NORTHWEST TERRITORIES & NUNAVUT

CODES OF PRACTICE

In accordance with the *Northwest Territories Safety Act* and Occupational Health and Safety Regulations; and *Nunavut Safety Act and Occupational Health and Safety Regulations. Also in support of the Northwest Territories Mine Health and Safety Regulations and the Nunavut Mine Health and Safety Regulations.*

April 2017

Camp Set Up and Management

WSCC Workers' Safety & Compensation Commission | ᐃᖅᑲᓇᐃᔭᖅᑎᓄᑦ ᐊᑦᑕᓇᖅᑐᓂᒃ ᐊᒻᒪ ᓇᓪᓕᐅᑦᑎᒍᑦᑕᐅᖏᓐᓇᕐᓂᖅ

Camp Set Up and Management

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FOREWORD

The Workers' Safety and Compensation Commission (WSCC) produced this industry Code of Practice in accordance with subsections 18(3) and 18(4) of the Northwest Territories and Nunavut *Safety Acts,* and as a supporting document to the Northwest Territories and Nunavut *Mine Health and Safety Acts.*

The Camp Set Up and Management Code relates to sections 4 and 5 of the Northwest Territories and Nunavut S*afety Acts* and section 15 of the Northwest Territories and Nunavut *Mine Health and Safety Acts.*

This code is in effect as published in the *Northwest Territories Gazette* and *Nunavut Gazette*, in accordance with the *Safety Acts* and *Occupational Health and Safety (OHS) Regulations.*

The WSCC acknowledges and thanks Prospectors & Developers Association of Canada (PDAC) for permission to adapt their *Framework For Responsible Exploration, Camp Set Up and Management* document, as well as Trudy Hause Photography for the use of the photograph titled 'Kennady Diamonds' for the cover of this Code.

IN EFFECT DATES:

Northwest Territories: April 28, 2017
Nunavut: April 28, 2017

Chief Safety Officer, WSCC
Chief Inspector of Mines, WSCC

Disclaimer

This publication refers to obligations under workers' compensation, occupational, and mine health and safety legislation as administered by the Workers' Safety and Compensation Commission.

To ensure compliance with legal obligations, always refer to the most recent legislation. This publication may refer to legislation that has been amended or repealed.

Check for information on the latest legislation at wscc.nt.ca or wscc.nu.ca, or contact WSCC at 1-800-661-0792.

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1 HOW DOES THIS CODE OF PRACTICE APPLY?

Codes of Practice come into effect in each territory on the day they are published in the *Northwest Territories Gazette* and *Nunavut Gazette*.

Codes of Practice do not have the same legal force as the *Safety Acts* the related *Mining Regulations* or the *Occupational Health and Safety Regulations*. A person or employer cannot face prosecution for failing to comply with a Code of Practice. However, in legal proceedings under the *Safety Acts* and *Occupational Health and Safety Regulations*, failure to observe a Code of Practice may be a consideration when determining whether a worker or employer has complied with the *Safety Acts* and *Regulations*.

1.1 INDUSTRIAL SAFETY

Camps are classified under the industrial sector: As per subsection 18(3) of the Northwest Territories and Nunavut *Safety Acts*, "For the purpose of providing practical guidance with respect to the requirements of any provision of this Act or the regulations, the Chief Safety Officer may approve and issue such codes of practice as he or she considers are suitable for that purpose."

Employers and workers should follow WSCC Codes of Practice unless there is an alternative course of action that achieves the same or better occupational health and safety outcomes.

1.2 MINE SAFETY

This Code of Practice serves as a supporting document on how to meet the requirements under section 15 of the *Mine Health and Safety Regulations.* It provides guidance on camp set up and management best practices, in addition to relevant links and resources.

Do not hesitate to contact the WSCC at 1 (800) 661-0792 for clarification on which legislation applies to a specific camp.

A Code of Practice

- Provides practical guidelines.
- Adapts to individual work sites.
- May serve as evidence.
- Should be followed unless there's a better way.

2 ACRONYMS

CO – Carbon Monoxide

CPR – Cardiopulmonary Resuscitation

CSA – Canadian Standards Association

ENR – Department of the Environment and Natural Resources (Government of the Northwest Territories)

EMT – Emergency Medical Technician

ERP – Emergency Response Plan

GFCI – Ground Fault Circuit Interrupter

kW – Kilowatt

LPG – Liquefied Petroleum Gas

m – Metre

MSDS – Material Safety Data Sheet (under WHMIS1988)

OHS – Occupational Health and Safety

POL – Possession Only License

PAL – Possession and Acquisition License

SDS – Safety Data Sheet (under WHMIS2015)

SOP – Safe Operating Procedure

TDG – Transportation of Dangerous Goods

UV – Ultra Violet

W – Watts

WHMIS – Workplace Hazardous Materials Information System

WSCC – Workers' Safety and Compensation Commission

3 INTRODUCTION

This Code of Practice outlines regulations, hazards, and risks employers should consider for the set up and management of camps. Careful planning and a concern for health, safety and the environment are essential for good camp management.

Field camps or rented accommodations must provide adequate working, eating, and sleeping arrangements for field workers. Employers must appropriately equip camps so that workers can complete tasks safely and efficiently. At the same time, camps should make as little impact as possible on the environment.

Project managers have to allow sufficient time to secure required permits and permissions before sites are opened. Consider the following factors when selecting a project or camp site:

- Time of residence: Will the camp be in operation for a field season or year round?
- Duration: Is it going to be a temporary or a permanent establishment?
- Size of the camp: Does it fluctuate with the seasons?
- Accessibility: Transportation access (vehicle, helicopter and fixed wing) may impact the site selection.
- Permits: What type of land is it, what entity owns it?

4 ACTS, REGULATIONS AND STANDARDS

In the Northwest Territories and Nunavut, camps are regulated through the:

- *Mine Health and Safety Regulations, Part XV Exploration, Section 15;*
- *Safety Act, Sections 4 and 5; and*
- *Occupational Health and Safety Regulations, Part 3 General Duties.*

Depending on the size of the camp, employers may require permits for camp construction, access routes, water use, and waste disposal. Be sure to determine the requirements and obtain all necessary permits to work in compliance with regulations prior to establishing a camp.

Before any work can begin, the Chief Inspector of Mines must approve the owner's Exploration – Work and Safety Program that includes details and procedures of:

- Location;
- Method of exploration;
- Equipment to be used;
- Number of workers who will be at the camp;
- Work practices;
- First aid and prevention of hypothermia;
- Fire hazards;
- Explosives handling;
- Equipment handling;
- Survival techniques and equipment; and
- Drilling, trenching, and underground exploration.

Exploration companies should have a concise policy to address alcohol and drugs at project and camp sites. Depending on the location, the policy must conform to the *Regulations* of either the Northwest Territories or Nunavut.

Companies should respect the wishes of local communities, especially when working in or near a dry community.

There should be a provision for workers to sign off that they understand and agree to follow all policies and regulations (alcohol, firearms, wildlife, etc) at camp.

> ***Mine Health and Safety Regulations of the Northwest Territories and Nunavut***
> 18.01. An employee shall:
> (f) not be impaired by alcohol or drugs while at work;
> (g) not possess alcohol or illegal drugs at work.

5 SELECTION AND LOCATION GUIDELINES

The proper set-up for a camp promotes a safe and healthy environment for workers.

When choosing a location, consult with regulatory agencies and bring in specialists who may assist in following territorial guidelines. Permission to use or access private land is always required, even though permits may not be necessary. Land access agreements may be required with settled land claim groups.

- **Environmental Conditions:** Pay special attention to the possibility of:
  - Fire sources
  - Water sources
  - Prevailing wind direction
  - Blowing dust
  - Drifting snow
  - Temperatures
  - Accessibility
- **Terrain:** Camps are generally best located in a dry, sunny, well drained site with sufficient elevation to avoid potential flooding or a negative environmental impact on local water resources. Assess hazards and avoid the following:
  - Dangerous trees and overhanging branches that may fall on tents or workers, or stumps that may impede equipment;
  - Areas prone to flooding, including dry streambeds and the immediate shorelines of lakes or streams;
  - Steep terrain or unstable ground with potential for land slip, including potential rock falls, landslides, mudslides, avalanches, cliff bases, and recently cleared areas;
  - Limited or confined work areas, potential for falls into old open mine works, inadequate parking space/access for service vehicles, equipment, and aircraft; and
  - Overhead or underground power lines, communications cables, gas and water pipelines, or private piping and instrumentation in the immediate area. Contact the appropriate authorities before any excavating or drilling commences to prevent accidental contact.

It is an offence against the Northwest Territories *Wildlife Act*, section 65(1), and the Nunavut *Wildlife Act*, Section 90(1), to feed wildlife. Doing so is punishable by a fine up to $100,000 and/or 1 year in jail in the NT, and up to $1,000,000 and/or 6 months of jail in NU.

- **Wildlife:** Consult ENR regarding wildlife regulations for interaction and recommended safety practices for the territory. There should be a policy stating that workers must not feed wildlife. This encourages animals to become habituated to humans and food conditioned.
- **Size:** The available space must be large enough to operate safely for the expected duration of the project, including future expansion.
- **Design:** The layout must meet applicable legislation for fire, health, safety, and the environment.
    - Arrange the camp to minimize the risk of encroachment by animals. There should be no dead ends where wildlife or workers may become trapped.
    - Locate the camp a minimum of 200 m from an airstrip to ensure aircraft do not pass over at a low altitude. Helicopter landing pads may be closer.
    - Establish a camp location as near as possible to the worksites to minimize travel time and exposure to associated risks.
    - Locate fuel storage areas at least 100 m away from the camp.
    - Accommodations:
        - Arrange accommodations in a line or a semi-circle, rather than in a full circle or a square to prevent a tent being in the target area should wildlife approach the camp.
        - Ideally, the kitchen area should be at least 20 m downwind from sleeping tents.
- **Communications**: Provide the best communication equipment for the geographic location and terrain; supply the camp with sufficient equipment, including an independent backup system. Post operating instructions for all communication equipment in the communication area for easy access in an emergency.

6 OCCUPATIONAL HEALTH AND SAFETY PROGRAMS

Occupational Health and Safety (OHS) Programs are intended to ensure that every person leaves the site, or completes a shift, healthy and safe; it is part of an organization's Internal Responsibility System (IRS).

A hazard assessment must be completed to identify and mitigate risks. Simply copying and pasting procedures from one work site to another is not a practice which will keep workers safe.

The following are part of an overall Occupational Health and Safety Program and must be reviewed and adjusted for the camp location:

- Risk assessments;
- Safe operating procedures;
- Emergency response plans (ERP);
- Equipment Maintenance;
- Lockout/Tag Out;
- Communications;
- Orientations;
- Safety meetings;
- Training;
- First aid;
- Inspections;
- Investigations;
- Documentation; and
- Reporting Forms.

7 FIREARM REGULATIONS AND POLICIES

Non-lethal deterrents must always be used unless the situation requires the use of a firearm. Only under special circumstances, such as the protection of human life from animal attacks, should firearms be kept in camps and/or carried by workers while travelling to worksites on foot. In some areas, where there is a threat of wild animal attack, it is preferable to have wildlife monitors with experience and training in attendance.

Things to consider when hiring a wildlife monitor:
- Approval through RCMP to possess firearms
- Specialized firearms safety training
- Expertise regarding local wildlife
- Wildlife defense training
- Knowledge of *Wildlife Act*

A hazard assessment must be conducted on the need and use of firearms to mitigate the following risks:
- Injury or death caused by the unintentional discharge of a firearm;
- Injury or death caused by the intentional misuse or careless use of a firearm;
- Personal injury to the shooter, which may include hearing loss or being shot from an accidental discharge (slip, trip or fall, etc.);
- Improper storage of firearms and ammunition; and
- Increased risk when wildlife is shot and injured.

7.1 COMPANY OWNED FIREARMS:

The company must submit an application for use of non-restricted firearms to the Chief Firearms Officer.

Northwest Territories and Alberta share a Chief Firearms Officer, located in Alberta. Similarly, Nunavut and Manitoba share theirs, located in Manitoba.

COMPANY FIREARMS POLICY:

The company firearms policy must conform to all federal, territorial, and local regulations. In Canada, only people who have a valid PAL/POL are permitted to use or handle company-owned firearms, except for individuals who qualify for alternative certification as approved by the RCMP. A firearms policy consists of:
- Who is in charge of firearms;
- Who is permitted to use firearms;
- How access to firearms is controlled;
- Requirements for transportation, storage, and care of firearms and ammunition;
- An outline detailing how only non-restricted and non-prohibited firearms are permissible in camp;
- The circumstances when firearms may be used (not permitted for hunting);

- How firearms must always be demonstrated to be safe (PROVE process);
- How only company firearms are permitted on site, with the exception of when an officer is performing inspections (Fisheries Officer, RCMP, or Wildlife Officer);
- Disciplinary actions for violation of the firearms regulations and policy; and
- Details on how contractors working on site are required to follow the company firearms policy.

SAFE FIREARMS PRACTICES:

- Provide firearms practice and training (including target practice) by a certified instructor to workers expected to handle firearms before they arrive on site;
- Notify local police authorities when firearms are present in camp;
- Review legal requirements for transportation of firearms by vehicles, ATVs, snowmobiles, boats, or fixed wing aircraft and helicopters;
- Store firearms unloaded with a trigger lock in place and in a locked container.
- Store ammunition locked separately. Make sure the correct ammunition is available for the specific firearm;
- If possible, purchase only one type of firearm and ammunition, as this can prevent potential mix ups during an emergency;
- When removed from storage, a firearm must be under the immediate control of a qualified person at all times;
- A firearm used for wildlife control may be stored temporarily unlocked and out in the open, as long as it is unloaded and ammunition is not readily accessible;
- Keep firearms in good condition and fully functioning. Any firearm that is not absolutely dependable is a liability to the person using it and for others whose safety depend upon it;
- Where field work may expose workers to wildlife attacks, it is advisable to work in groups with one acting as a wildlife monitor; and
- Work with local authorities to deal with troublesome wildlife.

8 HAZARDS

8.1 FIRE SAFETY

Fire is the one of the greatest risks in a camp and the consequences are extremely serious. Should a camp burn, people may be injured, killed, or left without shelter, first aid, communications, transportation, food, water, and clothing. The abrupt loss of a camp may result in an immediate and serious survival situation, especially in freezing weather.

Each camp must have the appropriate firefighting equipment identified through the hazard assessment and as required by legislation.

Locate tents, kitchen, fuel storage area and the helicopter landing pad with fire prevention in mind. Maintain a safe distance between tents and/or buildings and consider the prevailing wind direction. Make sure appropriate and properly functioning smoke detectors are present in permanent structures and tents. Keep a sand-filled bucket beside the entrance of each tent for small fires.

Housekeeping:

- Reduce clutter;
- Do not block exits or emergency equipment;
- Store oily rags in a sealed metal container or incinerate;
- Keep grass and flammable vegetation cleared; and
- Provide a designated smoking area.

Place fire extinguishers in an easy to access location near the exit of a tent, cabin, or a drill shack. Examples of extinguisher locations:

Office	Kitchen Tents	Sleeping Tents
Incineration Site	Generator Enclosures	Drill Shack
Fuelling Locations	Fuel Storage Area	Helicopter Landing Pad
Air Strip	Vehicles	

The hazard assessment may identify the requirement for additional extinguisher capacity in high hazard areas such as: fuel storage and filling stations, drill shacks, or kitchens beyond legislated requirements.

Develop an emergency evacuation plan. Post the plan and make sure every worker, including visitors, are familiar with the plan. Some considerations are:

- Notification system;
- Muster station;
- Parking allocation (two exit routes whenever possible);
- Firebreak construction. The firebreak should be at least 5-10 m wide; and
- Frequency of fire drills.

FIRE PREVENTION PRACTICES CHECKLIST (FOR WORKERS):

Workers are required to carry out all activities and procedures in a manner that minimizes the risk of fire.

- ☐ Workers must be informed about the local fire hazard rating and carry out work in compliance with any mandated restrictions. Contact the local ENR Officer for information on burning bans, permits required, or environmental updates prior to burning materials.
- ☐ When open fires are permitted, keep them small and locate them in a safe place; never leave a fire unattended.
- ☐ Fires in wooded areas must be built only on mineral soils. Scrape away all organic materials before building. Make absolutely certain that organic materials are never left smoldering under any fire.
- ☐ Extinguish all open fires thoroughly with water when they are no longer required. Even when sure a fire is extinguished, add several more buckets of water just to be safe.
- ☐ Separate and remove all dangerous goods that may explode if waste is incinerated at the camp (e.g. batteries, aerosol cans).
- ☐ Turn off cook stoves when not in use. Make sure oil stove heaters are turned down or off when leaving camp.
- ☐ Perform regular maintenance on stoves, stovepipes and draft regulators, which will reduce the potential risk of fire and CO poisoning.
- ☐ Turn off all non-essential propane tanks when temporarily leaving camp.
- ☐ Light lanterns outside the tent and bring them inside only when burning properly.
- ☐ Use caution when burning mosquito coils. Place them in a metal container when lit and be sure to extinguish them when unattended.
- ☐ Clear brush and grass from around portable generators, water pumps, compressors, and any small motors.
- ☐ Use caution and correct procedures when fuelling camp equipment and vehicles. If workers are unfamiliar with the routine, they must be given training.
- ☐ Make sure proper safeguards remain in place around motor generators and transmitters, as this equipment is a significant fire hazard.
- ☐ When parking a vehicle, including ATVs, make certain the exhaust system does not come in contact with dry flammable materials. Catalytic converters may become very hot.

8.2 FUELS:

Camps often require a variety of fuels, which are commonly stored in 205-litre (45-gallon) fuel drums or in smaller drums and jerry cans. Some fuels require special handling, such as propane and acetylene, as they are stored in cylinders under high pressure.

In Canada, as of June 12, 2010, new regulations apply to both aboveground and underground storage tanks for petroleum products with a capacity over 230 litres that are located on federal or aboriginal lands. Storage tank systems must be registered with Environment Canada and meet standards to prevent leaks and spills.

RISKS AND HAZARDS CAUSED BY FUEL AND OIL SPILLS INCLUDE:

- Environmental damage;
- Fire and/or explosion caused by: misting fuel coming in contact with an open flame, static discharge;
- Burns or chemical burn injuries caused by fires, explosions or skin contact with fuels;
- Inhalation injuries caused by toxic, corrosive, or asphyxiant properties of some compressed gases;
- Impact injuries caused by mechanical failure of compressed gas cylinders. If cylinders are knocked over and the regulator is sheared off, the contents may diffuse and/or the cylinder may become a missile; and
- CO poisoning caused by incomplete combustion of fuels in heating stoves, generators, saws or appliances where there is insufficient ventilation.

With WHMIS 2015 legislation currently in force, organizations must fully comply with **either** the repealed *Controlled Products Regulations* (WHMIS 1988) **or** the WHMIS 2015 for a specific controlled or hazardous product. The classification, label, and (material) SDS must comply fully with the specific regulation chosen by the supplier, **not a combination of the two.**

FUEL DRUMS AND TANKS:

- Store all flammable and combustible liquids safely in accurately labelled containers that conform to WHMIS regulations (e.g., fuels and propane);
- Store and secure each type of fuel in a separate cache; it is important not to mix different types of fuels, especially aviation fuels;
- Store full factory-sealed fuel drums by lying the drum on its side with both bungs horizontal in the 9 o'clock and 3 o'clock position, which prevents air and moisture from entering;
    - Aviation fuel drums must be stored horizontally but may be placed upright when they are in use. Once a drum is opened, it is very important to replace and securely tighten the bungs. Store an in-use drum at an inclined position (preferably 60-70° from the vertical).
    - Pilots may refuse to use fuel if:
        - it is more than two years old;
        - the bung seals are damaged; or
        - if it has been stored upright for more than one day.
- Fuel drums must be stored in a secondary containment system, which should be rated for diesel and aviation fuels, as required. Check the specification sheet for the rating information;

- Post signs that clearly prohibit smoking and open flames in fuel storage and handling areas;
- Most fuel drums are clearly marked but occasionally markings are unreadable. If in doubt about the identity of a fuel, DO NOT USE IT. Mark it appropriately for removal from site and disposal;
- Store fuel in a cleared, bermed area surrounded by a firebreak; and
- Properly dispose of empty fuel drums.

FUEL HANDLING:

Handle fuel carefully to prevent accidents including fires, spills, and fuel contamination. Workers who handle fuel must receive appropriate training in WHMIS and transportation of dangerous goods (TDG). Keep appropriate spill kits at fuelling stations and take precautions to prevent injury and environmental damage.

- Wear personal protective equipment: When drums are under pressure from sun exposure, the bungs may come off unexpectedly and the contents may splash out.
- Transferring fuel by hand from drums to smaller containers:
    - Use only CSA-approved fuel containers. Restrict the size to no larger than 20 L;
    - Use hand or power pumps with a flash or spark arrester to prevent a static spark when transferring fuel into jerry cans;
    - If it is necessary to use the same pump for various fuels, be sure to flush the pump out first and empty the waste into a container – never onto the ground. Label the waste fuel container;
    - **Workers must never use their mouths to siphon fuel**; and
    - It is NOT advisable to refill fuel drums.

Manage waste petroleum products according to ENR requirements. Isolate waste products in sealed appropriate containers until they can be properly disposed of either on or off site.

STORAGE OF COMPRESSED GAS CYLINDERS:

Compressed gas storage areas must be a minimum **of 30 m from any occupied building or tent**. Separate the storage areas to be compliant with WHMIS and MSDS/SDS specifications.

- Flammable gases must be stored separate from oxidizers (e.g., hydrogen peroxide, nitric acid, sulphuric acid) and corrosive vapours.
- Full cylinders must be stored separate from empty cylinders.

TRANSPORTING FUEL DRUMS AND COMPRESSED GAS CYLINDERS:

Follow all TDG regulations for transportation. The Transport Canada website provides information on training and links to a variety of topics regarding dangerous goods.

Transport fuel drums upright in the back of pickup trucks and never in the cab. Carefully secure all drums so they cannot shift while underway. Use a hand truck to transport and maneuver individual cylinders. Never roll them on their side over the ground or floor to move them. Follow safe slinging procedures when transporting fuel and follow the directions of the pilot.

PROPANE GAS HANDLING:

Propane (a type of liquefied petroleum gas [LPG]) is compressed into liquid and stored in special cylinders. Find general information about propane in *10.2 Propane and Other Liquefied Petroleum Gases* in the Excellence in Environmental Stewardship Toolkit on the e3Plus website.

Handle propane storage tanks and cylinders according to TDG and WHMIS SDS/MSDS standards. Ensure the protective ring is not damaged and the safety cap covering the valve is in place during transportation.

Set propane cylinders upright against the outside wall of the building, tent, or drill shack when in use. They must be placed on a solid base or non-combustible rack and secured so they cannot tip over. Do not place them directly on wet soil, as this may cause corrosion. Shield propane tanks from radiant or other direct heat sources and shield hoses from excessive heat and foot traffic. If a cylinder freezes to a surface, use warm water below 52°C (125°F) for thawing.

Use only the correct installation methods, tools, and fittings (regulators, hoses) when connecting propane cylinders to fuel lines.

As propane gas is heavier than air, escaping gas accumulates in low areas. Properly ventilate around all propane burning equipment to prevent explosion.

Propane pressure varies with the temperature of the liquid propane, not with the amount of propane in the cylinder. Never heat up a propane tank by using a torch etc., to try to increase the flow of gas from the cylinder.

Always use soapy water to check for leaks at the joints and fittings. **Never** use a flame to check for leaks. Make sure the safety shut-off valve works properly. Propane tanks have a limited life span. Do not use tanks that are corroded, rusty, or are past the expiry date.

Correctly stored compressed gas: upright, secured with safety caps in place and off wet ground to prevent corrosion.

HEATING STOVES AND APPLIANCES:

Precautions for Heating Stoves in Tents:

- Oil or woodstoves must have heat resistant material under them and on the walls nearest to them.
- When an outside chimney requires a support pole, place insulation between the chimney and the pole. Brace and wire all pipes until they are solid enough to withstand a windstorm. Make sure the chimney does not touch the tent and the chimney vent that passes through the tent is made of adequate insulating material.
- Always use a heat-resistant spark arrester at the chimney top for oil and wood stoves.
- For all heaters/stoves, always check that the tent is well-ventilated but not drafty. CO and toxic fumes are significant hazards.

Propane Heaters and Appliances:

Propane fuel may produce deadly CO through incomplete combustion. No propane heaters or appliances may be used in tents or any sleeping quarters without excellent ventilation. Place a CO detector in any area where propane appliances are used.

Never operate propane without a proper regulator at the outlet of the propane cylinder.

- Make sure all fittings on the supply line are secure.
- If there is the smell of propane (rotten eggs or cooked cabbage), do not try to light the heater or appliance.
- Keep combustibles away from any propane stove or appliance.

<u>Propane refrigerators:</u> Always transport refrigerators in the upright position. Install refrigerators in an area with sufficient ventilation. Keep them level and prevent them from rocking.

8.3 GENERATORS:

Field camps use a variety of generators in exploration activities. Small camps usually use small gasoline or diesel-powered generators with a generating capacity of 300-5000 W. Permanent camps commonly use larger diesel-powered generators with capacities of 2-50 kW or more. Generators are also commonly used in ground geophysical surveys.

GUIDELINES FOR THE SAFE OPERATION OF GENERATORS:

- Comply with the relevant building, fire, and electrical codes. Large generators and electrical distribution systems must be installed and/or inspected by a qualified electrician.

- Exhaust emissions contain poisonous CO. Never run a generator in a building, tent, or in an enclosed area unless the exhaust pipe discharges outside the area so fumes cannot re-enter the enclosure.
- Operate the generator on a level surface. Otherwise, fuel and oil spillage may result. Use drip trays or absorbent pads, and have a spill kit available.
- Fuel generators during daylight hours. If fuelling must be done in darkness (e.g., arctic winter), make sure there is adequate lighting to do the job safely.
- Do not smoke or allow flames or sparks when refuelling generators.
- Only trained individuals may fuel, install, and carry out regular maintenance and repairs. This includes regular oil changes and coolant level checks. Shut off the engine before carrying out maintenance. Keep a written log of maintenance and servicing.
- When using generators in the field, make certain they do not rest on any organic material or vegetation that might ignite.
- Install large generators away from tents and structures and in insulated housing to reduce noise. Whenever possible, locate them downwind to reduce noise and emission pollution.

All drums, tanks, or generators must be grounded when in use. They must also have secondary spill containment.

8.4 CARBON MONOXIDE POSIONING

CO is the leading cause of death by poisoning in North America. It is colourless, tasteless, odourless, and non-irritating, so workers are unaware of it when they breathe it. CO is easily carried in the blood, which reduces the blood's ability to carry oxygen. It can build up rapidly and poisoning can occur in a very short time – even within minutes.

SYMPTOMS OF CARBON MONOXIDE POISONING:

Symptoms depend on concentration, degree of physical exertion, and length of exposure. Because the brain is sensitive to oxygen deprivation, behavioural changes and confusion are common, but more easily recognized symptoms include the following:

- Low CO concentrations produce a slight headache, shortness of breath, nausea, and dizziness;
- High CO concentrations produce a severe headache, mental confusion, dizziness, impaired vision and/or hearing, and collapse or fainting with physical exertion; and
- Extreme CO concentrations produce unconsciousness, coma, and death.

RISKS

Primary risks to exploration workers comes from using portable generators, heating stoves, and gas-powered tools when used in areas without proper

ventilation. Stoves or heat sources used inside a tent are particularly dangerous. Risks are caused by:

- **Confined spaces or semi-confined spaces:** CO levels build up very quickly, sometimes in a few minutes;
- **Inadequate training:** Lack of awareness of the risks and situations where CO poisoning can occur;
- **Indoor use:** Propane or gasoline-fuelled equipment;
- **Pre-existing medical conditions:** Chronic lung or cardiovascular disease increases the susceptibility;
- **Reproductive toxin:** Pregnant women are very vulnerable, as the CO in their blood poisons the fetus more rapidly than it poisons the mother; and
- **Incomplete combustion:** Improperly adjusted oil or gas burners in space heaters, heating stoves, cooking stoves, and all fires are sources of CO. During normal combustion, very little CO is produced. However, incomplete combustion of *any* fuel greatly increases the production of CO.

PREVENTION AND PREPARATION:

- Include an assessment of all items that have the potential of generating CO. Mitigate the risks;
- Develop and implement SOPs for working with equipment that produces CO;
- Develop ERPs that address potential CO poisoning;
- Educate workers about the risks, warning signs and required first aid treatment for CO poisoning;
- Engineering controls;
    - Install ventilation that is appropriate for the work space. Work in trenches and underground requires proper air and exhaust ventilation for diesel motors – never use gasoline-powered motors near a trench where the exhaust may descend and accumulate.
    - Replace gasoline and diesel powered equipment with electric equipment if possible.
    - Maintain fuel-powered equipment in good condition and inspect it regularly.
    - For heating and cooking stoves, make sure the flame of LPG burns with a clear, blue flame. A flickering or yellow flame indicates incomplete combustion and that the air intake is restricted and needs adjustment.
- Start vehicles and heavy equipment outdoors or in well-ventilated areas; and
- Do not barbecue with charcoal in any enclosed space. Coals emit CO even when they are not glowing.

TESTING ENVIRONMENT

The only reliable test for CO is to use instruments designed to detect the presence of CO. Use detection instruments appropriate for the work site.

- Gas detection tubes – indicate the level of CO by colour changes.
- Electronic detectors: various sizes – portable and stationary.
- Do not use a home detector for buildings at a work site.

8.5 FORMS OF HAZARDOUS ENERGY:

There are various types of hazardous energy; an employer must develop SOPs to mitigate worker exposure.

- **Electrical energy:** Low voltage and high voltage equipment can kill workers. Workers must never work on electrical equipment, lighting systems, or electrical panels unless they are locked-out and they are trained, competent and authorized to do so;
- **Kinetic energy:** Machinery parts may continue to move after electric power has been turned off. Guarding, blocking, or restraints may be required during maintenance. Parts may be controlled by hydraulic or pneumatic pressure, which must be released and/or blocked;
- **Potential energy:** Some materials or parts of machines or equipment may be suspended or elevated when the energy source is stopped. Block any elevated machine parts that might fall due to gravity and pin or block parts suspended by hydraulic or pneumatic pressure. Loaded springs are a source of potential energy;
- **Chemical energy:** Flammable and combustible materials release energy in the form of a chemical reaction when they burn;
- **Thermal energy:** This energy can be transferred to a cooler body. Hot steam pipes and pressurized gases are sources of thermal energy; and
- **Radiation energy:** Lasers, light and X-rays are forms of radiation that may require control.

LOCKOUT/TAG OUT PROCEDURES:

- A program that requires all energy sources to be secured against the release of hazardous energy;
- Workers must be trained on lockout/tag out procedures;
- The lock and tag program must include:
    - A personal lock with only one key issued to each worker (as needed); which is kept by that worker.
    - Only that worker may place the lock on a switch, valve, or circuit panel to lockout energy and only that worker may remove the lock when work is complete.
    - A tag must be clearly written, weatherproof, and securely attached to the lock.

Personal lock and tags prevent someone from inadvertently restoring the energy source.

    - All workers performing maintenance on energy sources must place their personal lock and tag on the energy source. When their work is complete, they remove their personal lock and tag.
- Develop and implement procedures to address when lockout/tag out work carries over to other shifts.

ELECTRICAL SAFETY

Qualified electricians should design and install electrical systems, wiring, and carry out all repairs to electrical equipment. Workers who use electrical tools and equipment must be trained and refer to the manufacturer's manual for safe operating procedures.

General Guidelines for Electrical Safety:

An electric shock can be fatal when current passes through the body. Electrical burns can be extremely serious and may require amputation of digits or limbs. Avoid electrical hazards by following safe work practices:

- Keep all appliances, power tools, plugs, and cords away from water and damp surfaces;
- Make sure all electrical equipment is properly grounded;
- In the event of an electrical fire, always use a C-rated fire extinguisher – **never use water**, it will increase the risk of electrocution;
- Use extreme caution when handling aluminum ladders or other conductive materials. Prevent them from touching exposed overhead electrical wires, light bulbs, or other conductors;
- Do not work alone with or near high voltage electricity. Use the buddy system so emergency measures can be initiated if one worker is injured;

- Treat every wire as if it were energized or live until it has been confirmed that it is not; and
- Clearly label the circuit breaker(s) and the main power emergency switch. All workers must know the location and how to properly cut off power.

ELECTRICAL EQUIPMENT:

- Use the correct power tool or appliance for the job. Securely store all equipment in its designated storage place when not in use. Keep items in good repair and free of dirt and grease; never use defective or worn tools or appliances;
- Grip the plug and not the cord when unplugging a tool or appliance. Always handle plugs with dry hands; and
- Unplug tools, appliances, and machinery before inspecting, cleaning, clearing a stoppage, or carrying out maintenance.

CIRCUITS:
Make sure all electrical systems are correctly grounded. All circuits must be equipped with ground fault circuit interrupters (GFCIs). GFCIs protect workers from electrical shock, as they interrupt the circuit before a fuse in a circuit breaker panel is triggered.

Keep the access clear around circuit panels and junction boxes. Minimize hazards caused by electrical cables by burying, elevating, or barricading exposed cables. Mark the location of any buried cables.

Use only armoured (teck) cable as per the manufacturer's instructions for burial.

When using electrical cables, power and extension cords:

- Make sure power cords use the appropriate voltage for the electrical grid system. Use cords with ratings appropriate for the job;
- It is preferable to use only circuits with GFCIs. However, if there is no GFCI, use electrical cords that contain inline GFCIs. If using electrical cords that lack GFCIs, employers should have a documented inspection program in place; because of this, it is usually cheaper and safer to purchase and use cords with inline GFCIs;
- Visually inspect power cords before use. Make sure they are free of breaks in the insulation and have no taped splices. Inspect them for fraying and damage before each use. If damaged, cords must be repaired by an electrician or discarded;
- Use the correct type and length of cord for the job. A power cord must be as short as possible for the job. A cord should never be near a worker's feet where it may become a tripping hazard, or draped over a workspace or cooking surface where it may get caught; and
- Do not allow vehicles etc., to drive over power cords. Place the cord between planks for protection.

BATTERIES:
A variety of batteries are used in camps; 6 or 12 volt lead acid batteries power various means of transportation and communication equipment.

General battery tips:

- Follow the manufacturer's instructions to install and recharge batteries correctly;
- All batteries should be the same age – replace all of them at the same time;
- Do not leave equipment switched on when the batteries are depleted. Remove depleted or damaged batteries. Do not leave them in equipment as they may corrode or leak and cause damage;
- Pay attention to the expiry date on batteries. Batteries should be replaced before the expiry date;

- If carrying battery powered equipment in very cold weather, workers should keep the items close to their body inside several layers of clothing to preserve the charge; and
- Comply with ENR regarding disposal and recycling of batteries.

Battery recharging tips:

- Batteries should be almost, but not totally, depleted before recharging; and
- Charge batteries at room temperature whenever possible – not at temperatures below 0°C or above 40°C.

Battery storage tips:

- Store batteries as per manufacturer's specifications in cool, dry, well ventilated areas. Keep them away from any heat source, including direct sunlight; and
- Never store batteries with flammable or explosive materials or with food.

9 HEALTH

It can be challenging to manage remote exploration camps and provide a healthy environment for workers. This requires keeping camps as clean as possible through careful attention to sanitation, despite isolation and climatic conditions. Difficult working conditions can lead to physical stress and fatigue and contribute to workers' susceptibility to illnesses and/or incidents.

9.1 WORKER HYGIENE:

Exploration workers typically spend weeks or months working long hours while living in exploration camps. Clean water and safe nutritious food are essential for both productivity and morale. Good personal hygiene standards are important so dirt and potential infections from work sites do not contaminate the kitchen and eating areas.

Hand washing facilities should be located to encourage workers to wash their hands before eating, after using the toilet, and after handling any materials that might cause contamination (e.g., residues from samples containing radioactive minerals or asbestiform minerals). Frequent hand washing reduces the likelihood of contracting contagious diseases.

- Bathing/shower facilities should be used on a regular basis (daily is best).
- Clothes washing facilities should be used frequently to keep work clothes free of grease, grime, and dirt. Some sampling areas may require clothes washing facilities on site so potentially contaminated work clothing remains in that area. Under some circumstances, for example drill camps, it may be necessary to have dedicated washing machines for excessively dirty, greasy clothes.

9.2 GUIDELINES FOR KITCHEN SAFETY, FOOD HANDLING AND FOOD STORAGE:

Food-borne illness can sweep through a camp and disable many people at one time. Therefore, hygienic food preparation, handling procedures, and safe food storage are critical to maintaining worker health. The risk of food contamination increases in hot, moist conditions where bacteria can multiply very rapidly.

- Restrict food to the kitchen and dining areas; no food should be permitted in sleeping or work areas to prevent the presence of animals;
- Set up hand washing facilities so workers can wash before meals. Workers must not wear dirty work clothes and boots in the kitchen and eating areas; and
- Camps should have an emergency lighting system in the kitchen area in the event of a power failure.

KITCHEN STAFF:

Preventing food-borne illnesses starts with selecting competent food handlers. They must be familiar with safe food preparation, storage and cleanup practices.

- Select camp kitchen staff carefully. Whenever possible, hire kitchen staff with food handling certification. Food handler training is available and required to operate an establishment in the NT. Operations in Nunavut are recommended to have food handler training as well.
- Make sure the food handlers have up-to-date immunizations. Prior to employment, food handlers should undergo medical screening for communicable diseases (e.g., Cholera, Hepatitis A, and Infectious Tuberculosis). Food handlers are not permitted to handle food in the NT or NU in accordance with the Northwest Territories and Nunavut *Public Health Acts* and applicable *Regulations* if they are infected;
- Hand washing: Make sure that all kitchen staff use proper hand washing techniques with soap and water. Insist that staff practice meticulous personal hygiene before and during food preparation, after touching unsanitary surfaces (including face, nose, hair, etc.), handling garbage and after using the toilet;
- Consider placing hand sanitizer dispensers at key locations;
- No smoking is permitted while preparing food. Cover skin infections or cuts with waterproof dressings. Kitchen staff must inform their supervisor if they are feeling ill; and
- Workers with long hair should wear it up and out of the way and use a hair net. Do not wear loose clothing, especially loose sleeves that may catch fire or get caught on sharp edges.

KITCHEN OPERATIONS SAFETY:

General Safety:

- ALWAYS keep an appropriate-sized fire extinguisher(s), as determined by the hazard assessment, in the kitchen, near an exit;
- Depending on the kitchen size and set up, consider stocking a Class K fire extinguisher(s) designed for fighting fires in deep fat fryers;
- If a fire starts on the stove – turn off the heat and cover the pan. Use a Type B or BC fire extinguisher if one is required;
- Follow firefighting routines. See Fire Safety (Section 8.1);
- Always use dry kitchen towels, hot pads, or oven mitts when handling hot utensils and pots and pans. Damp items can produce a steam burn on the hands or arms;
- Handle kitchen knives properly;
    - Keep knives sharp and use the correct knife for the job.
    - Store kitchen knives safely – never store them loose in a drawer.

- Follow safe practices when using electric kitchen appliances.
    - Read the manufacturer's manual and be familiar with the safe operating procedures.
    - Outlets with GFCIs are recommended. Do not overload outlets; use power bars.
    - Never unplug electrical cords with wet hands. Always unplug an appliance before cleaning it or clearing a blockage.

KITCHEN AND FOOD PREPARATION SURFACES:

- Make a diluted bleach solution for sanitizing surfaces and eating utensils after each meal. Use this solution in a spray bottle on surfaces after they are washed with hot soapy water. Make a fresh solution often. Clean floors and food storage areas daily;
- Use cleaning products appropriate for the equipment used (e.g., oven, refrigerator). Post appropriate SDS/MSDSs nearby;
- Water temperature for hand washing dishes must be at least 43°C (110°F) and items should be allowed to air dry. Water temperature must be at least 60°C (140°F) in dishwashers;
- Sponges should *not* be used for cleaning in the kitchen area as they retain bacteria; and
- Wear rubber kitchen gloves when washing dishes to protect hands from hot water and excessive exposure to soap and water.

FOOD PREPARATION SAFETY:

Cross-contamination is one of the most common causes of food-borne illness and occurs when bacteria from raw food (especially meat and poultry) is spread to other foods.

- Use only potable (drinking) water to wash salad greens, fruits, vegetables, and any food that is consumed raw. It is advisable to wash pre-washed produce. Wash skins of melons before slicing and fruits that are peeled by knife to prevent bacteria being carried onto the fruit;
- Food preparation areas must be kept meticulously clean. It is essential to wash all food preparation surfaces with hot soapy water before food preparation begins and again before a different food is prepared on the surface to prevent cross-contamination. Rinse with a sanitizing solution;
- Use a designated cutting board for meat, poultry, and seafood, and a separate board for vegetables and fruits. This way, there is no accidental contamination between raw fruits and vegetables and raw meats, etc. Wash cutting boards with hot soapy water and sanitizing solution after use;
- Wash foods in a bowl, not in a water-filled sink. After washing meat, chicken, or fish, always wash the sink as well as the container, as splashed water may contain contaminating bacteria;

- When cooking meats, poultry, or seafood on a grill, place the cooked food in a clean container. Discard marinades after raw items are removed; and
- If disposable kitchen food preparation gloves are worn, the wearer must change them as often as they would normally wash their hands – whenever there is a chance of cross-contamination and when the hands have touched something unsanitary.

FOOD STORAGE:

Food handlers must unpack and inspect all food shipments immediately after arrival. Inspect for quality and potential contamination, including by vermin. After inspection, store it promptly. Proper storage includes both preservation of food quality by refrigeration and prevention of invasion by nuisance animals and insects. Never store food in sleeping tents.

- Store perishable goods in appropriate places – cupboards, refrigerators, or freezers;
- Critical temperatures for heating, cooling, and refrigeration of food;
    - It is essential to keep prepared food at a safe temperature to prevent the growth of bacteria. This requires that cold foods be kept cold (less than 4°C or 40°F) and hot foods be kept hot (warmer than 60°C or 140°F). Bacteria grow rapidly so food should be heated and cooled quickly through this temperature range.
    - Food that requires refrigeration should be discarded if it sits for two hours or more between the temperature range of 4° to 60°C (40° to 140°F).
        - A large pot of hot food takes a long time to cool through the critical temperature range. To chill cooked food quickly, place it in a shallow pan to expose a large surface area to cooler temperatures and/or place it into a number of smaller containers.
        - Defrost all foods in the refrigerator. Always defrost meat in a refrigerator.
- Store heavy and bulky items on lower shelves but not necessarily the lowest shelf. Store foods in containers that are insect proof, rodent proof, and bear proof, as required. Label the contents;
- Once frozen goods have thawed, they must not be refrozen. Cook thawed food as soon as possible or discard any food that has been thawed for too long;
- Rotate stored food so that food is used up in the order received. Pay attention to expiry dates and required storage instructions such as “refrigerate after opening”;
- Store food in covered containers or plastic bags in refrigerators to prevent juices from other items dripping onto them. Seal raw meat, poultry, and fish and place them on the lowest shelf of a refrigerator so they cannot drip onto other foods;

- Discard food when: packaging seals are broken, any tins are rusted, “bloated” or “popped”, the expiry date has passed, and if it has been improperly stored (e.g., without required refrigeration); and
- Always keep grease stored in an airtight container; use as soon as possible.

Prevent wildlife from accessing food if the camp is left unattended during the day. Strong smelling foods must be carefully sealed in layers of re-sealable plastic bags. Consider using an infrared motion detection device that emits a very loud noise and flashing lights to scare off wildlife that enter the designated detection area.

VERMIN AND WILDLIFE CONTROLS:

Vermin: Construct camp buildings to exclude vermin and insects by using appropriate fly screens, traps and baits.

Wildlife: With a very keen sense of smell, wildlife will seek out carelessly stored food and incompletely burned garbage. Place all food in metal storage drums whenever possible.

- Control the smells of food, garbage, and waste products;
- Prepare only enough food that can be consumed at one meal;
- Remove leftover lunch food from daypacks and dispose of it properly each day; and
- For fly camps:
    - Suspend food stores (caches) between trees when possible. Food should hang at least 4 m off the ground and at least 100 m from the sleeping tent.

9.3 DRINKING WATER SAFETY:

The primary risks associated with drinking water are disease-bearing organisms, turbidity, and the presence of toxic chemicals or sewage that may contaminate drinking water. These are worldwide issues, and water in any locale and in any climate or terrain may be affected by one or more of these factors. There are five water boards in the NT, each covers a specific region: Gwich'in Land and Water Board, Inuvialuit Water Board, Mackenzie Valley Land and Water Board, Sahtu Land and Water Board, and Wek'èezhìi Land and Water Board. The Nunavut Water Board is responsible for the Nunavut Territory.

GENERAL REQUIREMENTS FOR DRINKING WATER:

- The volume of drinking water required for the camp depends on the following factors;
    - Whether the camp is temporary or permanent.
    - Number of workers.
    - Season.
    - Exploration activities (e.g., drilling, mineral/rock cutting, sorting).

    - Existing and future requirements (showers, dishwashers, clothes washers) of the camp or project.
- Install an approved water treatment and purification system. Some systems employ filtration, chlorination, reverse osmosis, ultra violet (UV) technology, or a combination of these. UV systems are commonly used in camps. Consult an expert on the most appropriate type of system for a specific site, as necessary; and
- Take required water samples for analysis to confirm that water meets drinking water standards.

WATER SOURCES AT ESTABLISHED CAMPS

- Review the Department of Municipal and Community Affairs (MACA) procedures for water treatment, cleaning of tanks, and sampling procedures;
- When reopening a site, the water tank must be sanitized before water can be added;
- Inspect and maintain components of water treatment systems on a regular schedule;
- If large volumes of potable water are transported to the site in water tankers, chlorine should be added to provide a free residual chlorine concentration. Tankers should be used solely for drinking water or, if this is not possible, must be thoroughly cleaned prior to use to be sure that there is no residual contamination; and
- When the water system is shut down, the water tank must be completely drained. It is necessary to use a sump pump to empty out all the water. It is very important to remove all sand and sediment so there is no place for bacteria to grow when the tank is not in use. It is advisable to make sure there are filters and UV lights available for start-up at the next field season.

10 FIRST AID

As a part of due diligence and compliance with *Occupational Health and Safety Regulations* or *Mine Health and Safety Regulations*, companies must provide an adequate level of first aid resources in camps, including first aid staff, equipment and supplies.

10.1 EMERGENCY FIRST AID PLANNING AND PREPARATION:

Regulatory requirements for first aid provision and training can be found in Appendix A, as well as in the *Mine Health and Safety Regulations* and in the *Occupational Health and Safety Regulations.* Additional requirements may be identified through the site risk assessment.

- A designated first aid and sick quarters may be required for large camps.
- Camps must be equipped with an appropriate first aid and wilderness equipment.
- Any injury must be referred to a first aid attendant for evaluation and the potential need for treatment in a medical facility.
- Responsibilities of first aid attendants may include:
    - Obtaining medical information. For each worker requiring first aid, the attendant must follow privacy procedures as addressed by the company;
    - Completing a first aid record form for all injuries;
    - Completing a medical assessment form when transferring a worker for medical aid; and
    - Maintaining a complete first aid kit and documenting each use. Attendants must carry out a regular inventory of supplies, replenish as needed and keep the first aid area clean and organized.
- Camps must be prepared for the following potential events:
    - Common illnesses and disorders: colds, flu and other viruses, athlete's foot, fungus (ringworm), and scabies;
    - Initial treatment for life-threatening illnesses such as malaria, as appropriate;
    - Treatment for burns (scalds and sunburn);
    - Abrasions, sprains, and broken bones;
    - Serious cuts and lacerations (chainsaws, axes or other cutting tools);
    - Oxygen therapy; and
    - Specific injuries or illnesses due terrain or climate, as appropriate:
        - Hypothermia, frostbite, cold water immersion;
        - Hyperthermia or heat exhaustion, heat stroke;
        - Dehydration;
        - Tick and spider bites;
        - Acute mountain/altitude sickness; and

- Animal attack and accidental exposure to bear spray.

- Post a notice with the first aid attendant's contact information at central locations and at each communication station:
    - Name(s) of first aid attendant(s) and work location on site;
    - Telephone number, radio frequency or satellite phone number to reach the first aid attendant from any location at any time;
    - Operating instructions for both radio and satellite phone;
    - Contact number(s) for the nearest medical treatment centre and transportation providers (helicopter, fixed wing etc.); and
    - The times required to reach the medical centre.

11 WASTE MANAGEMENT

Proper waste management is fundamental to camp safety. Project management must determine how waste products are ultimately handled – whether they are recycled or subject to various treatment and disposal options.

Secure required permits and follow all applicable regulations regarding waste classification, management, and disposal, including for any hazardous waste products that may be produced at the site.

Recycle as much waste as possible and consider donating safe materials that might otherwise be disposed of as waste for public use.

11.1 STORAGE:

All waste storage areas must have restricted access to limit entry by non-trained workers, the public, and animals. Provide fly-tight garbage containers in convenient locations. Maintain containers so they do not become foul smelling, unsightly or a breeding place for insects. Waste odours may attract wildlife, creating hazards for workers, company property, and animals.

- Wash all bottles and cans to eliminate odours and recycle them offsite.

11.2 DISPOSAL:

Waste disposal facilities must conform to site permits. Remove waste to an approved landfill location or incinerate it completely. Where permitted, locate the incineration area 100-200 m from camp, in the open and have the burning site visible from camp in order to monitor it. Clear away vegetation within three metres of the incinerator and have a fire extinguisher in place.

- Where permitted, incinerate all waste completely to ash and cool it. If waste is not completely burned to ash, store the residue in airtight containers in an appropriate area protected from wildlife. Remove it to a proper disposal site.
- Landfills: Waste residues must be stored in animal-proof containers and hauled together with non-food waste to a municipal landfill or buried according to NT and NU approvals.

INCINERATION VS BURNING:

Incineration is usually best completed at least once a day. If burning and/or incineration are options, understand the difference between the two processes.

TraumaTech Incinerator © Bill Mitchell

Incinerators: When burning waste is permissible, most regions require the use of an incinerator that complies with local regulations.

Burn barrels: Used for very small, temporary, or fly camps, but this method requires a lot of attention to thoroughly burn garbage. They require the use a slow burning fuel, such as diesel, combined with lots of air to create a hot incinerating fire. Quick burning fuels do not burn garbage thoroughly; they scorch the garbage and spread the scent. The top of any burn barrel must be covered with a wire mesh lid to prevent sparks from starting a forest fire and stop animals and the wind from removing garbage. Check NT/NU Regulations to make sure that using a burn barrel is permitted.

WASTEWATER:

Commercially available wastewater treatment packages are viable options.

Treat the wastewater left over from dishwashing, showers and washing machines carefully to remove odours. Where regulations permit, use lime in sumps in preference to a water/bleach solution. Do not allow grease or fine food particles to accumulate in sumps; use grease traps to recover the waste and then incinerate it. Cover sumps with plywood to minimize access and odours. It is recommended to fence in large sumps.

In small camps with no grey water disposal system, strain food bits out of dishwater. Place them with garbage and pour dishwater into a proper location and treat it with lime to remove odours.

SEWAGE:

Large camps require a properly designed and approved sewage disposal system, such as a septic tank and a subsurface leach field. Expert advice may be required, especially where septic tanks and leach fields are not ideal. Consider incinerators or composting toilets as alternatives for small to medium-sized camps. Construct and maintain latrines (when permitted) where chemical or water flush or other types of toilets are not used. Construct and maintain all camp sewage toilets correctly:

- Prevent flies, insects, mice, and ground squirrels from gaining access to waste materials;
- Prevent surface or ground water from entering the pit or vault; and
- Self-closing seat covers are advisable.

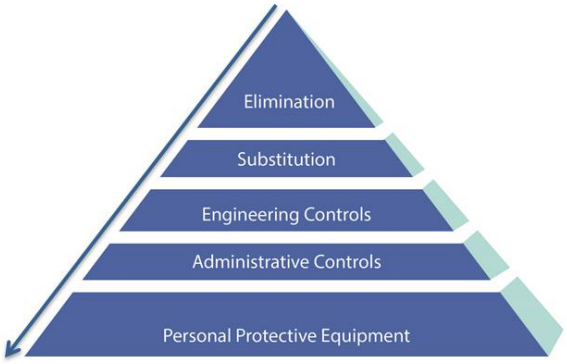
If latrines are permitted, they must conform to public health standards or to any conditions stipulated in work permits. Locate a latrine at least 100 m (300 ft.) from any stream or shoreline. It should be downwind from camp and at least 30-40 m away from the kitchen area. Locate hand washing facilities between the latrine and camp to promote hygiene. A good place is at the beginning of the access path to the latrine.

- Latrine: Dig a hole about 1.5 m square and about 1.5 m deep. Cover the hole with wooden planks leaving a hole for personal use. Place the latrine shelter on top of the hole. Cover the opening when not in use to reduce flies and the possibility of small animals falling in. Keep a container of lime with a designated ladle to disinfect the latrine. Place lime and dirt in the pit daily. Peat moss may work if there is not too much urine. When the latrine is no longer required, fill the hole with excavated soil. Keep the path to the latrine clear for safe use at night.
- Burn all feminine hygiene products in a very hot fire.

12 MANUAL HANDLING

Follow the hierarchy of controls and conduct hazard assessments to identify appropriate controls.

When setting up a camp, plan and organize the site to facilitate manual handling, which helps reduce injuries. Develop safe working procedures to control manual handling hazards. The Hazard Assessment Code of Practice contains details on assessments and methods for controlling hazards.



HIERARCHY OF HAZARD CONTROLS

When choosing a location, consider handling processes. Address the identified risks and hazards and mitigate the problems. Consider the following:

- Training: Train workers on proper lifting techniques and carry out refresher training several times a year, including during field season. Training should include proper stretching and warm-up exercises.
- Workplace and work station layouts: Arrange layouts to eliminate manual handling as much as possible. Consider the required movement of different loads:
    - Arrange work to be done at waist level in a position that does not require much bending, twisting, or reaching.
    - Avoid locations that require a worker to place a load very accurately or carry it a long distance.
    - Ensure adequate space so workers may use provided equipment to prevent and reduce injuries (e.g., dolly).
- Storage: Areas must be spacious enough for workers to handle materials safely.
    - Avoid storing loads at a position below mid-thigh or above shoulder level.
- Worker actions and postures: Avoid movements that are erratic, hard to control, twisting, bending low, or stretching high. Do not sustain awkward body positions for long periods of time.
- Weight: Consider the weight of objects along with their size and shape. Lighter objects may be difficult to move because they are bulky.
- Lighting: Provide good lighting. Workers must be able to see well in order to work safely.

- Hot or cold climate conditions: Control temperatures, wind, sun, rain and snow exposure as much as possible. Warehouses and core shacks should be comfortable to work in.
- PPE and clothing: Wear gloves, eye protection, and restrict loose clothing that might catch on machinery or tools. Loose sleeves, drawstrings, and long unrestrained hair are hazards.

13 RESOURCES

The Workers' Safety and Compensation Commission thanks the Prospectors & Developers Association of Canada (PDAC) for granting permission to adapt their *Framework for Responsible Exploration,* which includes material from publications from the following organizations. Permission to use materials does not imply endorsement of the document.

1984 Enterprises Inc.
Association for Mineral Exploration British Columbia (AME BC)
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APPENDIX A – FIRST AID CHECKLISTS

MINE HEALTH AND SAFETY REGULATIONS – NT AND NU

8.40. First aid equipment shall meet the requirements of Schedules 1, 2 and 3 unless these regulations specify otherwise or unless the chief inspector orders otherwise.

SCHEDULE 1 CHECKLIST:

Other than the basket stretcher and the blankets, the following items shall be kept in a container that can readily be taken to the scene of an injury.

- ☐ 1 current edition of the manual *First Aid: Safety Oriented*
- ☐ 5 pairs of latex gloves
- ☐ 200 adhesive bandages assorted sizes
- ☐ 1 sterile bandage compress, 10.2 cm
- ☐ 4 bandage compresses, 20.32 cm
- ☐ 1 package of 12 sterile burn dressings
- ☐ 6 sterile gauze eye pads
- ☐ 1 package of roller bandages, 2.54 cm
- ☐ 3 triangular bandages
- ☐ 12 large safety pins
- ☐ 1 plastic eye shield
- ☐ 1 package of flexible metallic splints
- ☐ 1 pair scissors
- ☐ 1 basket stretcher
- ☐ 1 treatment record book
- ☐ 2 CPR pocket valve masks
- ☐ 6 sterile bandages, 10.2 cm
- ☐ 5 bandage compresses, 15.24 cm
- ☐ 5 sterile gauze bandages, 91.4 cm
- ☐ 1 elastic bandage, 7.5 cm x 15 cm
- ☐ 10 roller bandages, 5.1 cm x 5.5 m
- ☐ 1 roll of adhesive tape, 2.5 cm x 2.3 m
- ☐ 3 crepe bandages, 7.6 cm long
- ☐ 2 boxes of 6 antiseptic towelettes
- ☐ 12 sterile pads, 5.08 cm
- ☐ 1 nail brush
- ☐ 1 tweezers
- ☐ 3 blankets

8.48. Where the time for the surface transportation of a person from a mine to the nearest hospital exceeds 20 minutes, the owner shall

(a) provide a first aid facility that is provided with first aid equipment and supplies that meet the requirements of Schedule 2; and

(b) notwithstanding paragraph 8.43(a), ensure that the first aid facility is in the charge of a person who holds a valid St. John Ambulance Advanced First Aid, Level 2 certificate or an equivalent or greater qualification or certificate. R-008-2003, s.83.

SCHEDULE 2 CHECKLIST:

In addition to the items required under Schedule 1, the following items shall be kept at a first aid facility referred to in section 8.48.

- ☐ 3 chemical cold packs
- ☐ 5 envelopes of skin closures, 0.6 cm x 7.5 cm
- ☐ 48 gauze pads, 7.62 cm
- ☐ 2 rolls of adhesive tape, 2.5 cm x 2.3 m
- ☐ 6 crepe bandages, 7.6 cm
- ☐ 1 antiseptic soap, 50 mL
- ☐ 1 glass eye dropper
- ☐ 2 plastic eye shields
- ☐ 1 pair of thin nose sliver forceps
- ☐ 2 packages of flexible metallic splints
- ☐ 1 small kidney basin
- ☐ 1 set of adjustable cervical collars
- ☐ 1 plywood spineboard with handholds (2 sides levelled), 44 cm x 1.8 m x 2 cm
- ☐ 7 heavy velcro straps to secure injured person, 5 cm x 1.8 m
- ☐ 2 sets of splints each including:
  - ☐ 2 splints, 1 cm x 10 cm x 1 m plywood notched and 2.5 cm padding
  - ☐ 1 splint, 1 cm x 10 cm x 1.5 m plywood notched and 2.5 cm padding
- ☐ 1 portable oxygen therapy unit (may be kept in a separate container from the other supplies)
- ☐ 1 pocket mask with a one-way valve (may accompany the portable oxygen therapy unit)
- ☐ 1 oropharyngeal airway kit (may accompany the portable oxygen therapy unit)
- ☐ 1 manually operated self-inflating bag-valve mask unit with an oxygen reservoir (may accompany the portable oxygen therapy unit)
- ☐ 1 bed
- ☐ 1 bedpan
- ☐ 6 sterile pads, 7.6 cm
- ☐ 6 bandage compresses, 5.08 cm
- ☐ 6 sterile bandages compresses, 7.6 cm
- ☐ 6 abdominal pads, 30.48 cm
- ☐ 2 Esmarch bandages, 7.62 cm
- ☐ 1 eye wash solution, 50 mL
- ☐ 1 glass footed eye bath cup
- ☐ 12 tongue depressors
- ☐ 1 burn trauma kit

8.50. Where the time for the surface transportation of a person from a mine to the nearest hospital is 20 minutes or less, the owner shall provide a first aid facility that is provided with the first aid equipment and supplies that meet the requirements of Schedule 3.

SCHEDULE 3 CHECKLIST:

In addition to the items required under Schedule 1, for the purposes of section 8.50, the following items shall be kept in a container which can readily be taken to the scene of an injury.

☐ 1 set of adjustable cervical collars
☐ 1 set of splints including:
    ☐ 2 splints, 1 cm x 10 cm x 1 m plywood notched and 2.5 cm padding
    ☐ 1 splint, 1 cm x 10 cm x 1.5 m plywood notched and 2.5 cm padding
☐ 1 portable oxygen therapy unit (may be kept in a separate container from the other supplies)
☐ 1 oropharyngeal airway kit (may accompany the portable oxygen therapy unit)
☐ 1 manually operated self-inflating bag-valve mask unit with an oxygen reservoir (may accompany the portable oxygen therapy unit)
☐ 1 treatment record book

OCCUPATIONAL HEALTH AND SAFETY REGULATIONS – NT AND NU

58. (1) An employer shall provide the first aid attendants and supplies as summarized in Schedule G for

(a) the distance of the work site to the nearest medical facility; and

(b) the number of workers at the work site at any one time.

SCHEDULE G CHECKLIST:

Minimum: Each work site must have a first aid box containing supplies as set out in Schedule H, a manual, a register, and emergency information. Additional requirements are listed below.

☐ 1-4 workers; close work site: Minimum

☐ 5-9 workers; close work site: Minimum, plus one first aid attendant with Level 1 qualification and supplies for high hazard work

☐ 10-99 workers; close work site: Minimum, plus one first aid attendant with Level 1 qualification and supplies

☐ 100+ workers; close work site: Minimum, plus two first aid attendants with Level 1 qualification supplies

☐ 1 worker; distant work site: Minimum

☐ 2-4 workers; distant site: Minimum, plus one first aid attendant with Level 1 qualification and supplies for high hazard work; blankets, stretcher and splints

☐ 5-40 workers; distant work site: Minimum, plus one first aid attendant with Level 1 qualification and supplies; blankets, stretcher and splints

☐ 41-99 workers; distant work site: Minimum, plus one first aid attendant with Level 2 qualification and supplies for high hazard work; one first aid attendant with Level 1 qualification and supplies for other than high hazard work; blankets, stretcher and splints

☐ 100+ workers; distant work site: Minimum, plus first aid room; one EMT and one first aid attendant with Level 2 qualification and supplies for high hazard work; two first aid attendants with Level 1 qualification and supplies for other than high hazard work; blankets, stretcher and splints

☐ 1 worker; isolated work site: Minimum

☐ 2-4 workers; isolated work site: Minimum, plus one first aid attendant with Level 1 qualification and supplies for high hazard work; blankets, stretcher and splints

☐ 5-20 workers; isolated work site: Minimum, plus one first aid attendant with Level 1 qualification and supplies; blankets, stretcher and splints

☐ 21-40 workers; isolated work site: Minimum, plus one first air attendant with Level 2 qualification and supplies for high hazard work; one first aid attendant with Level 1 qualification and supplies for other than high hazard work; blankets, stretcher and splints

☐ 41-99 workers; isolated work site: Minimum, plus one EMT for high hazard work; one first aid attendant with Level 2 qualification and supplies for high hazard work, one first aid attendant with Level 1 qualification for other than high hazard work; blankets, stretcher and splints

☐ 100+ workers; isolated work site: Minimum, plus one EMT for high hazard work; one first aid attendant with Level 2 qualification and supplies for high hazard work; two first aid attendants with Level 2 qualification and supplies for other than hazard work; two first aid attendants with Level 1 qualification and supplies for low high hazard work; blankets, stretcher and splints

58 (4) Notwithstanding any other provision of this Part, if an employer provides lodging for workers at or near a distant or isolated work site, the employer shall provide the first aid attendants, supplies, equipment and facilities set out in Schedules G, H, I and J based on the total number of workers at or near the work site, whether or not the workers are all working at any one time.

SCHEDULE H REQUIRED CONTENTS OF FIRST AID BOX CHECKLIST:
Amounts or quantities of the following supplies and equipment adequate for the expected emergencies, contained in a well-marked container.

☐ Antiseptic, wound solution or antiseptic swabs
☐ Bandage – triangular, 100 cm folded, and safety pins
☐ Bandage – gauze roller, various sizes
☐ Bandage – adhesive strips and hypoallergenic adhesive tape
☐ Disposable latex or vinyl gloves
☐ Dressing – sterile and wrapped gauze pads and compresses, various sizes including abdominal pad size
☐ Dressing – self-adherent roller, various sizes
☐ Forceps – splinter
☐ Pad with shield or tape for eye
☐ Pocket mask with disposable one-way re-breathe valves
☐ Scissors – bandage
☐ Soap

SCHEDULE I ADDITIONAL SUPPLIES AND EQUIPMENT, LEVEL 1 QUALIFICATION CHECKLIST:

☐ Bag – ice or cold water
☐ Bag – hot water or hot pack
☐ Bandage – elastic, 5 cm and 10 cm widths
☐ Sterile burn sheet
☐ Any other first aid supplies and equipment that are appropriate to the dangers and other circumstances of the work site and commensurate with the training of the first aid attendant

SCHEDULE J ADDITIONAL SUPPLIES AND EQUIPMENT, LEVEL 2 QUALIFICATION CHECKLIST:

☐ Bag – hot water or hot pack
☐ Bag – ice or cold water
☐ Bag valve and mask resuscitator
☐ Bandage – elastic, 5 cm and 10 cm widths
☐ Emergency oxygen system
☐ Sphygmomanometer
☐ Sterile burn sheet
☐ Stethoscope with a bell
☐ Thermometer
☐ Where there are potential causes of spinal injury, short and long spine boards with adequate restraining straps and medium and large cervical collars
☐ Any other first aid supplies and equipment that are appropriate to the dangers and other circumstances of the work site and commensurate with the training of the first aid attendant

Camp Set Up and Management

Workers' Safety & Compensation Commission
Northwest Territories and Nunavut

WSCC Emergency Reporting
24-hour Incident Reporting Line

1 800 661-0792

If you would like this Code of Practice in another language, please contact us.