specialty Chemicals Canada Inc.
2626 Argentia Road
Mississauga, Ontario
L5N 5N2
8am - 5pm Phone Number: 1-866-679-2422

CANUTEC Emergency: (613) 996-6666
Emergency 24-Hour Health/Environmental Phone: 1-800-873-1138

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Signal Word: CAUTION!
Physical Form: Granular Powder
Color: White
Odor: Odorless
Health: This product has no known adverse effect on human health.
Physical Hazards: Slip hazard when wet. , Organic powders may be capable of generating static discharges and creating explosive mixtures in air. Handle with caution, Refer to MSDS Section 7 for Dust Explosion information. .

WHMIS Designation: This product is not WHMIS controlled.

Potential Health Effects: Eye contact may cause slight irritation and/or redness. Repeated or prolonged exposure may cause slight skin irritation. Inhaled dust may cause some respiratory irritation.

Primary Route(s) of Entry: Inhalation, Ingestion, Skin, Eyes.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Component Information: This material does not contain any hazardous components that are reportable according to WHMIS criteria.

4. FIRST AID MEASURES

Eyes: Immediately flush the eye(s) with lukewarm, gently flowing water for 15 minutes or until the chemical is removed. Get medical attention.

Skin: Wash off immediately with soap and plenty of water. Get medical attention if irritation occurs. If clothing is contaminated, remove and launder before reuse.

Inhalation: Remove to fresh air, if not breathing give artificial respiration. If breathing is difficult, give oxygen and get immediate medical attention.

Ingestion: Do not induce vomiting. If vomiting occurs naturally, have casualty lean forward to reduce the risk of aspiration. Seek medical attention immediately.

5. FIRE FIGHTING MEASURES

Fire Fighting Measures: Standard procedure for chemical fires.

Suitable Extinguishing Media: Carbon dioxide, dry chemical or foam.

Fire Fighting Equipment: Wear self-contained breathing apparatus and protective suit.

Unusual hazards: The product is slippery when wet. Restrict pedestrian and vehicular traffic in areas where slip hazard may exist. Dust in sufficient concentration can result in an explosive mixture in air. Handle to minimize dusting and eliminate open flame and other sources of ignition.

Hazardous Combustion Products: Burning may produce oxides of carbon or nitrogen.

6. ACCIDENTAL RELEASE MEASURES

Cleanup Instructions: Wear suitable protective equipment. Product becomes slippery and difficult to handle when wet. Avoid dust formation. Sweep up and shovel into suitable containers for disposal. Should not be released into the environment. Clean up promptly.

7. HANDLING AND STORAGE

Handling: As with all industrial chemicals, use good industrial practices when handling. Avoid eye, skin, and clothing contact. Do not inhale. Do not taste or swallow. Use only with adequate ventilation. Slip hazard when wet. Clean up spills promptly.

Storage: Keep containers tightly closed in a cool, well-ventilated place. Avoid wet, damp or humid conditions, temperature extremes and ignition sources. Avoid buildup of dust.

Explosion Hazards: Avoid creating dusty conditions. Organic powders may be capable of generating static discharges and creating explosive mixtures in air. Handle with caution.

For Industrial Use Only

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines:

There are no OSHA or ACGIH exposure guidelines available for component(s) in this product.

Personal Protective Equipment

Eye/Face Protection:	Wear safety glasses or goggles to protect against dust particles.
Skin Protection:	Wear chemical resistant gloves and protective clothing.
Respiratory Protection:	Use NIOSH approved respirator as needed to mitigate exposure.
Engineering Controls:	Work in well ventilated areas. Do not breathe dust. Local exhaust/ventilation recommended.
Other Protective Equipment:	Eye bath and washing facilities.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical Form:	Granular Powder
Color:	White
Odor:	Odorless.
Freezing/Melting Point:	Not determined
Solubility in water:	Soluble, solubility limited by viscosity
Vapor Density:	Not applicable
Vapor Pressure:	Not applicable
Density:	Not determined
Specific Gravity:	0.75
pH:	Not determined
Percent Volatile:	Not determined
VOC:	Not determined
Partition Coefficient (Octanol/Water):	Not determined
Decomposition Temperature:	Not determined
Flammability Limits in Air:	
Flash point:	Not applicable
Test Method (for Flash Point):	Not applicable

10. STABILITY AND REACTIVITY

Stability:	Stable.
Conditions to Avoid:	Avoid static discharges and sources of ignition. Avoid wet and humid conditions. Avoid high temperatures.
Incompatibility:	Strong oxidizing agents. (may degrade polymer)
Hazardous Decomposition Products:	No decomposition expected under normal storage conditions.
Possibility of Hazardous Reactions:	None expected.

11. TOXICOLOGICAL INFORMATION

Acute Oral Toxicity:	Not determined.
Acute Dermal Toxicity:	Not determined
Acute Inhalation Toxicity:	Not determined.
Eye Irritation:	Not determined.
Skin Irritation:	Not determined.
Skin Sensitization:	Not determined
Respiratory Sensitization:	Not determined
Carcinogenicity (IARC; NTP; OSHA; ACGIH):	None of the components in this product at concentrations greater than 0.1% are listed by IARC; NTP, OSHA or ACGIH as a carcinogen.
Mutagenicity:	No data for product. No effects anticipated.
Reproductive Toxicity:	No data for product. No effects anticipated.
Teratogenicity:	No data for product. No effects anticipated.
Neurotoxicity:	Not determined
Subacute Toxicity:	Not determined
Subchronic Toxicity:	Not determined
Chronic toxicity:	Not determined
Absorption / Distribution / Excretion / Metabolism:	Not determined
Additional Information:	Not determined

12. ECOLOGICAL INFORMATION

Toxicity to Fish:	LC50 230 mg/L 96 hour (Rainbow trout) (under static conditions in the presence of humic acid)
Toxicity to Invertebrates:	LC50 110 mg/L 48 hour (Ceriodaphnia dubia) (under static conditions in the presence of humic acid) EC50 3.6 mg/L 7 days (Ceriodaphnia dubia) (under static-renewel conditions in the presence of humic acid)
Toxicity to Algae:	Not determined
Toxicity to Sewage Bacteria:	Not determined
Activated Sludge Respiration Inhibition Test:	Not determined

Biochemical Oxygen Demand (BOD): Not determined

Chemical Oxygen Demand (COD): Not determined

Total Oxygen Demand (TOD): Not determined

Biodegradability: Not determined

Bioaccumulation: Not determined

Additional Environmental Data: No data available.

13. DISPOSAL CONSIDERATIONS

Waste Disposal: Dispose in accordance with local, state, provincial and federal regulations.

14. TRANSPORT INFORMATION

Transportation of Dangerous Goods (TDG):

Not regulated for transport by road or rail.

International Maritime Dangerous Goods (IMDG):

Not regulated for this mode of transport.

International Air Transportation Authority (IATA):

Not regulated for this mode of transport.

15. REGULATORY INFORMATION

Federal Regulations

Workplace Hazardous Materials Information System (WHMIS): This product is not WHMIS controlled.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

Domestic Substance List (DSL) Status: All components either exempt or listed on the DSL.

International Regulations

TSCA Section 8(b) Inventory Status: All component(s) comprising this product are either exempt or listed on the TSCA inventory.

Chemical Weapons Convention (CWC): This product does not contain any component(s) listed under the Chemical Weapons Convention Schedule of Chemicals.

16. OTHER INFORMATION

Reason for revision: New MSDS Format.

Contact Information Safety, Regulatory and Environmental: Marlene Dorcas (905) 812-7280

Disclaimer: The information contained herein is based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to such data or information. The user is responsible for determining whether the product is suitable for its intended conditions of use.

AMOCO OIL -- AMOCO LDO SG MOTOR OIL 10W-40

MATERIAL SAFETY DATA SHEET

NSN: 9150001160506

Manufacturer's CAGE: 15958

Part No. Indicator: A

Part Number/Trade Name: AMOCO LDO SG MOTOR OIL 10W-40

General Information

Company's Name: AMOCO OIL CO

Company's Street: 200 E RANDOLPH DR

Company's City: CHICAGO

Company's State: IL

Company's Country: US

Company's Zip Code: 60601

Company's Emerg Ph #: 800-447-8735;800-424-9300(CHEMTREC)

Company's Info Ph #: 312-856-3907

Record No. For Safety Entry: 003

Tot Safety Entries This Stk#: 008

Status: SMJ

Date MSDS Prepared: 02OCT89

Safety Data Review Date: 28MAR95

Supply Item Manager: S9G

MSDS Serial Number: BKMWP

Hazard Characteristic Code: N1

Ingredients/Identity Information

Proprietary: NO

Ingredient: REFINED HEAVY PARAFFINIC DISTILLATES (SOLVENT REFINED
PARAFFINIC PETROLEUM OIL) PEL/TLV AS OIL MIST.

Ingredient Sequence Number: 01

NIOSH (RTECS) Number: 1003331RP

CAS Number: 64741-88-4

OSHA PEL: 5 MG/M3

ACGIH TLV: 5 MG/M3;10 MG/M3STEL

Physical/Chemical Characteristics

Appearance And Odor: PALE COLORED OILY LIQUID.

Specific Gravity: 0.88

Solubility In Water: <0.1%.

Fire and Explosion Hazard Data

Flash Point: 401F,205C

Flash Point Method: COC

Extinguishing Media: AGENTS APPROVED FOR CLASS B HAZARDS (E.G., DRY

CHEMICAL, CARBON DIOXIDE, HALOGENATED AGENTS, FOAM, STEAM) OR WATER FOG.
Special Fire Fighting Proc: WEAR NIOSH/MSHA APPROVED SCBA AND FULL
PROTECTIVE EQUIPMENT (FP D).

Unusual Fire And Expl Hazrds: NONE.

Reactivity Data

Stability: YES

Cond To Avoid (Stability): NONE SPECIFIED BY MANUFACTURER.

Materials To Avoid: NONE SPECIFIED BY MANUFACTURER.

Hazardous Decomp Products: INCOMPLETE BURNING CAN PRODUCE CO AND/OR CO2
AND OTHER HARMFUL PRODUCTS.

Conditions To Avoid (Poly): NONE SPECIFIED BY MANUFACTURER.

Health Hazard Data

LD50-LC50 Mixture: LD50:(ORL,RAT)5 G/KG; (DRM,RBT)2 G/KG.

Route Of Entry - Inhalation: YES

Route Of Entry - Skin: YES

Route Of Entry - Ingestion: NO

Health Haz Acute And Chronic: ACUTE:EYE/INHAL/INGEST:NO SIGNIFICANT HEALTH
HAZARDS IDENTIFIED. SKIN:NONE EXPECTED FOR SINGLE SHORT-TERM EXPOSURES.
PRLNGD/RPTD CONTACT MAY PRODUCE SOME IRRITATION. CAUTION! CONTINUOUS LONG-
TERM CONTACT W/USED MOTOR OILS HAS CAUSED CANCER IN ANIMAL TESTS. (MFR.)

Carcinogenicity - NTP: NO

Carcinogenicity - IARC: NO

Carcinogenicity - OSHA: NO

Explanation Carcinogenicity: NOT RELEVANT

Signs/Symptoms Of Overexp: NONE SPECIFIED BY MANUFACTURER.

Med Cond Aggravated By Exp: NONE SPECIFIED BY MANUFACTURER.

Emergency/First Aid Proc: EYE:FLUSH W/PLENTY OF WATER FOR AT LEAST 15
MINUTES. SKIN:NONE REQUIRED FOR UNUSED MOTOR OIL. CNTCT W/USED MOTOR OIL,
WASH AREA THOROUGHLY W/SOAP & WATER OR USE WATERLESS HAND CLEANERS. DO NOT
USE GASOLINE, THINNERS OR SOLVENTS. INHAL:IF ADVERSE EFFECTS OCCUR, REMOVE
TO UNCONTAMINATED AREA. INGEST:IF LG AMT SWALLOWED, INDUCE VOMITING. GET
MD.

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: CONTAIN ON ABSORBENT MATERIAL (E.G., SAND,
SAWDUST, DIRT, CLAY). KEEP OUT OF SEWERS AND WATERWAYS.

Neutralizing Agent: NONE SPECIFIED BY MANUFACTURER.

Waste Disposal Method: DISPOSAL MUST BE I/A/W APPLICABLE FEDERAL, STATE,
OR LOCAL REGULATIONS. ENCLOSED-CONTROLLED INCINERATION IS RECOMMENDED
UNLESS DIRECTED OTHERWISE BY APPLICABLE ORDINANCES.

Precautions-Handling/Storing: WEAR PROTECTIVE CLOTHING AND IMPERVIOUS
GLOVES WHEN WORKING W/USED MOTOR OILS.

Other Precautions: NONE SPECIFIED BY MANUFACTURER.

Control Measures

Respiratory Protection: NONE REQUIRED; HOWEVER, USE OF ADEQUATE VENTILATION IS GOOD INDUSTRIAL PRACTICE.

Ventilation: NONE SPECIFIED BY MANUFACTURER.

Protective Gloves: IMPERVIOUS GLOVES.

Eye Protection: CHEMICAL WORKERS GOGGLES (FP D).

Other Protective Equipment: PROTECTIVE CLOTHING.

Work Hygienic Practices: REMOVE OIL-SOAKED CLTHG, INCLUDING SHOES, & THOROUGHLY CLEAN & DRY BEFORE RE-USE.

Suppl. Safety & Health Data: NONE SPECIFIED BY MANUFACTURER.

Transportation Data

Trans Data Review Date: 91248

DOT PSN Code: ZZZ

DOT Proper Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION

IMO PSN Code: ZZZ

IMO Proper Shipping Name: NOT REGULATED FOR THIS MODE OF TRANSPORTATION

IATA PSN Code: ZZZ

IATA Proper Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION

AFI PSN Code: ZZZ

AFI Prop. Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION

Additional Trans Data: NOT REGULATED FOR TRANSPORTATION

Disposal Data

Label Data

Label Required: YES

Label Status: G

Common Name: AMOCO LDO SG MOTOR OIL 10W-40

Special Hazard Precautions: ACUTE:EYE/INHAL/INGEST:NO SIGNIFICANT HEALTH HAZARDS IDENTIFIED. SKIN:NONE EXPECTED FOR SINGLE SHORT-TERM EXPOSURES.

PRLNGD/RPTD CONTACT MAY PRODUCE SOME IRRITATION. CAUTION! CONTINUOUS LONG-TERM CONTACT W/USED MOTOR OILS HAS CAUSED CANCER IN ANIMAL TESTS. (MFR.)

NONE SPECIFIED BY MANUFACTURER.

Label Name: AMOCO OIL CO

Label Street: 200 E RANDOLPH DR

Label City: CHICAGO

Label State: IL













Label Zip Code: 60601

Label Country: US

Label Emergency Number: 800-447-8735;800-424-9300(CHEMTREC)

EMERGENCY NUMBERS:

(USA) CHEMTREC : 1(800) 424-9300 (24hrs)
(CAN) CANUTEC : 1(613) 996-6666 (24hrs)
(USA) Anachemia : 1(518) 297-4444
(CAN) Anachemia : 1(514) 489-5711

WHMIS	Protective Clothing	TDG Road/Rail
WHMIS CLASS: E C D-1A		TDG CLASS: 8 5.1 6.1 9.2 PIN: UN2032 PG: I
  	    	   

Section I. Product Identification and Uses

Product name	NITRIC ACID, 90%	CI#	Not available.
Chemical formula	HNO ₃ in H ₂ O	CAS#	Not applicable.
Synonyms	Nitric acid red fuming, Red fuming nitric acid, AC-6527, 62800	Code	AC-6527
Supplier	Anachemia Canada. 255 Norman. Lachine (Montreal), Que H8R 1A3	Formula weight	Not applicable.
		Supersedes	
Material uses	For laboratory use only.		

Section II. Ingredients

Name	CAS #	%	TLV
1) NITRIC ACID	7697-37-2	>90	Exposure limits: ACGIH TWA 2 ppm (5.2 mg/m ³); STEL 4 ppm (10 mg/m ³)
2) NITROGEN DIOXIDE	10102-44-0	7.5-12.7	Exposure limits: ACGIH TWA 3 ppm (5.6 mg/m ³); STEL 5 ppm (9.4 mg/m ³)
3) WATER	7732-18-5	Balance	Not established by ACGIH.

Toxicity values of the hazardous ingredients

NITRIC ACID:
ORAL (LDLo): Acute: 430 mg/m³ (Human).
UNREPORTED (LDLo): Acute: 110 mg/kg (Human).
NITRIC ACID, FUMING:
INHALATION (LC50): Acute: 67 ppm (Rat) (NO₂) (4 hour(s)).
NITROGEN DIOXIDE:
GAS (LC50): Acute: 30 ppm (Guinea pig) (1 hour(s)). 88 ppm (Rat) (4 hour(s)). 315 ppm/15M (Rabbit).
GAS (LCLo): Acute: 200 ppm/1M (Human).

Section III. Physical Data**NITRIC ACID, 90%****page 2/4**

Physical state and appearance / Odor	Yellow to brown-red liquid. Pungent and suffocating acid odor.
pH (1% soln/water)	<7
Odor threshold	<5 ppm
Percent volatile	100% (V/V)
Freezing point	-42°C
Boiling point	83°C
Specific gravity	1.526-1.544 (Water = 1)
Vapor density	2.2 (Air = 1)
Vapor pressure	62 mm of Hg (@ 25°C)
Water/oil dist. coeff.	Not available.
Evaporation rate	Not available.
Solubility	Miscible in water.

Section IV. Fire and Explosion Data

Flash point	Not applicable.
Flammable limits	Not applicable.
Auto-ignition temperature	Not applicable.
Fire degradation products	Oxides of nitrogen (NO, NO ₂ , N ₂ O, N ₂ O ₃) plus nitric acid mist or vapor.
Fire extinguishing procedures	Use flooding quantities of water. Wear adequate personal protection to prevent contact with material or its combustion products. Self contained breathing apparatus with a full facepiece operated in a pressure demand or other positive pressure mode. Cool containing vessels with flooding quantities of water until well after fire is out.
Fire and Explosion Hazards	Powerful oxidizing agent; may ignite oxidizable materials. Contributes to combustion of other materials. Container explosion may occur under fire conditions or when heated. Contact with other material may cause fire and/or explosion. Flammable/explosive hydrogen gas may be formed upon contact of this product with metals. Emits toxic and corrosive fumes under fire conditions. Reacts violently with water.

Section V. Toxicological Properties

Routes of entry	Ingestion and inhalation. Eye contact. Skin contact.
Effects of Acute Exposure	May be fatal by ingestion, inhalation, or by skin absorption. Corrosive to skin and eyes on contact. Vapors, liquids and mists are extremely corrosive. Possible risks of irreversible effects. Effects may be delayed. Target organs: eyes, skin, respiratory system, lungs, teeth, cardiovascular system. 25 ppm (NO ₂) is immediately dangerous to life or health.
Eye	Vapors, liquids and mists are extremely corrosive to the eyes. Brief contact of the vapors will be severely irritating. Brief contact of the liquid or mist will severely damage the eyes and prolonged contact may cause permanent eye injury which may be followed by blindness.
Skin	Causes severe burns, blisters and yellow skin discoloration.
Inhalation	Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract. Inhalation may be fatal as a result of spasm, inflammation and edema of the larynx and bronchi, chemical pneumonitis and pulmonary edema. Symptoms of exposure may include burning sensation, coughing, laryngitis, bronchitis, dyspnea, headache, nausea, hypotension, cyanosis, and vomiting. May cause delayed lung injury.
Ingestion	Burns in mouth, pharynx and gastrointestinal tract. Risk of vomiting, nausea, diarrhea, abdominal pain, stomach perforation, hematemesis, hemoptysis, hypotension, nephritis, albuminuria, oliguria, anuria, hematuria, convulsions, kidney damage, coma and death.

Section V. Toxicological Properties

NITRIC ACID, 90%

page 3/4

Effects of Chronic Overexposure	May cause erosion of the teeth, lesions of the skin, bronchial irritation, coughing, pneumonia, bronchitis, and lung damage. Repeated or prolonged exposure to the substance can produce target organs damage. Carcinogenic effects: Not available. Mutagenic effects: Not available. Teratogenic effects: Not available. Toxicity of the product to the reproductive system: Not available. To the best of our knowledge, the chemical, physical, and toxicity of this substance has not been fully investigated.
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Section VI. First Aid Measures

Eye contact	Immediate first aid is needed to prevent eye damage. Washing within 1 minute is essential to achieve maximum effectiveness. IMMEDIATELY flush eyes with copious quantities of water for at least 30 minutes holding lids apart to ensure flushing of the entire surface. Seek immediate medical attention. If irritation persists, repeat flushing.
Skin contact	Immediate first aid is needed to prevent skin damage. IMMEDIATELY flush skin with running water for at least 30 minutes. Remove contaminated clothing, protecting your own hands and body. Seek immediate medical attention. If irritation persists, repeat flushing. Do not transport victim unless the recommended flushing period is completed or flushing can be continued during transport. Wash contaminated clothing before reusing.
Inhalation	Remove patient to fresh air. Administer approved oxygen supply if breathing is difficult. Administer artificial respiration or CPR if breathing has ceased. Seek immediate medical attention.
Ingestion	If conscious, wash out mouth with water. Have conscious person drink several glasses of water or milk. Aim to dilute acid 100 times approximately. DO NOT induce vomiting. Seek immediate medical attention. Never give anything by mouth to an unconscious or convulsing person. Guard against aspiration into lungs. If spontaneous vomiting occurs, have victim lean forward with head down to avoid breathing in of vomitus, rinse mouth and administer more water.

Section VII. Reactivity Data

Stability	Stable. Conditions to avoid: High temperatures, sparks, open flames and all other sources of ignition, contamination.
Hazardous decomp. products	Various nitrogen oxides, including (NO, NO ₂ , N ₂ O ₃ , N ₂ O) all mixed with nitric acid mist and vapor.
Incompatibility	Explosive reaction with reducing agents, combustible materials, wood, paper, cotton, and similar organic materials, organic chemicals, fluorine, phosphine, carbonates, diborane, hydrocarbons, dichromates, bases, alkalis, aluminum, iron, copper, resins, sulfides, ammonia, amines, alcohols, turpentine, hydrogen sulfide, metal powders, carbides, organic materials (acetone, acetic acid, methanol, formaldehyde, ether, etc.), non-metals (boron, phosphorus, carbon, etc.), hydrazine, acids, peroxides, silicides, phosphides, salicylates, non-metal oxides, thiols, nitrides, cyanates, ketones, interhalogens, boron phosphide, cyanides, acetylides, silver compounds, mercury(II) compounds, thiocyanates, ammonium nitrate, hexacyanoferrates, phosphorus compounds, zinc ethoxide, azides, metal oxides, ferricyanides, alkali metals. Reacts with most common metals to produce hydrogen. Heat.
Reaction Products	Reacts with water to produce heat, and toxic, corrosive fumes of nitrogen oxides. Contact with other material may cause fire and/or explosion. Corrosive to metals. Hazardous polymerization will not occur.

Section VIII. Preventive Measures

NITRIC ACID, 90%

page 4/4

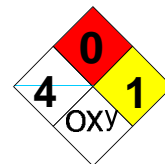
Protective Clothing in case of spill and leak	Wear self-contained breathing apparatus, neoprene boots and neoprene gloves. Full suit.
Spill and leak	Evacuate and ventilate the area. Eliminate all sources of ignition. Cover with soda ash or lime. Adequate ventilation is required for soda ash due to release of carbon dioxide gas. Place in a suitable container and mark for disposal. Wash spill site after material pick up is complete. DO NOT empty into drains. DO NOT touch damaged container or spilled material. Avoid contact with a combustible material (wood, paper, oil, clothing...). Stay upwind: Keep out of low areas.
Waste disposal	According to all applicable regulations. Harmful to aquatic life at very low concentrations. Can be dangerous if allowed to enter drinking water intakes. Do not contaminate domestic or irrigation water supplies, lakes, streams, ponds, or rivers.
Storage and Handling	Store in a cool place away from heated areas, sparks, and flame. Store in a well ventilated area. Store away from incompatible materials. Do not add any other material to the container. Do not wash down the drain. Do not breathe gas/fumes/vapor/spray. In case of insufficient ventilation, wear suitable respiratory equipment. Keep away from direct sunlight or strong incandescent light. Keep container tightly closed and dry. Manipulate under an adequate fume hood. Avoid contact with a combustible material (wood, paper, oil, clothing...). Empty containers may contain a hazardous residue. Handle and open container with care. Take off immediately all contaminated clothing. This product must be manipulated by qualified personnel. Do not get in eyes, on skin, or on clothing. Wash well after use. In accordance with good storage and handling practices. Do not allow smoking and food consumption while handling. In case of accident or if you feel unwell, seek medical advice immediately (show the label when possible.). Do not allow water to get inside container because of violent reaction. May catch fire in contact with combustible materials. May develop pressure; vent periodically.

Section IX. Protective Measures

Protective clothing	Face shield and splash goggles. Impervious neoprene gloves, synthetic apron, coveralls, and/or other resistant protective clothing. Sufficient to protect skin. Have available and use as appropriate: neoprene suits and boots. A OSHA/MSHA jointly approved respirator is advised in the absence of proper environmental controls. If more than TLV, do not breathe vapor. Wear self-contained breathing apparatus. Do not wear contact lenses. Make eye bath and emergency shower available. Ensure that eyewash station and safety shower is proximal to the work-station location.
Engineering controls	Use only in a chemical fume hood to keep airborne levels below recommended exposure limits. Ventilation should be corrosion proof. Do not use in unventilated spaces.

Section X. Other Information

Special Precautions or comments	<p>Extremely corrosive liquid! Powerful oxidizing agent; may ignite oxidizable materials. Highly toxic! Causes severe burns which may be delayed! Risk of serious damage to eyes. Possible risks of irreversible effects. Do not breathe vapor. Avoid all contact with the product. Avoid prolonged or repeated exposure. Use only in a chemical fume hood. Contact with other material may cause fire and/or explosion. Reacts violently with water. When diluting, always add acid to water, not water to acid. Heat is generated by dilution. Handle and open container with care. Container should be opened only by a technically qualified person.</p> <p>Note to physician: Medical conditions that may be aggravated by exposure include asthma, bronchitis, emphysema, and other lung diseases and chronic nose, sinus, or throat conditions. In the event of skin or eye contact, rapid and thorough flushing is essential.</p> <p>RTECS no. QU5900000.</p>
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NFPA

Prepared by MSDS Department/Département de F.S..

Validated 11-Dec-2001

Telephone# (514) 489-5711

While the company believes the data set forth herein are accurate as of the date hereof, the company makes no warranty with respect thereto and expressly disclaims all liability for reliance thereon. Such data are offered solely for your consideration, investigation and verification.

BARIUM AND CHEMICALS INC -- POTASSIUM NITRATE

MSDS Safety Information

MSDS Date: 12/27/2000

MSDS Num: CKXTG

Product ID: POTASSIUM NITRATE

MFN: 01

Responsible Party

Cage: 20865

Name: BARIUM AND CHEMICALS INC

Address: COUNTY RD 44

Box: 218

City: STEUBENVILLE OH 43952

Info Phone Number: 740-282-9776

Emergency Phone Number: 740-282-9776

Published: Y

Contractor Summary

Cage: 20865

Name: BARIUM AND CHEMICALS INC

Address: COUNTY RD 44

Box: 218

City: STEUBENVILLE OH 43952

Phone: 740-282-9776

Contract Number: SP0413-01-M-0433

Ingredients

Cas: 7757-79-1

RTECS #: TT3700000

Name: POTASSIUM NITRATE

% low Wt: 99.

% high Wt: 100.

Health Hazards Data

Route Of Entry Inds - Inhalation: YES

Skin: YES

Ingestion: YES

Effects of Exposure: IRRITATION OF SKIN AND MUCOUS MEMBRANES. INGESTION OF LARGE AMOUNTS CAUSES VIOLENT GASTROENTERITIS. CHRONIC EXPOSURE: ANEMIA, NEPHRITIS, METHEMOGLOBINEMIA.

Signs And Symptoms Of Overexposure: DIZZINESS, ABDOMINAL CRAMPS, VOMITING, HEADACHES, MENTAL IMPAIRMENT, CYANOSIS.

Medical Cond Aggravated By Exposure: NA

First Aid: EYES: FLUSH THOROUGHLY WITH WATER FOR 15 MINUTES: CALL PHYSICIAN.
SKIN: FLUSH THOROUGHLY WITH WATER. INGESTION: DRINK WATER AND INDUCE
VOMITING. INHALATION: REMOVE TO FRESH AIR, CALL PHYSICIAN.

=====
Handling and Disposal
=====

Spill Release Procedures: WEAR IMPERVIOUS GLOVES, BOOTS, COVERALLS AND GOGGLES.
WEAR NIOSH/MSHA-APPROVED DUST RESPIRATOR. SHOVEL UP SPILLED MATERIAL.

Waste Disposal Methods: SANITARY LANDFILL I/A/W FEDERAL, STATE AND LOCAL
REGULATIONS.

Handling And Storage Precautions: STOW AWAY FROM REDUCING AGENTS AND LIQUIDS OF
LOW FLASH POINTS.

Other Precautions: CONTAINERS USED TO SHIP THIS MATERIAL SHOULD BE DISPOSED OF
I/A/W LOCAL, STATE AND FEDERAL REGULATIONS.

=====
Fire and Explosion Hazard Information
=====

Flash Point Text: NA

Autoignition Temp Text: NA

Lower Limits: NA

Upper Limits: NA

Extinguishing Media: SMALL FIRES: DRY CHEMICAL / LARGE FIRES: WATER SPRAY, FOG
OR FOAM.

Fire Fighting Procedures: REMOVE CONTAINERS, IF POSSIBLE WITHOUT RISK. COOL
CONTAINERS WITH WATER. USE NIOSH/MSHA-APPROVED SCBA WHEN MATERIAL IS INVOLVED
IN FIRE.

Unusual Fire/Explosion Hazard: OXIDIZER - KEEP AWAY FROM REDUCING AGENTS. WILL
EXPLODE IF HEATED TO 1000 F IN PRESENCE OF REDUCING AGENTS, ORGANIC
MATERIALS, OR IF MIXED WITH CYANIDES. YIELDS TOXIC GASEOUS OXIDES WHEN HEATED
ABOVE 1000 F.

=====
Control Measures
=====

Respiratory Protection: NIOSH/MSHA-APPROVED DUST-TYPE RESPIRATOR.

Protective Gloves: IMPERVIOUS: BUTYL OR RUBBER.

Eye Protection: GOGGLES.

Other Protective Equipment: COVERALLS AND IMPERVIOUS BOOTS.

Work Hygienic Practices: WASH THOROUGHLY AFTER HANDLING. AVOID PROLONGED OR
REPEATED CONTACT WITH SKIN. AVOID CONTACT WITH EYES.

Supplemental Safety and Health: KEEP CONTAINER TIGHTLY CLOSED. AVOID INGESTION
AND INHALATION. USE WITH ADEQUATE VENTILATION. WASH CLOTHING BEFORE REUSE.
KEEP AWAY FROM CLOTHING AND OTHER COMBUSTIBLE MATERIALS.

=====
Physical/Chemical Properties
=====

HCC: D1

B.P. Text: NA

Melt/Freeze Pt: =333.C, 631.4F

Vapor Pres: NEGLIGIBLE

Spec Gravity: 2.1

Solubility in Water: 36 G/100 ML H2O

Appearance and Odor: WHITE CRYSTALS OR POWDER, ODORLESS.

=====

Reactivity Data

=====

Stability Indicator: YES

Stability Condition To Avoid: AVOID CONTACT WITH REDUCING AGENTS AND FLAMMABLE
OR COMBUSTIBLE MATERIAL.

Materials To Avoid: REDUCING AGENTS, FLAMMABLES OR COMBUSTIBLES.

Hazardous Decomposition Products: OXIDES OF NITROGEN.

Hazardous Polymerization Indicator: NO

Conditions To Avoid Polymerization: WILL NOT OCCUR

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Toxicological Information

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=====

Ecological Information

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=====

MSDS Transport Information

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Regulatory Information

=====

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Other Information

=====

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Transportation Information

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Responsible Party Cage: 20865

Trans ID NO: 155807

Product ID: POTASSIUM NITRATE

MSDS Prepared Date: 12/27/2000

Review Date: 01/16/2001

MFN: 1

Multiple KIT Number: 0

Unit Of Issue: CY

Type Of Container: CYLINDER

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Detail DOT Information

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DOT PSN AM

DOT Proper Shipping Name: POTASSIUM NITRATE

Hazard Class: 5.1

UN ID Num: UN1486

DOT Packaging Group: III
Label: OXIDIZER
Special Provision: A1,A29
Packaging Exception: 152
Non Bulk Pack: 213
Bulk Pack: 240
Max Qty Pass: 25 KG
Max Qty Cargo: 100 KG
Vessel Stow Req: A

=====

Detail IMO Information

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IMO PSN EL
IMO Proper Shipping Name: POTASSIUM NITRATE
IMDG Page Number: 5171
UN Number: 1486
UN Hazard Class: 5.1
IMO Packaging Group: III
Subsidiary Risk Label: -
EMS Number: 5.1-06
MED First Aid Guide NUM: 235

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Detail IATA Information

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IATA PSN Code: UQX
IATA UN ID Num: 1486
IATA Proper Shipping Name: POTASSIUM NITRATE
IATA UN Class: 5.1
IATA Label: OXIDIZER
UN Packing Group: III
Packing Note Passenger: 516
Max Quant Pass: 25KG
Max Quant Cargo: 100KG
Packaging Note Cargo: 518

=====

Detail AFI Information

=====

AFI PSN Code: UQX
AFI Proper Shipping Name: POTASSIUM NITRATE
AFI Hazard Class: 5.1
AFI UN ID NUM: UN1486
AFI Packing Group: III
Special Provisions: P5, A1, A29
Back Pack Reference: A9.8

=====

HAZCOM Label

=====

Product ID: POTASSIUM NITRATE

Cage: 20865
Company Name: BARIUM AND CHEMICALS INC
Street: COUNTY RD 44
PO Box: 218
City: STEUBENVILLE OH
Zipcode: 43952
Health Emergency Phone: 740-282-9776
Label Required IND: Y
Date Of Label Review: 01/16/2001
Status Code: A
Label Date: 01/16/2001
Origination Code: F
Chronic Hazard IND: Y
Eye Protection IND: YES
Skin Protection IND: YES
Signal Word: CAUTION
Respiratory Protection IND: YES
Health Hazard: Slight
Contact Hazard: Slight
Fire Hazard: None
Reactivity Hazard: None
Hazard And Precautions: IRRITATION OF SKIN AND MUCOUS MEMBRANES. INGESTION OF
LARGE AMOUNTS CAUSES VIOLENT GASTROENTERITIS. CHRONIC EXPOSURE: ANEMIA,
NEPHRITIS, METHEMOGLOBINEMIA. FIRST AID: EYES: FLUSH WITH WATER FOR 15 MINU
TES. GET MEDICAL ATTENTION. SKIN: FLUSH WITH WATER. INGESTION: DRINK WATER AND
INDUCE VOMITING. INHALATION: MOVE TO FRESH AIR. GET MEDICAL ATTENTION.

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Division of Facilities Services

DOD Hazardous Material Information (ANSI Format) For Cornell University Convenience Only

SODA ASH

Section 1 - Product and Company Identification	Section 9 - Physical & Chemical Properties
Section 2 - Composition/Information on Ingredients	Section 10 - Stability & Reactivity Data
Section 3 - Hazards Identification Including Emergency Overview	Section 11 - Toxicological Information
Section 4 - First Aid Measures	Section 12 - Ecological Information
Section 5 - Fire Fighting Measures	Section 13 - Disposal Considerations
Section 6 - Accidental Release Measures	Section 14 - MSDS Transport Information
Section 7 - Handling and Storage	Section 15 - Regulatory Information
Section 8 - Exposure Controls & Personal Protection	Section 16 - Other Information

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Section 1 - Product and Company Identification **SODA ASH**

Product Identification: SODA ASH

Date of MSDS: 01/01/1985 **Technical Review Date:** 12/04/1981

FSC: 6810 **NIIN:** 00-664-0402

Submitter: D DG

Status Code: C

MFN: 01

Article: N

Kit Part: N

Manufacturer's Information

Manufacturer's Name: BASF WYANDOTTE CORP.

Manufacturer's Address1:

Manufacturer's Address2: N/P, NK 00000

Manufacturer's Country: NK

General Information Telephone:

Emergency Telephone: 313-282-3300

Emergency Telephone: 313-282-3300

MSDS Preparer's Name: N/P

Proprietary: N

Reviewed: Y

Published: Y

CAGE: 83339

Special Project Code: N

Item Description

Item Name:

Item Manager:

Specification Number: O-S-571

Type/Grade/Class: NK

Unit of Issue:

Unit of Issue Quantity:

Type of Container:

Contractor Information

Contractor's Name: BASF WYANDOTTE CORP

Contractor's Address1: 1609 BIDDLE AVE

Contractor's Address2: WYANDOTTE, MI 48192-3729

Contractor's Telephone: 313-246-6100

Contractor's CAGE: 83339

Section 2 - Composition/Information on Ingredients

SODA ASH

Ingredient Name: SODIUM CARBONATE

Ingredient CAS Number: **Ingredient CAS Code:** X

RTECS Number: NZ4050000 **RTECS Code:** M

=WT: =WT Code:

=Volume: =Volume Code:

>WT: >WT Code:

>Volume: >Volume Code:

<WT: <WT Code:

<Volume: <Volume Code:

% Low WT: % Low WT Code:

% High WT: % High WT Code:

% Low Volume: % Low Volume Code:

% High Volume: % High Volume Code:

% Text: >99

% Environmental Weight:

Other REC Limits: N/P

OSHA PEL: N/P OSHA PEL Code:

OSHA STEL: OSHA STEL Code:

ACGIH TLV: N/P ACGIH TLV Code:

ACGIH STEL: N/P ACGIH STEL Code:

EPA Reporting Quantity:

DOT Reporting Quantity:

Ozone Depleting Chemical:

Section 3 - Hazards Identification, Including Emergency Overview

SODA ASH

Health Hazards Acute & Chronic: N/P

Signs & Symptoms of Overexposure:

IRRITANT

Medical Conditions Aggravated by Exposure:

N/P

LD50 LC50 Mixture: N/P

Route of Entry Indicators:

Inhalation: N/P

Skin: N/P

Ingestion: N/P

Carcenogenicity Indicators

NTP: N/P

IARC: N/P

OSHA: N/P

Carcinogenicity Explanation: N/P

Section 4 - First Aid Measures

SODA ASH

First Aid:

SKIN/EYE: WASH WITH RUNNING WATER.

Section 5 - Fire Fighting Measures

SODA ASH

Fire Fighting Procedures:

N/P

Unusual Fire or Explosion Hazard:

MELT POINT:1564F

Extinguishing Media:

NON-FLAMMABLE,NOT EXPLOSIVE

Flash Point: **Flash Point Text:** NONE

Autoignition Temperature:

Autoignition Temperature Text: N/A

Lower Limit(s):

Upper Limit(s):

Section 6 - Accidental Release Measures

SODA ASH

Spill Release Procedures:

VACUUM OR SWEEP OR WASH WITH LARGE AMTS OF WATER.

Section 7 - Handling and Storage

SODA ASH

Handling and Storage Precautions:

Other Precautions:

Section 8 - Exposure Controls & Personal Protection
SODA ASH

Respiratory Protection:

DUST RESPIRATORS-WHEN DUST IS EXCESSIVE

Ventilation:

LOCAL EXHAUST:IF PRODUCT DUSTY-USE EXHAUST FAN.

Protective Gloves:

PLASTIC COATED

Eye Protection: GOGGLES

Other Protective Equipment: N/P

Work Hygienic Practices: N/P

Supplemental Health & Safety Information: N/P

Section 9 - Physical & Chemical Properties
SODA ASH

HCC: N1

NRC/State License Number:

Net Property Weight for Ammo:

Boiling Point: Boiling Point Text: NONE

Melting/Freezing Point: Melting/Freezing Text: N/A

Decomposition Point: Decomposition Text: N/A

Vapor Pressure: N/P **Vapor Density:** N/P

Percent Volatile Organic Content:

Specific Gravity: 2.53

Volatile Organic Content Pounds per Gallon:

pH: N/P

Volatile Organic Content Grams per Liter:

Viscosity: N/P

Evaporation Weight and Reference: NONE

Solubility in Water: 21.5MG/100

Appearance and Odor: WHITE POWDER,ODORLESS

Percent Volatiles by Volume: NONE

Corrosion Rate: N/P

Section 10 - Stability & Reactivity Data
SODA ASH

Stability Indicator: YES

Materials to Avoid:

LIME/MOISTURE IN PRESENCE OF SODA ASH YEILDS A CAUSTIC.

Stability Condition to Avoid:

COMBINATION OF LIME AND WATER

Hazardous Decomposition Products:

N/P

Hazardous Polymerization Indicator: NO

Conditions to Avoid Polymerization:

N/P

Section 11 - Toxicological Information
SODA ASH

Toxicological Information:

N/P

Section 12 - Ecological Information
SODA ASH

Ecological Information:

N/P

Section 13 - Disposal Considerations
SODA ASH

Waste Disposal Methods:

DEPENDS ON FED.,STATE,AND LOCAL REGULATIONS.

Section 14 - MSDS Transport Information
SODA ASH

Transport Information:

N/P

Section 15 - Regulatory Information
SODA ASH

SARA Title III Information:

N/P

Federal Regulatory Information:

N/P

State Regulatory Information:

N/P

Section 16 - Other Information

SODA ASH

Other Information:

N/P

HMIS Transportation Information**Product Identification:** SODA ASH**Transportation ID Number:** 81245**Responsible Party CAGE:** 83339**Date MSDS Prepared:** 01/01/1985**Date MSDS Reviewed:** 12/04/1981**MFN:** 12/04/1981**Submitter:** D DG**Status Code:** C**Container Information****Unit of Issue:****Container Quantity:****Type of Container:****Net Unit Weight:****Article without MSDS:** N**Technical Entry NOS Shipping Number:****Radioactivity:****Form:****Net Explosive Weight:****Coast Guard Ammunition Code:****Magnetism:** N/P**AF MMAC Code:****DOD Exemption Number:****Limited Quantity Indicator:****Multiple Kit Number:** 0**Kit Indicator:** N**Kit Part Indicator:** N**Review Indicator:** Y**Additional Data:****Department of Transportation Information****DOT Proper Shipping Name:** NOT REGULATED BY THIS MODE OF TRANSPORTATION**DOT PSN Code:** ZZZ**Symbols:** N/R**DOT PSN Modifier:**

Hazard Class: N/R

UN ID Number: N/R

DOT Packaging Group: N/R

Label: N/R

Special Provision(s): N/R

Packaging Exception: N/R

Non Bulk Packaging: N/R

Bulk Packaging: N/R

Maximum Quantity in Passenger Area: N/R

Maximum Quantity in Cargo Area: N/R

Stow in Vessel Requirements: N/R

Requirements Water/Sp/Other: N/R

IMO Detail Information

IMO Proper Shipping Name: NOT REGULATED FOR THIS MODE OF TRANSPORTATION

IMO PSN Code: ZZZ

IMO PSN Modifier:

IMDG Page Number: N/R

UN Number: N/R

UN Hazard Class: N/R

IMO Packaging Group: N/R

Subsidiary Risk Label: N/R

EMS Number: N/R

Medical First Aid Guide Number: N/R

IATA Detail Information

IATA Proper Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION

IATA PSN Code: ZZZ

IATA PSN Modifier:

IATA UN Id Number: N/R

IATA UN Class: N/R

Subsidiary Risk Class: N/R

UN Packaging Group: N/R

IATA Label: N/R

Packaging Note for Passengers: N/R

Maximum Quantity for Passengers: N/R

Packaging Note for Cargo: N/R

Maximum Quantity for Cargo: N/R

Exceptions: N/R

AFI Detail Information

AFI Proper Shipping Name: NOT REGULATED BY THIS MODE OF TRANSPORTATION

AFI Symbols:

AFI PSN Code: ZZZ

AFI PSN Modifier:

AFI UN Id Number: N/R

AFI Hazard Class: N/R

AFI Packing Group: N/R

AFI Label: N/R

Special Provisions: N/A

Back Pack Reference: N/A

HAZCOM Label Information

Product Identification: SODA ASH

CAGE: 83339

Assigned Individual: N

Company Name: BASF WYANDOTTE CORP

Company PO Box:

Company Street Address1: 1609 BIDDLE AVE

Company Street Address2: WYANDOTTE, MI 48192-3729 US

Health Emergency Telephone: 313-282-3300

Label Required Indicator: Y

Date Label Reviewed: 12/16/1998

Status Code: C

Manufacturer's Label Number:

Date of Label: 12/16/1998

Year Procured: N/K

Organization Code: G

Chronic Hazard Indicator: N/P

Eye Protection Indicator: N/P

Skin Protection Indicator: N/P

Respiratory Protection Indicator: N/P

Signal Word: N/P

Health Hazard:

Contact Hazard:

Fire Hazard:

Reactivity Hazard:

8/7/2002 11:54:16 PM

FISHER SCIENTIFIC -- SODIUM HYDROXIDE, PURUM PELLETS, S318 5

MSDS Safety Information

MSDS Date: 12/12/1997
 MSDS Num: CJGBC
 Product ID: SODIUM HYDROXIDE, PURUM PELLETS, S318 5
 MFN: 02
 Responsible Party
 Cage: 1B464
 Name: FISHER SCIENTIFIC
 Address: 1 REAGENT LANE
 City: FAIR LAWN NJ 07410
 Info Phone Number: 201-796-7100
 Emergency Phone Number: 201-796-7100
 Resp. Party Other MSDS No.: 21300
 Chemtrec IND/Phone: (800)424-9300
 Review Ind: Y
 Published: Y

Contractor Summary

Cage: 1B464
 Name: FISHER SCIENTIFIC CO. CHEMICAL MFG DIV
 Address: 1 REAGENT LANE
 City: FAIRLAWN NJ 07410-2802
 Phone: 201-796-7100
 Cage: SO010
 Name: NAVY ENVIRONMENTAL HEALTH CENTER
 Address: 2510 WALMER AVENUE
 City: NORFOLK VA 23513-2617
 Phone: 804-444-4657, DSN 564-4657 X 272

Toxicological Information

Toxicological Information: CARCINOGENICITY: SODIUM HYDROXIDE - NOT LISTED BY ACGIH, IARC, NIOSH, NTP OR OSHA. EPIDEMIOLOGY: NO INFO REPORTED.
 TERATOGENICITY: NO INFO REPORTED. REPRODUCTIVE EFTS: NO INFO REPORTED.
 NEUROTOXICITY: NO INFO REPORTED. MUTAGENICITY: MUTATION DATA REPORTED. OTHER STUDIES: NO INFO REPORTED.

Ecological Information

Ecological: ECOTOXICITY: TLM, MOSQUITO FISH, 125 PPM/96HR (FRESH WATER); TLM, BLUEGILL, 88 MG/48HR (TAP WATER). ENVIRONMENTAL FATE: THIS CHEM IS NOT MOBILE IN SOLID FORM, ALTHOUGH IT ABSORBS MOISTURE VERY EASILY. ONCE LIQUID, SODIUM HYDROXIDE LEACHES RAPIDLY INTO THE SOIL, POSSIBLY CONTAMINATING WATER SOURCES. PHYSICAL/CHEMICAL: NO INFO FOUND. OTHER: NO INFO FOUND.

MSDS Transport Information

Transport Information: US DOT - SHIPPING NAME: SODIUM HYDROXIDE, SOLID. HAZ CLASS: 8. UN NUMBER: UN1823. PACKING GROUP: II. IMO - SHIPPING NAME: SODIUM HYDROXIDE, SOLID. HAZ CLASS: 8. UN NUMBER: 1823. PACKING GROUP: 2. IATA - SHIPPING NAME: SODIUM HYDROXIDE, SOLID. HAZ CLASS: 8. UN NUMBER: 1823. PACKING GROUP: 2. RID/ADR - SHIPPING NAME: SODIUM HYDROXIDE, SOLID. DANGEROUS GOODS CODE: 8(41B). UN NUMBER: 1823.

Regulatory Information

Sara Title III Information: SECTION 302 (RQ) CAS #1310-73-2: FINAL RQ = 1000 LBS (454 KG). SECTION 302 (TPQ) NONE OF CHEMS IN PROD HAVE TPQ. SARA CODES CAS #1310-73-2: ACUTE, REACTIVE. SECTION 313 NO CHEMS ARE REPORTABLE UNDER SECTION 313. CLEAN AIR ACT: THIS MATL DOES NOT CNTN ANY HAZ AIR POLLUTANTS. THIS MATL DOES NOT CNTN ANY CLASS 1 OZONE DEPLETORS. THIS MATL DOES NOT CNTN ANY CLASS 2 OZONE DEPLETORS. CLEAR WATER ACT: C AS #1310-73-2 IS LISTED AS HAZ SUBSTANCE UNDER CWA. NONE OF CHEMS IN PROD ARE LISTED AS PRIORITY POLLUTANTS UNDER CWA. NONE OF CHEMS IN PROD ARE LISTED AS TOX POLLUTANTS UNDER CWA.

OSHA: NONE OF CHEMS IN PROD CONSIDERED HIGHLY HAZ BY OSHA.

Federal Regulatory Information: TSCA CAS #1310-73-2 IS LISTED ON THE TSCA INVENTORY. HEALTH & SAFETY REPORTING LIST: NONE OF THE CHEMICALS IN THIS PRODUCT ARE UNDER A CHEMICAL TEST RULE. SECTION 12B: NONE OF THE CHEMICALS ARE LISTED UNDER TSCA SECTION 12B. TSCA SIGNIFICANT NEW USE RULE: NONE OF THE CHEMICALS IN THIS MATERIAL HAVE A SNUR UNDER TSCA.

State Regulatory Information: SODIUM HYDROXIDE CAN BE FOUND ON THE FOLLOWING STATE RIGHT TO KNOW LISTS: CALIFORNIA, NEW JERSEY, FLORIDA, PENNSYLVANIA, MINNESOTA, MASSACHUSETTS. CALIFORNIA NO SIGNIFICANT RISK LEVEL: NONE OF THE CHEMICALS IN THIS PRODUCT ARE LISTED.

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Other Information

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HAZCOM Label

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Product ID: SODIUM HYDROXIDE, PURUM PELLETS, S318 5

Cage: 1B464

Company Name: FISHER SCIENTIFIC CO. CHEMICAL MFG DIV

Street: 1 REAGENT LANE

City: FAIRLAWN NJ

Zipcode: 07410-2802

Health Emergency Phone: 201-796-7100

Label Required IND: Y

Date Of Label Review: 05/27/1999

Status Code: A

Origination Code: F

Chronic Hazard IND: Y

Eye Protection: YES

Skin Protection IND: YES

Signal Word: DANGER

Respiratory Protection: YES

Health Hazard: Moderate

Contact Hazard: Severe

Fire Hazard: None

Reactivity Hazard: Slight

Hazard And Precautions: GENERATES LARGE AMOUNTS OF HEAT WHEN IN CONTACT WITH WATER. ACUTE: EYE: CAUSES SEVERE EYE BURNS. SKIN: CAUSES SKIN BURNS. MAY CAUSE DEEP, PENETRATING ULCERS OF THE SKIN. INGESTION: HARMFUL IF SWALLOWED. CAUSES GASTROINTESTINAL TRACT BURNS. CAUSES SEVERE PAIN, NAUSEA, VOMITING, DIARRHEA AND SHOCK. INHALATION: IRRITATION MAY LEAD TO CHEMICAL PNEUMONITIS AND PULMONARY EDEMA. CAUSES SEVERE IRRITATION OF UPPER RESPIRATORY TRACT WITH COUGHING, BURNS, BREATHING DIFFICULTY AND POSSIBLE COMA. CHRONIC: PROLONGED OR REPEATED SKIN CONTACT MAY CAUSE DERMATITIS. TARGET ORGANS: NONE.

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Disclaimer (provided with this information by the compiling agencies): This information is formulated for use by elements of the Department of Defense. The United States of America in no manner whatsoever expressly or implied warrants, states, or intends said information to have any application, use or viability by or to any person or persons outside the Department of Defense nor any person or persons contracting with any instrumentality of the United

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APPENDIXG
Toxicological Properties of Major and Minor Chemicals
Stored at Jericho

TOXICOLOGICAL PROPERTIES OF MAJOR CHEMICALS

Diesel (Fuel Oil)*Physicochemical Properties***Appearance And Odor:**

Clear to yellow, typical hydrocarbon odor.

Boiling Point:

360-572F

Melting Point: NA**Vapor Pressure (MM Hg/70 F):**

0.1

Vapor Density (Air=1): NA**Specific Gravity:**

0.81-0.86

Decomposition Temperature: NA**Evaporation Rate And Ref:** NA**Solubility In Water:**

Trace

Percent Volatiles By Volume:

100

Ph: NA**Corrosion Rate (IPY):** NA**Flash Point:**

100F, 38C

Flash Point Method:

PMCC

Lower Explosive Limit:

1 %

Upper Explosive Limit:

5 %

Stability:

Yes

Cond To Avoid (Stability):

Under normal conditions, the material is stable.

Materials To Avoid:

Strong oxidants such as liquid chlorine, concentrated oxygen, sodium hypochlorite or calcium hypochlorite.

Hazardous Decomp Products:

Fumes, smoke, carbon monoxide, aldehydes and other decomposition products.

Hazardous Poly Occur:

No

Conditions To Avoid (Poly):

Material is not known to ☐ sulphuric ☐.

*Toxicological Properties***LD50-LC50 Mixture:**

Oral LD50 (rat) is = 5-15 g/kg

Route Of Entry – Inhalation: Yes

Route Of Entry – Skin: Yes

Route Of Entry – Ingestion: Yes

Health Haz Acute And Chronic:

Acute:

Central nervous system depression with extreme exposure; effects may include anaesthesia, coma, respiratory arrest, and irregular heart rate. Oxygen deprivation is possible if working in a confined area.

Chronic:

No known major cumulative or latent effects have been reported.

Carcinogenicity – NTP: No

Carcinogenicity – IARC: No

Carcinogenicity – OSHA: No

Explanation Carcinogenicity:

Not carcinogenic.

Signs/Symptoms Of Overexp:

Inhalation-irritation of the upper respiratory tract, depression, dizziness, headache, uncoordination, anaesthesia, coma & respiratory arrest. Skin-defatting, irritation & burning sensation & swelling of lids. Eye-severe burning sensation. Ingestion-irritation of throat, esophagus & stomach, vomiting.

Med Cond Aggravated By Exp:

None specified by manufacturer.

Ferrosilicon*Physicochemical Properties*

Not a hazardous substance.

Appearance And Odor:

Silver metallic, powder, □ulphuric

Boiling Point: N/A**Melting Point:**

2192 – 2282F

Vapor Pressure (MM Hg/70 F): N/A**Vapor Density (Air=1):** N/A**Specific Gravity:**

2-5

Evaporation Rate And Ref:

Not applicable

Solubility In Water:

Insoluble/negligible

Percent Volatiles By Volume: N/A**Flash Point:** N/A**Lower Explosive Limit:** N/A**Upper Explosive Limit:** N/A**Stability:**

Yes

Cond To Avoid (Stability):

Not applicable

Materials To Avoid:

Acids, strong oxidizers, strong bases.

Hazardous Decomp Products:

None.

Hazardous Poly Occur:

No

Conditions To Avoid (Poly):

Not relevant.

*Toxicological Properties***LD50-LC50 Mixture:**

None specified by manufacturer.

Route Of Entry – Inhalation: Yes**Route Of Entry – Skin:** No**Route Of Entry – Ingestion:** No**Health Haz Acute And Chronic:****Acute:**

Effects associated w/overexposure to metal dusts may include respiratory irritation, conjunctivitis, pneumoconiosis, etc.

Carcinogenicity – NTP: No**Carcinogenicity – IARC:** No**Carcinogenicity – OSHA:** No**Explanation Carcinogenicity:**

Not relevant.

Ethylene Glycol*Physicochemical Properties***Appearance:**

Clear oily liquid.

Odor:

Odorless.

Solubility:

Miscible in water.

Specific Gravity:

1.1

Ph @20C/4C:

No information found.

% Volatiles by volume @ 21C (70F):

100

Boiling Point:

197.6C (388F)

Melting Point:

-13C (9F)

Vapor Density (Air=1):

2.14

Vapor Pressure (mm Hg):

0.06 @ 20C (68F)

Evaporation Rate (BuAc=1):

No information found.

Stability:

Stable under ordinary conditions of use and storage.

Hazardous Decomposition Products:

Carbon dioxide and carbon monoxide may form when heated to decomposition. May produce acid smoke and irritating fumes when heated to decomposition.

Hazardous Polymerization:

Will not occur.

Incompatibilities:

Strong oxidizing agents. Reacts violently with chlorosulfonic acid, oleum, □sulphuric acid, perchloric acid. Causes ignition at room temperature with chromium trioxide, potassium permanganate and sodium peroxide; causes ignition at 212F(100C) with ammonium dichromate, silver chlorate, sodium chloride and uranyl nitrate.

Conditions to Avoid:

Heat, flames, ignition sources, water (absorbs readily) and incompatibles.

Toxicological Properties

Oral rat LD50: 4700 mg/kg; skin rabbit LD50: 9530 mg/kg.

Irritation – skin rabbit: 555mg(open), mild; eye rabbit: 500mg/24H, mild.

Investigated as a tumorigen, mutagen, reproductive effector.

Reproductive Toxicity:

Has shown teratogenic effects in laboratory animals.

Ingredient	NTP Carcinogen		
	Known	Anticipated	IARC Category
Ethylene Glycol (107-21-1)	No	No	None

TOXICOLOGICAL AND PHYSICOCHEMICAL PROPERTIES OF MINOR CHEMICALS HANDLED

Magnifloc 156 Flocculent*Physicochemical Properties***Odour and Appearance:**

Off-white coloured solid.

Bulk Density:

0.75 g/cm³.

Vapour Density:

Not available.

Boiling Point:

Not available.

Ph Value:

6.5 1% soln.

Vapour Pressure:

Not available.

Solubility (in water):

Soluble.

Odour Threshold:

Not available.

Evaporation Rate:

Not available.

Freezing Point:

Not available.

Coeff. of water/oil Dist.:

Soluble in water.

Specific Gravity:

0.75

Conditions of Flammability:

Very low risk.

Flash Point (method of determination):

None exhibited.

LEL, UEL: NA**Auto-ignition Temperature:**

Not available.

Flammability Classification: NA**Hazardous Combustion Products:**

None known.

Explosion Data:

As with most organic powders, flammable dust clouds may be formed in air. Avoid creating dust. Keep away from sources of ignition.

*Toxicological Properties***Nature of Hazard:**

May cause mild irritation to the eyes which should cease upon removal of the product. May cause mild irritation of the skin with repeated or prolonged use. The product is non-volatile but inhalation of dust may cause irritation.

WHMIS Classification:

Not a controlled product.

Primary Routes of Entry:

Ingestion, inhalation, eye and skin contact.

Effects of Acute Exposure:

Contact with the eye may produce irritation and redness. Inhalation of dust may cause irritation to the respiratory system.

Effects of Chronic Exposure:

None known.

Exposure Limit: (8-hour TWA, total inhalable dust):

ACGIH: 10 mg/m³ OSHA PEL: 10 mg/m³ MFRS Recommendation: 10 mg/m³.

Carcinogenicity Determination by NTP, IARC, OSHA:

None.

Hydraulic/Motor Oil*Physicochemical Properties***Appearance And Odor:**

Dark oily with mineral oil odor

Specific Gravity:

0.890

Decomposition Temperature:

Unknown

Solubility In Water:

Negligible, <0.1%

Corrosion Rate (IPY):

Unknown

Flash Point: >90F, >32C**Flash Point Method:** COC**Stability:**

Yes

Cond To Avoid (Stability):

Open flames

Materials To Avoid:

Strong oxidizers such as hydrogen peroxide, bromine, and chromic acid.

Hazardous Decomp Products:

Carbon monoxide, carbon dioxide, oxides of phosphorous, sulphur, and possibly hydrogen sulphide.

Hazardous Poly Occur:

No

Conditions To Avoid (Poly):

Not applicable.

*Toxicological Properties***LD50-LC50 Mixture:**

Unknown

Route Of Entry – Inhalation: No**Route Of Entry – Skin:** Yes**Route Of Entry – Ingestion:** No**Health Haz Acute And Chronic:****Acute-**

Inhalation of mist may cause irritation. Ingestion: no ill effects expected. Minute amounts aspirated into lungs may cause pulmonary injury. Eye: irritation. Skin: not normally expected to cause ill effects.

Chronic-

Prolonged/repeated skin contact may cause irritation.

Carcinogenicity – NTP: No**Carcinogenicity – IARC:** No**Carcinogenicity – OSHA:** No

Explanation Carcinogenicity: none of the compounds in this product is listed by IARC, NTP, or OSHA as a carcinogen.

Signs/Symptoms Of Overexp:

Skin and eye irritation.

Med Cond Aggravated By Exp:

None specified by manufacturer.

Jet Fuel (Jet B)*Physicochemical Properties***Appearance And Odor:**

Colorless liquid, fuel oil odor

Boiling Point:

250-549f

Melting Point:

Not given

Vapor Pressure (MM Hg/70 F):

2-3 PSI

Vapor Density (Air=1):

Not given

Specific Gravity:

0.75 –0.8

Decomposition Temperature:

Unknown

Evaporation Rate And Ref:

Not given

Solubility In Water:

Negligible

Corrosion Rate (IPY):

Unknown

Autoignition Temperature:

468F

Flash Point:

-10F, -23C

Flash Point Method:

CC

Lower Explosive Limit:

1.3 %

Upper Explosive Limit:

8 %

Extinguishing Media:

Agents approved for class B hazards (dry chemical, carbon dioxide, halogenated agents, foam, steam) and water fog.

Special Fire Fighting Proc:

Fire fighters should use NIOSH approved SCBA & full protective equipment when fighting chemical fire. Use water spray to cool nearby containers exposed to fire.

Unusual Fire And Expl Hazrds:

Do not use direct stream of water on fire. Toxic gases are released during combustion. Vapor may explode if ignited in enclosed area.

Stability:

Yes

Cond To Avoid (Stability):

Heat, open flame, sparks

Materials To Avoid:

Strong oxidizing agents

Hazardous Decomp Products:

Carbon monoxide, carbon dioxide, unidentified organic compounds.

Hazardous Poly Occur:

No

Conditions To Avoid (Poly):

None. Will not occur.

*Toxicological Properties***LD50-LC50 Mixture:**

Not given for product as a whole

Route Of Entry – Inhalation:

Yes

Route Of Entry – Skin:

Yes

Route Of Entry – Ingestion:

No

Health Haz Acute And Chronic:

May be mildly irritating to the eyes. Prolonged or repeated contact may cause dermatitis. Vapours may irritate the nose, throat and upper respiratory tract and cause central nervous system depression. Aspiration hazard.

Carcinogenicity – NTP:

Yes

Carcinogenicity – IARC:

Yes

Carcinogenicity – OSHA:

Yes

Explanation Carcinogenicity:

Contains Benzene [71-43-2] which is listed by NTP and IARC and regulated by OSHA as a carcinogen.

Signs/Symptoms Of Overexp:

Eye irritation, skin irritation, dermatitis, upper respiratory tract irritation, nausea, vomiting, diarrhea, headaches, dizziness, drowsiness.

Med Cond Aggravated By Exp:

Pre-existing skin and/or respiratory disorders may be aggravated by exposure to this product.

Gasoline*Physicochemical Properties***Appearance And Odor:**

Clear liquid with gasoline odor.

Boiling Point:

>70F,>21C

Melting Point:

-36F,-38C

Vapor Pressure (MM Hg/70 F):

400

Vapor Density (Air=1):

5

Specific Gravity:

0.74

Decomposition Temperature:

Unknown

Evaporation Rate And Ref:

10.5(N-Butyl Acetate=1)

Solubility In Water:

Negligible

Percent Volatiles By Volume:

100

Viscosity:

Unknown

Ph:

7

Corrosion Rate (IPY):

Unknown

Flash Point:

-36F,-38C

Flash Point Method:

TCC

Lower Explosive Limit:

1.4 %

Upper Explosive Limit:

7.6 %

Extinguishing Media:

Use water fog, carbon dioxide, foam, or dry chemical.

Special Fire Fighting Proc:

Water may be ineffective on flames, but should be used to keep fire-exposed containers cool. Large fires, such as tank fires, should be fought with caution.

Unusual Fire And Expl Hazrds:

Highly volatile material. Flowing gasoline can be ignited by self-generated static electricity. Vapours may travel along the ground to a remote ignition source.

Stability:

Yes

Cond To Avoid (Stability):

High heat, open flames and other sources of ignition

Materials To Avoid:

Strong oxidizing agents

Hazardous Decomp Products:

Burning or excessive heating may produce carbon monoxide and other harmful gases/vapours.

Hazardous Poly Occur:

No

Conditions To Avoid (Poly):

Not applicable

*Toxicological Properties***LD50-LC50 Mixture:**

Oral LD50 (Rat) is >5G/KG

Route Of Entry – Inhalation:

Yes

Route Of Entry – Skin:

Yes

Route Of Entry – Ingestion:

No

Health Haz Acute And Chronic:

Inhalation: moderate risk of vapor defatting with drying and cracking can lead to dermatitis and secondary infection. Eye: irritant. Ingestion: burning of mouth and upper gi tract, vomiting and diarrhea. Prolonged or repeated contact: dermatitis.

Carcinogenicity – NTP:

Yes

Carcinogenicity – IARC:

Yes

Carcinogenicity – OSHA:

Yes

Explanation Carcinogenicity:

Contains Benzene [71-43-2] which is listed by NTP and IARC and regulated by OSHA as a carcinogen.

Signs/Symptoms Of Overexp:

Inhalation may cause euphoria, lung irritation and edema, headache, dizziness, drowsiness, convulsions, coma, cyanosis, generalized depression. Ingestion may cause general depression, sedation, respiratory depression, coma.

Med Cond Aggravated By Exp:

May aggravate pre-existing dermatitis, respiratory illness, or other conditions which have the same symptoms or effects as stated above.

Hydrochloric Acid

Physicochemical Properties

Appearance:

Colorless, fuming liquid.

Odor:

Pungent odor of hydrogen chloride.

Solubility:

Infinite in water with slight evolution of heat.

Density:

1.18

Ph:

For HCL solutions: 0.1 (1.0 N), 1.1 (0.1 N), 2.02 (0.01 N)

% Volatiles by volume @ 21C (70F):

100

Boiling Point:

53C (127F) Azeotrope (20.2%) boils at 109C (228F)

Melting Point:

-74C (-101F)

Vapor Density (Air=1):

No information found.

Vapor Pressure (mm Hg):

190 @ 25C (77F)

Evaporation Rate (BuAc=1):

No information found.

Stability:

Stable under ordinary conditions of use and storage. Containers may burst when heated.

Hazardous Decomposition Products:

When heated to decomposition, emits toxic hydrogen chloride fumes and will react with water or steam to produce heat and toxic and corrosive fumes. Thermal oxidative decomposition produces toxic chlorine fumes and explosive hydrogen gas.

Hazardous Polymerization:

Will not occur.

Incompatibilities:

A strong mineral acid, concentrated hydrochloric acid is incompatible with many substances and highly reactive with strong bases, metals, metal oxides, hydroxides, amines, carbonates and other alkaline materials. Incompatible with materials such as cyanides, sulphides, sulphites, and formaldehyde.

Conditions to Avoid:

Heat, direct sunlight.

Toxicological Properties

Inhalation rat LC50: 3124 ppm/1H; oral rabbit LD50: 900 mg/kg (Hydrochloric acid concentrated); investigated as a tumorigen, mutagen, reproductive effector.

Ingredient	NTP Carcinogen		
	Known	Anticipated	IARC Category
Hydrogen chloride (7647-01-0)	No	No	3
Water (7732-18-5)	No	No	None

APPENDIX H
Used Chemical Containers
Handling and Disposal Procedure

January 2005

PROCEDURE FOR HANDLING AND DISPOSAL OF EMPTY CHEMICAL CONTAINERS**1. Purpose**

- 1.1. To ensure that chemical containers are properly handled so that they do not impact the environment or injure employees.
- 1.2. To encourage the reuse and recycling of empty chemical containers.

2. Scope

- 2.1. This procedure covers any empty container (or one with residue) that housed a chemical that might have an impact on the environment or human health.
- 2.2. This procedure covers all types of hazardous chemicals or fuels whether they are in the liquid, solid, or gaseous/vapor state.

3. Responsibilities

- 3.1. It is the responsibility of the chemical user to ensure that the chemical container has been properly cleaned.
- 3.2. The environmental department will audit the container cleaning operation to ensure that the procedure is being followed.
- 3.3. The procurement department will arrange contracts with chemical suppliers to reuse as many containers as possible.

4. Procedure

Since most empty chemical containers may still have some residue, they must be handled properly to minimize injury and impact to the environment (see MSDS for the particular chemical). In many cases, the residues in the containers result in a hazardous waste classification.

4.1. Training

January 2005

Responsible employees are trained concerning this procedure and personal protective equipment (PPE) provided when this training is carried out. If the employees don't understand or appreciate what they are doing, there are containers going out in the trash with residual chemicals. This may result in heavy fines and possible environmental damage.

4.2. Complete Use

It is very important to remove as much of the chemical as possible. This may require inversion for a period of time or scraping or chipping. Drain racks are commonly used for this phase of the process.

4.3. Handling of Residual

The residue are used in the plant operation, if possible. If this cannot occur, then the residue will probably have to be treated as hazardous waste and should not be placed in the common landfill. If liners are present, they are also usually treated as hazardous waste.

4.4. Container Cleaning/Washing

Depending on the residual, it may be possible to wash out the container and cap. This washing is usually done three times (triple rinse). The wash solution may have to be treated as hazardous waste.

January 2005

4.5. Testing

The container are tested after the washing. For example, if an acid or base was in the container before, then pH paper could be used. pH meters are another option to ensure adequate washing has occurred.

4.6. Inversion

After washing the container, it should be inverted. A drain rack will allow all residual fluid to exit the container.

4.7. Return of Container

If possible, the container should then be returned to the chemical supplier, broker, or recycler. This is preferable to land disposal in terms of the environment and associated liabilities.

APPENDIX I
CHEMICAL TRACKING PROCEDURE

January 2005

PROCEDURE FOR TRACKING OF CHEMICALS

Tracking of chemicals is an essential component of a comprehensive environmental management system. Being aware of chemicals that are planned, purchased, stored, and used, and that become hazardous wastes is the essence of the system. Key components of the tracking system include an inventory, important information about the chemical, and a mass balance.

1. Purpose

- 1.1. To make sure all chemicals are identified and accounted for in all phases of the operation.
- 1.2. To reduce the volume and/or toxicity of chemicals on-site.
- 1.3. To detect early any significant leak or spill of chemicals.

2. Scope

- 2.1. This procedure covers chemicals used in mining, processing, catering/janitorial, and all other aspects of the operation.

3. Responsibilities

- 3.1. The purchaser of the chemical is responsible for notifying the environmental department when a new chemical is introduced into the operation. The purchaser is also responsible for tracking of chemical quantities and reporting this to the environmental department.
- 3.2. The environmental department is responsible for keeping facility-wide inventories of chemicals by type and quantity. The environmental department must also compare this data to emissions and discharges to determine if leaks have occurred.

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4. Procedure

4.1. Identify Responsible Individual

A person who is responsible for all chemical tracking at the site are identified. Many people may be involved; however, one individual should coordinate the overall effort for the entire organization.

4.2. Inventory

Inventory the chemicals planned and on-site and enter this information into a software system. For example, it should be indicated whether the chemical is planned or on-site. The quantity of the chemical in use, in storage, and being discharged needs to be recorded on an ongoing basis. The discharged amount would be in accordance with permits and regulations and include that to sewers, water bodies, air, and landfill. The amounts presently being recycled, reused, or sold should also be added into the inventory and so designated.

4.3. Other Information

Additional information should be entered into the software system, however, this may require some research into material safety data sheets or calls to the manufacturer. For example, the composition of the chemical along with Chemical Abstract System (CAS) numbers should be added. Hazard rating information should also be added.

4.4. Ongoing Review and Entry of Information

There are on-going review of invoices, shipping documents, manifests, plans, and other information, which is added to the software system. The system should track, balance and account for, all chemicals. This helps to ensure that some have not leaked or been spilled from their containers.

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4.5. Enforcement of Chemical Purchase Procedures

As all the numbers are obtained, there may be cases where it is found some individuals are not following the chemical purchase procedures. When this happens they are reminded of the procedure.

4.6. When the Numbers Don't Add Up

If the mass balance shows that there are significant volumes of chemicals unaccounted for some additional research are needed. If it is not just an error in calculation, it might be a leaking storage tank or a spill.