Vector Projects Group Ltd

Health and Safety Manual

1.0 MANAGEMENT LEADERSHIP AND COMMITMENT

The Vector Projects Group Ltd Health and Safety Management Program is driven by leadership and commitment from senior management. Vector Projects Group Ltd is committed to providing a productive, safe and healthy work environment for our workers, contractors, clients, customers and visitors. Our commitments are communicated to all workers, contractors and suppliers. Vector Projects Group Ltd will:

- Encourage a corporate culture where harm to our staff through work is totally unacceptable.
- Be proactive in assessing health and safety hazards for new business, new and existing work systems, practices and equipment.
- Encourage team problem solving at all levels of Vector Projects Group Ltd to implement work practices that continually improve health and safety standards and productivity.
- Report and investigate incidents and implement systems and practices that prevent reoccurrence.
- Ensure compliance with legal requirements and industry standards.
- Train managers and workers to competently perform work described in safe work procedures.
- Provide information to all workers, contractors and customers that inform them of health and safety issues relevant to Vector Projects Group Ltd operations.
- Ensure products and/or services are safe and without adverse environmental impact.
- Management personnel and workers have responsibility for implementing this health and safety management system by striving to achieve a zero tolerance towards hazards, incidents and injuries.
- Continuously improve health and safety management by setting objectives, plans and performance measures and regularly reviewing progress against the targets set.
- Involve our staff in health and safety management through training and by contributing in identifying, assessing and controlling hazards.

1.1 Health and Safety Policy

The management of Vector Projects Group Ltd is committed to preventing the accidental loss of any of its resources, including employees and physical assets.

In fulfilling this commitment to protect both people and property, management will provide and maintain a safe and healthy work environment, in accordance with industry standards and in compliance with legislative requirements, and will strive to eliminate any foreseeable hazards which may result in property damage, accidents, or personal injury/illness.

We recognize that the responsibility for health and safety are shared. All employees will be equally responsible for minimizing accidents within our facilities and on our work sites. Safe work practices and job procedures will be clearly defined in the company's Health and Safety Manual for all employees to follow.

Accidental loss can be controlled through good management in combination with active employee involvement. Safety is the direct responsibility of all managers, supervisors, employees, and contractors.

All management activities will comply with company safety requirements as they relate to planning, operation and maintenance of facilities and equipment. All employees will perform their jobs properly in accordance with established procedures and safe work practices.

I trust that all of you will join me in a personal commitment to make safety a way of life.

_____

Vector Projects Group Ltd PRESIDENT

1.2 Environmental Policy

Vector Projects Group Ltd recognizes environmental protection as one of our guiding principles and a key component of sound business performance.

Vector Projects Group Ltd is committed to providing our community with quality service in a manner that ensures a safe and healthy workplace for our employees and minimizes our potential impact on the environment.

Vector Projects Group Ltd will operate in compliance will all relevant federal, provincial and municipal environmental legislation and we will strive to use pollution prevention and environmental best practices in all we do.

Vector Projects Group Ltd will:

- Integrate the consideration of environmental concerns and impacts into all of our decision making and activities, promote environmental awareness among our employees and encourage them to work in an environmentally responsible manner,
- Train, educate and inform our employees about environmental issues that may affect their work.
- Reduce waste through re-use and recycling and by purchasing recycled, recyclable or re-furbished products and materials where these alternatives are available, economical and suitable,
- Promote efficient use of materials and resources throughout our facility including water, electricity, raw materials and other resources, particularly those that are non-renewable.
- Avoid unnecessary use of hazardous materials and products, seek substitutions when feasible, and take all reasonable steps to protect human health and the environment when such materials must be used, stored and disposed of.
- Purchase and use environmentally responsible products that have been selected based on criteria including low toxicity or environmental hazard, durability, use of recycled materials, reduced energy and/or water consumption reduced packaging and ability to be recycled, refilled or refurbished at end of life,
- Where required by legislation or where significant health, safety or environmental hazards exist, develop and maintain appropriate emergency and spill response programs.
- Regularly communicate our environmental program to our clients, customers and the public and encourage them to support it.
- Strive to continually improve our environmental performance by periodically reviewing our environmental policy in light of our current and planned future activities.

This policy is to be included in the posted in all Vector Projects Group Ltd facilities by the site supervisor.

_____

Vector Projects Group Ltd PRESIDENT
10/28/2017

1.3 Drug and Alcohol Policy Statement

The possession, use, distribution or sale of any alcoholic beverages or illegal drugs or illicit drug paraphernalia is strictly prohibited when working for or on any properties owned or controlled by or in any vehicles owned or controlled by Vector Projects Group Ltd.

All persons performing work on behalf of Vector Projects Group Ltd must comply with the company Drug and Alcohol Policy. A contractor's failure to deal with a contravention of this policy by one of their employees, in a manner acceptable to Vector Projects Group Ltd , will be viewed as a breach of contract and may result in suspension or termination of the contract.

Both employees and subcontractors of Vector Projects Group Ltd are expected to be fit-for duty and perform their job in a safe manner in accordance with the provision of this policy. They are expected to remain fit-for-work during their shift and be free from any adverse performance effects from the use of drugs or alcohol.

If an off-duty employee is called in to work, it is the employee's responsibility to advise the office if he or she may be impaired, even marginally. If this employee does not advise the office and reports to work impaired, the employee will be disciplined accordingly. Testing will be done under reasonable suspicion or post incident/accident.

Any employee on prescription drugs or over-the-counter medications that may impair their ability to work safely must advise the office of their medical condition, including the name and dosage of all prescription drugs they are taking. It is strictly prohibited for any employee to possess prescribed medicines not authorize for their own personal use, unless they are in possession for courier reasons.

All individuals that operate any motor vehicle on behalf of Vector Projects Group Ltd will be required to maintain a valid driver's license. Any loss of license must be reported immediately, and the individual will no longer be qualified to drive on behalf of the company.

Investigation of all significant incidents will include the potential for drug and alcohol testing of any worker (includes contractors and subcontractors) including visitors directly or indirectly involved in the events forming part of the significant incident. A decision to proceed with drug or alcohol testing will be made as part of the incident management process where there is objective evidence that the use of alcohol and drugs cannot be ruled out in relation to the cause of the incident, after completion of a Reason for Testing Checklist.

Drug and alcohol testing may be performed when there are reasonable grounds to believe that a worker or visitor may be under the influence of drugs and/or alcohol, or be in possession of drugs and/or alcohol. The decision to test will be made using the Drug and Alcohol Testing Reasonable Cause Checklist completed and signed off by two management or supervision personnel trained in a Drug and Alcohol Awareness Program.

_____

Vector Projects Group Ltd President
10/28/2017

1.4 Management of Change Policy

Management of Change refers to a formal process for making changes to Vector Projects Group Ltd services. The goal of the "Management of Change" policy is to increase awareness and understanding of proposed changes across our organization and ensure that all changes are made in a thoughtful way that minimizes negative impact to services and customers.

Management recognizes the importance of change management and control and the associated risks with ineffective change management and control and have therefore formulated this Management of Change Policy in order to address the associated risks.

"Management of Change" process must been completed when there are changes in our temporary or permanent work including but not limited to, personnel, systems, processes, equipment and products as well as in the laws and regulations. All changes must follow a process of planning, evaluation, review, approval, and documentation.

Where applicable, Vector Projects Group Ltd will:

- Conduct a risk assessment of new work areas, products and equipment that are introduced into the workplace.
- Plan the change, including the implementation design, scheduling, communication plan, testing plan and roll-back plan.
- Evaluate the change, including determining the priority level of the service and the risk of the proposed change and determine the change type as well as the change process to use.
- Develop and implement control measures that will reduce the level of risks associated with the new work areas, products and equipment that have been introduced to the company.
- Review Change Plan with peers and/or Change Advisory Board as appropriate to the change type.
- Obtain approval of the Change Plan by management as needed.
- Communicate about changes with the appropriate parties and implement training to personnel on the changes.
- Implement the change.
- Document the change and any review and approval information.
- Review the change with an eye to future improvements.

As new technologies, training programs, safe work procedures, and legislative changes occur, the elements within the safety program will require updates and further development.

1.5 Disciplinary Enforcement Policy

Management is committed to the safety of its workers by providing an injury and incident free workplace. Disciplinary action may be taken when any violation of the company's health and safety rules, policies, and/or procedures occurs. Safety violations will be handled in an objective but firm manner.

Managers are responsible for enforcement of health and safety rules, policies, and procedures. Department Supervisors are responsible for carrying out the disciplinary actions when a violation of the rules, policies, and/or procedures occurs.

The enforcement progression follows the steps outlined below with documentation at each stage:

1.5.1 Misconduct

Employee breaks rules for keeping the work place efficient and safe.

Verbal Warning

Communicate expectations.
Gives employee the opportunity to tell his/her story about the misconduct.
Collection of all the relevant facts surrounding the misconduct.
Everything is documented.

Written Warning

Documented details and expectation– placed in personnel file.

Suspension

Documented details and expectation – placed in personnel file.

Termination

Documented

1.5.2 Incompetence

Employee lacks the skills or ability to do the job.

Clarification

Clear, reasonable job expectations are communicated.
Unacceptable work promptly communicated to the employee.

Retraining and Supervision

Reasonable supervision, training and instruction are provided.
Reasonable warning is given including failure to meet expectations could result in dismissal.
Allow reasonable time and opportunity to meet the job expectations. (Depends on situation what reasonable time will be)

Termination

Documented.

1.5.3 Mitigating and Aggravating Factors

Factors that will be considered in applying the progressive discipline process in cases of either incompetence or misconduct. Examples include:

1. Was the misconduct intentional?
2. Is the employee accepting responsibility for his/her actions?
3. Seriousness and/or frequency of the problem?
4. Employee's work history?
5. Effect on the organization?

1.5.4 Situations for Disciplinary Action

Violation of any of the following rules will not be tolerated on the job and are grounds for immediate discipline up to and including immediate suspension or dismissal:

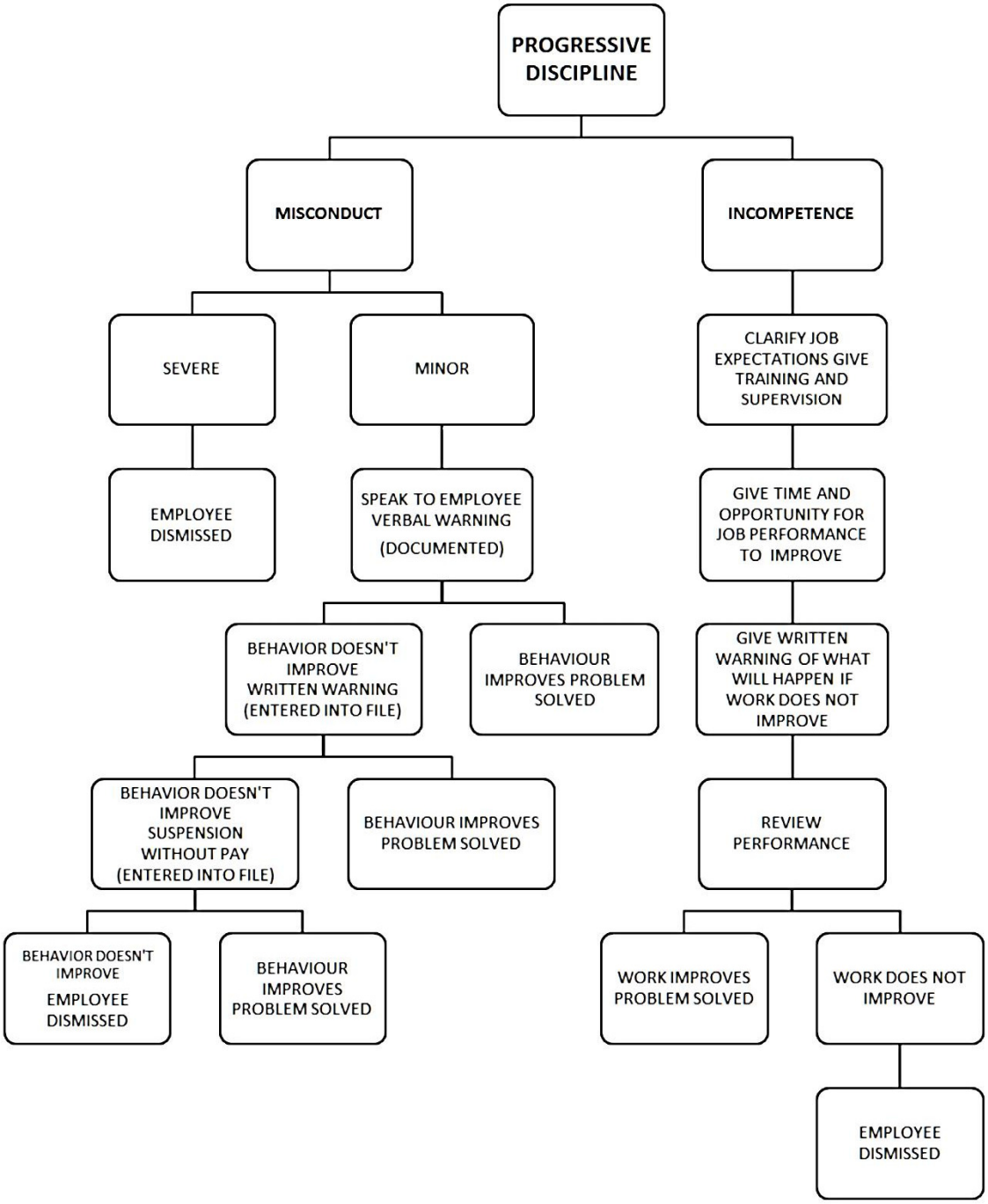
1. Use or possession of alcohol or illegal drugs on company premises on company job-site, is prohibited.
2. Acts of violence and/or harassment against a co-worker including but not limited to using physical force to cause injury, threatening statements or other actions to cause a worker to feel they are at risk of injury.
3. Failure to follow critical life safety procedures (such as completion of a safe work permit or failure to use fall protection)
4. Theft, vandalism or any other abuse or misuse of company property.
5. Being in possession of weapons on the jobsite.

6. Not reporting all incidents that result in or could create danger or injury to a supervisor immediately.
7. Not providing first aid treatment promptly for any injury.
8. Fighting, horseplay, practical jokes or otherwise interfering with other workers is prohibited.
9. Not wearing hard hats, safety boots or other required PPE at all times on all job-sites.
10. Not carrying out work in accordance with appropriate safe work practices and the supervisor's direction.
11. Not using tools that are in good repair, with all guards and safety devices in place.
12. Not keeping the work area neat, clean and orderly.

1.5.5 Communication

Employees must be informed of the company's Progressive Discipline program. Employees are informed of the program during their initial orientation on the first day of work. New employees are required to read and acknowledge the company's policy. Other methods used to educate employees on the program include but are not limited to, posting of the policy in the Lunch Room or in a conspicuous location at the work site, safety meetings, safety talks and training sessions.

1.5.6 Progressive Discipline Schematic



1.6 Structure and Assignment of Rights and Responsibilities

1.6.1 Worker Rights

1.6.1.1 Right to Refuse

Any employee subject to Part II of the Canada Labour Code has the right to refuse dangerous work as long as they have reasonable cause to believe that it presents a danger. Specifically, the Code states in these cases that an employee may refuse to use or operate a machine that constitutes a danger to the employee or to another employee, to work in a place or to perform an activity that constitutes a danger to the employee or to another employee.

The worker must report the unsafe condition to a Supervisor or a designate without delay and allow sufficient time for the Supervisor or the designate to investigate the unsafe condition and make a decision regarding the action necessary to correct the unsafe condition.

The Supervisor shall perform an in-depth hazard assessment and full investigation, without delay and without prejudice and then advise the worker on the conclusions. Any changes to the unsafe condition must be documented and the Supervisor or designate must inform all other workers of the change.

If the Supervisor or designate does not agree that the condition is unsafe he/she must inform the worker. If the worker continues to refuse to carry out the work, the Supervisor or designate will then perform an investigation in the presence of the worker, a worker representative or any other available worker selected by the worker who refused the work is acceptable.

If this investigation does not resolve the matter, then the Supervisor and the worker must notify Occupational Health and Safety without delay.

No worker shall be reprimanded or intimidated for refusing to perform unsafe work... If temporary re-assignment is required, no disciplinary action will be initiated. No worker shall be subject to disciplinary action for this refusal. If temporary re-assignment is required, no disciplinary action will be initiated.

1.6.1.2 Right to Know

Every worker has a right to know what hazards are present on the job and how the hazards can affect them. The hazards will be presented to the worker(s) during health and safety training, tailgate meetings, general discussions and also in dispatched jobs.

1.6.1.3 Right to Participate

All workers have the right to participate in health and safety activities. Workers also have the obligation to alert management of unsafe practices and conditions.

1.6.2 Worker Responsibilities

Follow all the required legislation that pertains to their jobs.

Workers must follow the safety rules, policies, plans and procedures of Vector Projects Group Ltd and Vector Projects Group Ltd clients.

Participate in the hazard identification and control process as requested by management.

Ensure training has been completed before completing a task.

Whenever a worker observes what appears to be an unsafe or harmful condition or act, the worker must report it as soon as possible to a supervisor or to a member of Vector Projects Group Ltd management.

A worker who refuses to carry out a work process or operate a tool, appliance, or equipment must immediately report the circumstances of the unsafe condition to his or her supervisor or to a member of Vector Projects Group Ltd management.

In the event of an emergency, action that is required to correct a condition which constitutes an immediate threat to workers - only those qualified and properly instructed workers necessary to correct the unsafe condition may be exposed to the hazard and every possible effort must be made to control the hazard.

1.6.3 Employer Rights

Expect all workers to follow all safety rules, policies, plans and procedures of Vector Projects Group Ltd and our clients.
Expect all workers to follow required legislation.
Expect all workers and management to participate in safety program expectations.
Expect all workers to participate in the hazard identification and reporting process.

1.6.4 Employer Responsibilities

To provide personal protective equipment in accordance with provisions within this safety management system.

To conduct regular inspection of premises, equipment, work methods and work practices, at appropriate intervals. Unsafe or harmful conditions found in the course of an inspection must be remedied without delay.

To promptly investigate incidents to determine the action necessary to prevent their reoccurrence.

To ensure that unsafe or harmful conditions found in the course of any audit or inspection or being reported must be investigated and remedied without delay.

If emergency action is required to correct a condition which constitutes an immediate threat to workers only those qualified and properly instructed workers necessary to correct the unsafe condition may be exposed to the hazard, and every possible effort must be made to control the hazard while this is being done.

Ensure that all work refusal occurrences are investigated and documented for lessons learned and ensure corrective measures are put into place.

A supervisor or Vector Projects Group Ltd representative will ensure all workers are provided training on work refusal procedures. Workers must be educated on their right to refuse unsafe work and the procedures for refusing unsafe work.

Any Vector Projects Group Ltd supervisor or member of management receiving a report must immediately investigate the matter and ensure that any unsafe condition is remedied without delay, or if in his or her opinion the report is not valid, must so inform the person who made the report.

In the event of an emergency action that is required to correct a condition which constitutes an immediate threat to workers only those qualified and properly instructed workers necessary to correct the unsafe condition may be exposed to the hazard, and every possible effort must be made to control the hazard.

Vector Projects Group Ltd management shall meet periodically at a location determined by senior management to discuss health and safety activities and incident trends, and for the determination of necessary courses of action, resources needed or changes to our safety system.

Vector Projects Group Ltd will provide personal protective equipment in accordance with provisions within this safety management system.

1.6.5 Safety Meetings

Monthly Safety Meetings

Employees are required to attend regular safety meetings. Meetings will include safety concerns, stats, incidents, regulation updates, safety presentations, etc. Meetings will be documented.

Pre-Job Meetings

A safety meeting will be held with all workers on site prior to each job starting. These meetings will address work to be completed, hazards associated with work, controls to be taken and emergency response plan, etc. If workers are on a jobsite with another company (Prime Contractor) then the meetings may be facilitated by that company and workers are required to attend.

Tailgate Meetings

Informal discussions about scheduling and the events of the day, the job, safety issues and incidents, time, invoicing, concerns they have as well as discussions regarding current incidents and accidents in the industry, including but not limited to, possible root causes and controls that can be used to ensure occurrence does not happen at Vector Projects Group Ltd .

1.7 Legal Requirements

Safety Manager identifies, tracks and monitors legal and other requirements for work performed and ensures access to legislation.

Safety Manager monitors bulletins and updates to ensure accuracy and completeness of the Health and Safety Compliance Matrix and communicates requirement changes to the site manager and supervisors

Supervisors notify the Safety Manager of new projects and communicate responsibilities to our employees. The Safety Manager then conducts an analysis which identifies the legal and other requirements that apply to the scope of work being performed.

Copies of current occupational health and safety legislation (federal, provincial and municipal) appropriate to the operation of the work site(s) will be present on site.

Vector Projects Group Ltd must ensure that a current paper or electronic copy of each of the OHS Act, Code and Regulation is readily available for reference by workers.

Identified legal and other requirements are listed on the Vector Projects Group Ltd Health and Safety Compliance Matrix.

All employees must follow the legislation requirements.

Vector Projects Group Ltd uses the internet to check on health and safety and new or revised legislation for the scope of work being conducted.

Legal and other requirements are reviewed annually.

1.7.1 Health and Safety Compliance Matrix

Aspect	Location	Citation or Standard	Responsible for	Operational Control	Records
Canada Labour Standards Regulations	All Canadian Operations	Part II	Provides employment standards within Canada	Inspections	Vector Projects Group Ltd Health and Safety Management System
Hazardous Products Act	All Canadian Operations	Entire	WHMIS-Controls hazardous product requirements for the workplace	Inspections	WHMIS Training Records
Occupational Health and Safety Act, Regulation and/or Code	All Canadian Operations	Each Provincial /Federal Jurisdiction where work is completed.	The OHS Act, Regulations, Codes contain legal safety requirements that must be met by all employers under the inspectional jurisdiction of the WCB.	Inspections	Vector Projects Group Ltd Health and Safety Management System
Workers Compensation Compliance	All Canadian Operations	Each Provincial Jurisdiction where work is completed	Monitors OHS inspection requirements/ jurisdiction. Reporting agency for workplace injuries. Provides insurance for injured workers	Workers Compensation Procedure	Workers Compensation Records
Client HSE Compliance	Client Specific	As specified by client	Follow individual client safety and environmental requirements.	SSHP Inspections	SSHP Inspections
Traffic Safety Act	All Canadian Operations	Federal, Provincial and local driving laws and regulations.	Provides direction, instruction and requirements for vehicles & drivers on Canadian roads	Training License Verification	Annual Driver's Abstracts
National Safety Code	All regulated units/drivers	Federal/National requirements	Provides guidance and ensures compliance of requirements of commercial vehicles in Canada	Inspections	Log books Inspections
CSA Standards	All Canadian Operations	PPE & Equipment Safety Standards Requirements	Ensures all safety requirements are met - PPE, tools, equipment, etc.	Inspections Training	Inspections, Purchasing Records

Occupational Health & Safety Legislation
Sections/Categories that affect Vector Projects Group Ltd Operations

Although the names may be slightly different in each province's OHS legislation, these sections are easily identifiable in each. There are specific sections of our safety program that are not listed below but are covered in subcategories under the following, general headings. Eg. Asbestos, Benzene, Inspections, Maintenance. They may also be covered under different legislation that pertains to our organization such as above in the Health and Safety Compliance Matrix.

- Blasting Operations
- Chemical Hazards, Biological Hazards and Harmful Substances
- Confined Spaces
- Cranes, Hoists and Lifting Devices
- Electrical Safety
- Emergency Preparedness and Response
- Entrances, Walkways, Stairways and Ladders
- Fall Protection
- Fire and Explosion Hazards
- First Aid
- General Safety Precautions
- Hazard Assessment, Elimination and Control
- Joint Work Site Health and Safety Committee
- Lifting and Handling Loads
- Managing the Control of Hazardous Energy
- Noise
- Overhead Power Lines
- Personal Protective Equipment
- Powered Mobile Equipment
- Radiation Exposure
- Rigging
- Rights and Responsibilities
- Safeguards
- Scaffolds and Temporary Work Platforms
- Specifications and Certifications
- Substance Specific Requirements
- Toilets and Washing Facilities
- Tools, Equipment and Machinery
- Transportation of Workers
- Traffic Control
- Ventilation Systems
- Violence
- Working Alone
- Workplace Hazardous Materials (WHMIS)
- Vibration, Radiation and Temperature

2.0 HAZARD IDENTIFICATION, RISK ASSESSMENT AND CONTROLS

2.1 Purpose

This program has been created to ensure that all known safety & health hazards are identified, controlled and communicated. The hazards that cannot be readily controlled or eliminated but have the potential for causing serious injury are identified and brought to the attention of workers who may be exposed to the hazards. Hazard assessments will provide information on the hazards which exist in the workplace including how the hazards are created, the potential for loss associated with the various hazards and the controls required to be followed to minimize the risk of the hazards. The material in this document does not take precedence over applicable government legislation which all employees and subcontractors must follow.

2.2 Assignment of Responsibilities

Company

- Ensures identification, assessments and documentation of health and safety risks in the workplace for routine and non-routine activities while ensuring workers are involved during the process.
- Eliminate, as far as is practicable, the risk of human injury, illness, or damage to property
- Promote planning as a means of achieving continuous improvement in our health and safety performance by utilizing risk management procedures when establishing our annual health and safety objectives.

Safety Manager

- Introduces hazard identification and assessment procedures and assists site managers with implementation.
- Determines risk levels for identified hazards and continually reviews legal and other requirements.
- Utilizes risk management procedure results when establishing Vector Projects Group Ltd annual health and safety objectives.
- Maintains all documentation related to hazard identification and assessment.
- Provides training for key workers in the process of hazard identification and assessment.
- Ensures control measures are in place and are being used
- Conducts safety inspections and monitoring practices.

Site Supervisors

- Implements hazard identification and assessment procedures
- Ensure workers are trained and involved in the process.
- Supplies the Safety Manager copies of all documents generated related to hazard identification and assessment.
- Ensures control measures are in place and are being used on a daily basis.
- Ensures disciplinary policy followed for non-compliance

Employees

- Assist in the development of assessments by providing input to risk identification and assessment procedures.
- Follows all controls that are put in place for their health and safety

Subcontractors

- Assist in the development of assessments by providing input to risk identification and assessment procedures.
- Follows all controls that are put in place for their health and safety

2.3 Hazard Identification

Occupational hazards are divided into two categories:

Health Hazards - A health hazard may produce serious and immediate (acute) health effects or cause long-term (chronic) health problems. All or part of the body may be affected. Someone with an occupational illness may not recognize the symptoms immediately. For example, noise-induced hearing loss is often not noticed until it is well advanced.

Safety Hazards - A safety hazard is anything that could endanger the immediate safety of a worker, for example, a pinch point, crush, or burn hazards.

Potential hazards are identified through Formal Hazard Assessments, field level hazard assessments (also referred to as JHAs, FLRA), JSAs, work permits, inspections, site or company audits, toolbox meetings, safety observations and incident investigations.

2.3.1 Methods of Identifying Hazards

Company managers and workers identify potential hazards through:

1. Formal Assessment
2. Field Level Assessment(FLRA)
3. JSAs
4. Worker Identification and Communication
5. Inspections
6. Site or company audits
7. Work permits
8. Safety observations
9. Incident investigations

2.3.2 Hazard Categories

Both health and safety hazards can be classified into the following categories -

Physical - slipping, falling, cuts, burns, abrasions, strains from lifting, being struck by objects, workplace and pinch points.

Chemical - liquids, sprays solvents, fumes, gases, aerosols, corrosives, alkalis, chemicals, heavy metals, poisons, pesticides, vapors - acute or chronic toxins which are ingested, inhaled, absorbed or injected.

Biological - specific bacteria or viruses, moulds, fungi, body fluids and sewage.

Radiation - exposure to radioactive substances which are non-ionizing (ex. – microwaves, lasers, radio frequency, ultra violet, infra-red, visible light) or ionizing (ex. - x-rays, radio-active substances).

Environmental - heat, cold, noise, air quality, vibration.

Ergonomic - strains, physical stress, eye strain, cramped workplaces, improperly adjusted equipment/furniture, repetitive tasks, vibration, etc.

Psychological Stress - violence, stress and fatigue, boredom, personal stress, effects of shift work.

Mechanical hazards - trapped between moving parts, pinch points, struck by, struck against and contact with moving parts.

2.3.3 Sources of Hazards

The most likely sources that should be considered are -

People - Human error and inattention, lack of training, poor communication, rushing, fatigue and other factors may cause at-risk behaviours.

Equipment and Tools - Some equipment and tools used in the job process are inherently hazardous and others become hazardous over time from inadequate maintenance.

Materials - Some equipment, tools and materials used in the job process are inherently hazardous and others become hazardous over time due to inadequate storage, handling or disposal.

Workplace Environment/Atmospheric Conditions - Factors such as facility layout, ventilation and lighting, walking surfaces, temperature and other variables can all be sources of hazards.

Workplace Activities - congestion.

2.3.4 Common Sources of Injuries

1. Slips, trips, falls
2. Contact with objects and equipment - struck by, struck against, caught in
3. Exposure to harmful substances - chemicals, dusts, fumes, mists
4. Fires and explosions
5. Exertion - over exertion, repetitive motion

2.4 Hazard Assessments

There are two levels of hazard assessment.

1. Formal hazard assessment is the formal internal process for routine work and an important step in developing the Vector Projects Group Ltd Health and Safety Management System.

2. Field-level hazard assessment is performed on the spot when unusual hazards may be introduced into the worker's work.

According to Canadian OHS legislation, Vector Projects Group Ltd must involve affected workers in the hazard assessment processes. Workers and/or subcontractors are actively involved in this hazard assessment processes. Worker knowledge of the job tasks can be of great value to the process, and their involvement will help gain worker buy-in. Worker names and participation in the process shall be documented either on the written formal hazard assessment reports or on the prejob assessment/field-level assessments.

2.5 Formal Hazard Assessment

Formal hazard assessments will serve as the foundation of the Vector Projects Group Ltd HSMS and involve the identification of all jobs and tasks performed by workers, the assessment of each task for hazards and the prioritization of the hazards based on the level of risk. This process will be followed by the implementation of controls for the identified hazards.

The hazard identification process should be used for routine and non-routine activities as well as new processes, changes in operation, products or services as applicable.

2.5.1 Create an Inventory of Jobs and Tasks

The first step of formal hazard assessment is to create a list of all jobs within the scope of Vector Projects Group Ltd and record the number of workers that perform each job. Additional areas for jobs and tasks identification include:

1. Activities of all persons having access to the workplace including contractors and visitors.
2. Ergonomic assessments
3. Industrial hygiene surveys
4. Workplace Inspections
5. Purchasing and procuring
6. Document review
7. Accident/incident investigations
8. It is also necessary to consider future tasks or situations that involve a change to the existing premises or process, or those which are non-routine.

Once this is done, list all the tasks performed as part of each job identified.

2.5.2 Identifying Hazards

Each inventoried task is assessed to determine the potential hazards and associated risk. For each task listed, Vector Projects Group Ltd will identify any health or safety hazards to which workers may be exposed. Vector Projects Group Ltd will involve workers who perform the tasks in this process to ensure nothing is overlooked. Questions to ask during the Hazard Identification process should include:

1. Could any part of the body get caught in or between objects?
2. Do tools, machines, or equipment present any hazards?
3. Can the employees be harmed if there is contact with the machine?
4. Can the employees slip, trip, or fall?
5. Can the employees suffer strain from lifting, pushing, or pulling?
6. Is the employees exposed to extreme heat or cold?
7. Is there a danger of items falling?
8. Is lighting a problem?
9. Can weather conditions affect safety?
10. Are there fumes, vapours, dusts, or mists in the air?

Examples of hazards identified on Vector Projects Group Ltd worksites include but are not limited to:

- Working Alone
- Thermal Exposure
- Mobile Equipment
- Noise
- Abrasive blasting
- WHMIS controlled products
- Musculoskeletal disorders
- Bloodborne pathogens
- Confined spaces
- Driving hazards
- Falling from heights
- Use of cranes and hoists
- Flammable & combustible substances
- Hot work
- Adverse weather conditions
- H2S
- Working with hand & power tools
- Chemical and biological hazards
- Ground disturbance hazards
- Electricity

2.5.3 Assess Risk of Hazards Identified

Hazards are classified and ranked according to risk. Each identified hazard is assessed for risk based on potential consequences of effecting injury to people, damage to assets, and the environment as well as the frequency of risk exposure is then considered.

After the hazards are identified, risk ratings are calculated by answering the following questions:

1. What are the consequences if the hazards are not controlled?
2. What is the frequency of exposure to the hazard?

Following risk assessment steps, each risk assessed becomes classified as low, medium or high in accordance with the Vector Projects Group Ltd Risk Assessment Matrix shown below. The risk level of the hazard is recorded with the associated work task for the job.

RISK ASSESSMENT MATRIX

Frequency / Consequence	Frequent	Likely	Occasionally	Seldom	Unlikely
Fatality or Serious Injury	1 Very High	1 Very High	2 High	2 High	3 Medium
Lost Time Incident or Hospitalization	1 Very High	2 High	2 High	3 Medium	4 Low
First Aid / Medical Aid	2 High	3 Medium	3 Medium	4 Low	4 Low
Minor / Near Miss	3 Medium	4 Low	4 Low	4 Low	4 Low

Key	Low - Manage for continuous improvement	Medium - Manage for continuous improvement	Medium - Incorporate risk reduction measures	Very High - Intolerable

2.5.4 Prioritize Hazards

Using the information from the assessment, Vector Projects Group Ltd determines the risk rating for each task, and ranks the tasks in order of priority, based on the level of risk. Highest risk areas or jobs are focused on first to ensure all controls are put in place.

2.5.5 Assign Controls to Eliminate or Minimize the Risk

Vector Projects Group Ltd addresses identified hazards by assigning methods of control to eliminate or reduce the hazard. The most effective controls can be determined based on legal requirements, manufacturers' specifications, Vector Projects Group Ltd rules, industry best practices and worker input. Vector Projects Group Ltd records the control methods, the date of implementation, and the names of those who participated in the assessment and control process. Vector Projects Group Ltd will follow up with periodic reviews to ensure the control measures are working and effective.

Risk assessed hazards are compiled, addressed and mitigated through dedicated assignment, appropriate documentation of completion, and implemented control methods.

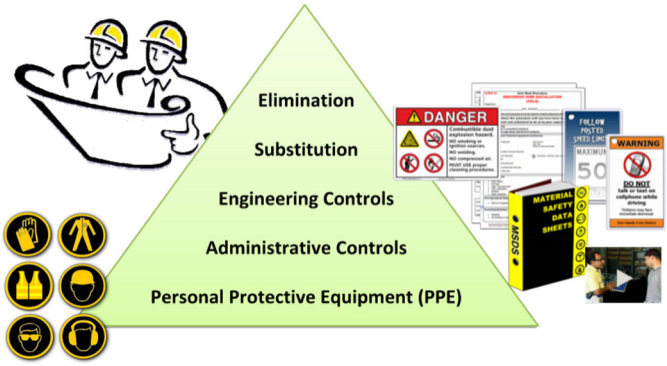
Controls for hazards include elimination, substitution, engineering, administrative, and PPE. If an existing or potential hazard to workers is identified during a hazard assessment, Vector Projects Group Ltd must take measures to eliminate the hazard, or if elimination is not reasonably practicable, control the hazard. Site

supervisors are responsible to ensure all identified controls are being implemented and utilized. They are also responsible for enforcing disciplinary actions if violations are seen. If a hazard cannot be adequately controlled using engineering controls, Vector Projects Group Ltd must use administrative controls that control the hazard to a level as low as reasonably achievable. If the hazard cannot be adequately controlled using engineering and/or administrative controls, Vector Projects Group Ltd must ensure that the appropriate personal protective equipment (PPE) is used by workers affected by the hazard.

Vector Projects Group Ltd may use a combination of engineering controls, administrative controls and PPE if there is a greater level of worker safety because a combination is used.

2.5.6 Hierarchy of Controls

1. Elimination
2. Substitution
3. Engineering Controls
4. Administrative Controls
5. Personal Protective Equipment (PPE)



Engineering controls should always be the first option to reduce risk by Vector Projects Group Ltd if elimination or substitution is not practical. Examples include:

1. Building a catwalk with handrails and replacing a portable ladder with a permanent access ladder for maintenance procedures
2. Building a sound-dampening enclosure around a piece of loud equipment to reduce workers' noise exposure
3. Replacing a harmful chemical with a less hazardous product

Administrative controls are the second most effective methods of hazard control and involve the implementation of Vector Projects Group Ltd practices, procedures and rules to reduce the amount of exposure a worker has to the danger. Examples include:

1. Developing and enforcing the use of practices and procedures for conducting a task safely
2. Providing emergency response training to all workers and conducting regular drills
3. Job rotation
4. Posting signs to warn of high noise areas.
5. Orientation & Training

Personal Protective Equipment (PPE) is the method of last resort and should always be used in combination with other control methods. Personal protective equipment is often the easiest control to implement, but is usually the least effective. Examples of personal protective equipment include:

1. Safety glasses, to protect the eyes from flying debris
2. Hard hats, to protect the head from falling objects
3. Respiratory protective equipment, to protect the lungs from harmful dusts and chemical vapors

2.6 Field-Level Hazard Assessment

A hazard assessment is completed before work begins. Vector Projects Group Ltd must assess a work site and identify existing or potential hazards before work begins at the work site or prior to the construction of a new work site. All workers at the job site must participate in a field-level assessment with their supervisor. The field-level hazard assessment is to be conducted before work begins and repeated at reasonable intervals for routine and non-routine activities as well as new processes, changes in operation, products or services as applicable.

Unsafe conditions/hazards must be reported immediately and addressed by the supervisor. The supervisor discusses the worksite hazard assessment with employees at the respective work location during the employee's documented orientation.

All identified hazards are assessed for risk and risk controls are assigned within the worksite hazard assessment for that specific hazard.

All hazard assessments are documented. Vector Projects Group Ltd must review the results of the hazard assessments and the methods used to control or eliminate the hazards identified.

Hazard assessments and JHAs/JSAs should be updated whenever changes occur to processes, equipment, facilities.

The steps involved are as follows:

1. Before starting work on a new job site, or under unfamiliar conditions, worker(s) must stop to identify any hazards that may have been introduced into their usual work.
2. Identify all existing hazards on site. Include people, processes, equipment, and natural hazards.
3. Assess the risks and implement controls accordingly to eliminate or reduce the risk to a reasonable level before work begins. The ABC method to document hazards & risks is used on the jobsite.
4. Hazards and controls must be communicated to all workers on site.

FIELD LEVEL HAZARD ASSESSMENT RATING MATRIX	
"A" Hazards	those that pose an imminent danger and require immediate correction
"B" Hazards	those that are not imminently dangerous, but pose a significant hazard and must be corrected as soon as possible
"C" Hazards	those that are a low hazard, and should be addressed when time allows

In many cases, a field-level hazard assessment will identify hazards that have already been identified and assessed through the formal hazard assessment process, since the formal process should have identified all hazards that workers would normally encounter in the course of their work. If this happens, the worker would be directed to a pre-determined method of hazard control. If a new and unusual hazard specific to the job or job site is identified a new control method may have to be identified and implemented before work can begin.

When a new control method is required for a new or unusual hazard, that hazard must be reported to the supervisor. Vector Projects Group Ltd can then prioritize the hazard and determine if further preventative

action needs to be conducted by the company (such as revision of training, procedures, and awareness bulletins).
Driver Hazard Assessments fall under the category of the Field Hazard Assessment and these are specific to drivers in the field.

Field level risk assessment forms will be maintained at the work site and a copy submitted to the Safety Manager for documentation purposes.

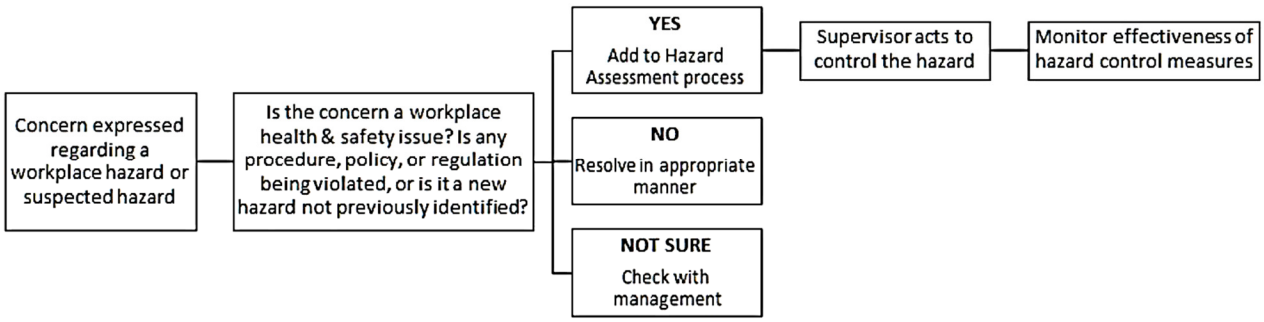
No work will begin before the worksite assessment is completed. Additionally, no risk assessed as High (Intolerable) shall be performed.

2.7 Reporting Hazards

1. Workers shall not perform any work they feel is unsafe.
2. Each worker must report hazardous work conditions without fear of reprisal.
3. Some sites will have a formal process for documenting reporting hazards.
4. All workers have a responsibility to report hazardous work conditions, practices, or acts that are encountered on the job site to their immediate supervisor.
5. Workers shall report any non-work injuries or prescriptions that could affect their ability to safely perform their normal job before reporting for work.
6. Additional methods for reporting hazardous conditions include use of the safety suggestion box, safety concern report, notifying their supervisor or any management representative, safety meetings or JHSC involvement, as well as the use of client hazard reporting methods.
7. Suggestions or ideas received will be addressed in a timely manner.

2.7.1 Communicating Safety Concerns

Unsafe conditions or actions as well as safety concerns must be reported immediately and addressed by the supervisor early while they are still concerns and not incidents or accidents. In order to report these concerns, they must be in writing, so please use the Safety Concern Report that is available in this section. Once a concern from a driver, contractor, main contracting organization, or someone else is communicated, the steps below will be followed.



2.7.2 Emergency Controls of Hazards

Only those employees competent in correcting emergency controls of hazards may be exposed to the hazard and only the minimum number of competent employees may be exposed during hazard emergency control. An example is a gas leak in a building. Only those personnel with training on fire safety, gas supply shut off and other related controls will attempt to resolve the emergency control of a hazard. Vector Projects Group Ltd will make every possible effort to control the hazard while the condition is being corrected or under the supervision of client emergency response personnel in every emergency.

2.7.3 Job Safety Analysis (JSA)

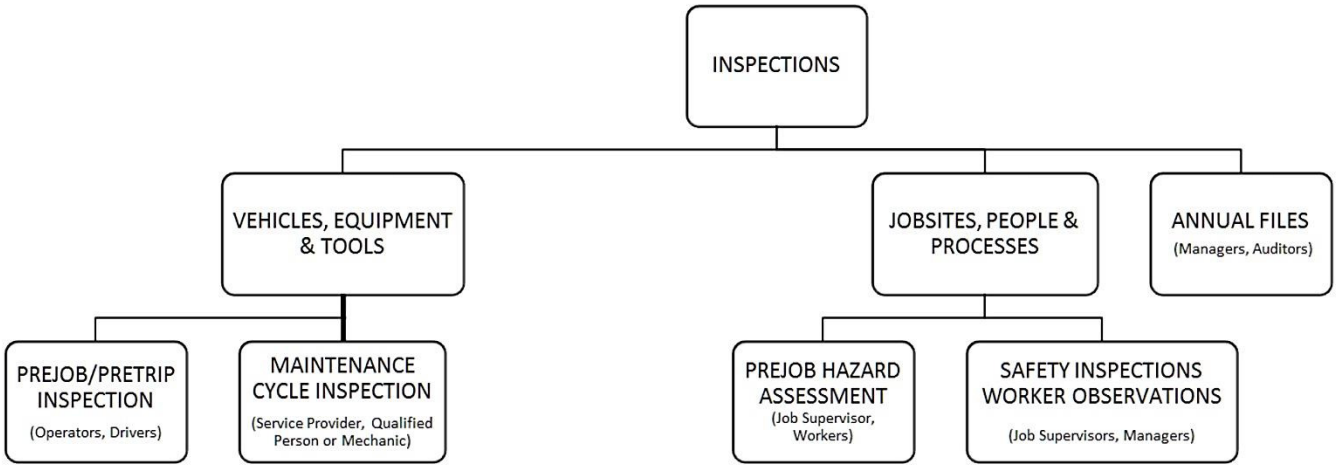
For those jobs with the highest injury or illness rates, jobs that are new to our operation, jobs that have undergone major changes in processes and procedures or jobs complex enough to require written instructions will have a Job Safety Analysis performed. Completed JSAs are available from the Safety Manager.

3.0 INSPECTIONS

3.1 Purpose

The purpose of this program is to provide a method to review and verify compliance with the Vector Projects Group Ltd HSMS and proactively identify potential hazards that may not have been previously noted. When followed this program also confirms the effectiveness of controls already in place and demonstrates a commitment to health and safety for all our workers.

The Vector Projects Group Ltd Inspection and Maintenance Program clearly outlines what needs to be inspected, who will be involved, how often the inspections should be performed and who is responsible for corrective actions and follow-up. The results of the inspection program will provide information on whether the hazard assessment requires review. The material in this document does not take precedence over applicable government legislation which all employees must follow.



The written Maintenance Program calls for a regular and continuous program of inspection. The Inspection and Preventative Maintenance Program pertains to all areas of Vector Projects Group Ltd operations and vehicles (trucks and trailers) in the fleet including lease operators where applicable. Lease operators must submit a copy of their maintenance program to the office within 2 week of being hired.

3.2 Assignment of Responsibilities

Safety Manager

- Ensures inspections are conducted
- Develops the inspection schedule and scope
- Communicates inspection findings
- Verifies non-compliance and non-conformance areas are corrected
- Tracks inspection findings and communicates progress toward closure of findings

Site Manager and Supervisors

- Develops and implements corrective and preventive action for deficiencies.
- Tracks inspection findings until the responsible party has corrected the deficiencies
- Participates in site safety inspection

Drivers

- Maintain the vehicle in good and safe operating condition and repair, suitable for the intended purpose
- Follow all rules and regulations.
- Keep the unit washed and clean.
- Complete a pre-trip inspection.
- Complete a monthly maintenance report.
- Complete a monthly mileage and fuel log.

Equipment Operators

1. Maintain the equipment in good and safe operating condition and repair, suitable for the intended purpose.
2. Follow all rules, procedures and regulations.
3. Complete a pre-job inspection.
4. Complete daily maintenance.
5. Complete a monthly maintenance report.

3.3 Types of Inspection

Formal - Formal inspections have a set inspection form conducted at specified time frames.

Informal - Spontaneous inspections, results noted if non-conformance, defects found.

3.4 Informal Inspections

Informal Inspections are carried out by workers, supervisors and managers and do not involve a formal report or a specific schedule. Some examples of informal inspections include:

- A manager walking through the shop/worksite may take the opportunity to verify that workers are following safe procedures, using safety equipment, or following healthy work procedures and provide feedback on their safety performance.

- A tradesperson conducts a pre-job check on their tools, looking for defects and maintenance needs prior to starting work each day.

The results of an informal inspection will be acted on immediately, required changes will be made on the spot and worker feedback (both positive and constructive) will be made verbally. Inspection information will only be recorded and reported if the situation requires it.

3.5 Formal Inspections

Formal inspections are carried out by workers, supervisors and managers and involve a formal report or a specific schedule. Some examples of formal inspections include:

- Pre-trip Vehicle Inspection - set form used and must be carried out before each trip. Ensures vehicle is in safe operating condition before leaving yard.
- Safety Equipment Inspection - set form used and is carried out monthly.
- Paperwork and File Inspections - carried out quarterly to ensure files are in order and people are completing paperwork properly (form and manner).
- Pre-job Hazard Assessments - before each job begins to identify hazards that may be present and ensure controls are in place to eliminate or minimize risk to workers.

3.6 Light Duty Vehicle Inspection Requirements

PRETRIP LIGHT DUTY VEHCILE INSPECTION REQUIREMENTS	
Form to be used	Pretrip inspection
Conducted by	Driver
Inspection Frequency	Weekly or Before each trip of distance over 100 Kilometers
Inspector will be looking for	**Lights** (headlights, tail lights, signal lights - All working properly, clean, no cracks/chips **Tires -** Properly inflated, Adequate tread **Windows -** Broken, Cracked, Missing, Cleanliness **Brakes -** Tested and working properly **Gauges -** Working condition, no warning lights on **Fluids** (Oils/Gas/windshield wiper fluid, antifreeze) - Level, Cracks in hoses, Fluid on ground, Leaks from filters. **Horn -** Tested and working properly **Windshield wipers -** Tested, Properly installed, Damaged, Broken, Proper working order **Mirrors -** Cracks, Broken, Working condition, Properly placed **Emergency equipment -** Available, good working condition, maintenance up to date **Body condition** - Loose, Missing, Damage Interior Cab Condition - Clean & free of debris **Seatbelts -** Tested and working properly, Frays, Cuts, Tears, Snags, Roping

VEHICLE MAINTENANCE INSPECTIONS	
Form to be Used	Service provider form
Conducted by	Qualified Service inspector
Inspection Frequency	As recommended by manufacturer
The inspector will be looking for defects in the required following items	As recommended by manufacturer

3.7 Equipment Inspection Requirements

EQUIPMENT PRE-JOB INSPECTIONS	
Form to be Used	Prejob inspection – per unit as per manufacturer's requirements.
Conducted by	Operator
Inspection Frequency	Before each job
The inspector will be looking at	As per manufacturer's recommendations per machine
	WITH ENGINE - OFF
Fork Lift Sample	Accelerator or Direction Control Pedal - Functioning Smoothly and Properly **Service Brake -** Functioning Smoothly and Properly **Parking Brake -** Functioning Smoothly and Properly **Steering Operation -** Functioning Smoothly and Properly **Drive Control -** Forward/Reverse-Functioning Smoothly and Properly **Tilt Control -** Forward and Back-Functioning Smoothly and Properly **Hoist and Lowering Control -** Functioning Smoothly and Properly Attachment Control - Operation **Horn and Lights -** Functioning Properly **Cab (if equipped) -** Heater, Defroster, Wipers-Functioning Properly **Gauges -** Ammeter, Engine Oil Pressure, Hour Meter, **Fuel Level, Temperature, Instrument Monitors -** Functioning Properly
	WITH ENGINE - OFF
	Hydraulic Oil - Leaks, Level **Engine Oil -** Leaks, Level Radiator Coolant - Leaks, Level Transmission Fluid - Leaks, Level **Tires -** Condition and Pressure Forks, Top Clip Retaining Pin and Heel - Check Condition Hydraulic Hoses, Mast Chains, Cables and Stops - Visual Check, Leaks, Damage **Overhead Guard -** Attached, Damage **Safety Warnings -** Attached, Visible, Legible (Refer to Parts Manual for Location) **Battery -** Check Water/Electrolyte Level and Charge **All Engine Belts -** Cracked, Damage, Rips, Visual Check **Engine Air Cleaner -** Squeeze Rubber Dirt Trap or Check the Restriction Alarm (if equipped) Fuel Sedimentor (Diesel) - Condition Operator's Manual - In Cab **Nameplate -** Attached and Information Matches Model, Serial Number and Attachments Seat Belt, Buckle, Retractor - Condition, Torn, Ripped, Damage to housing **Hood Latch -** Adjusted and Securely Fastened Brake Fluid - Leaks, Level

EQUIPMENT MAINTENANCE INSPECTIONS	
Form to be Used	Service provider form
Conducted by	Qualified Service inspector
Inspection Frequency	As recommended by manufacturer
The inspector will be looking for defects in the required following items	As recommended by manufacturer

3.8 Worksite Inspection Requirements

WORKSITE/SHOP INSPECTION REQUIREMENTS	
Form to be used	Individual conducting the site inspection will determine the appropriate Inspection form depending on the worksite & activities being performed. The forms will serve to prompt inspectors to check for specific items and will create a consistent standard for the gathering of information.
Conducted by	Designated Safety Officer
Inspection Frequency	Random

Inspector will be looking for	**Unsafe Conditions -** slippery floor, poor lighting, cluttered work area, slipping hazards, missing guards, etc. **Unsafe Actions** - improper use of machinery or equipment, workers not wearing personal protective equipment or following safe work procedures, etc. **Health Hazards -** dangerous chemicals, dust exposure, noise, toxic waste, etc.

3.9 Fire Safety Inspection Requirements

FIRE SAFETY INSPECTION REQUIREMENTS	
Form to be used	Fire Safety Checklist
Conducted by	Designated Safety Officer
Inspection Frequency	Monthly
Inspector will be looking for defects in	Damage to equipment Maintenance due stickers – if maintenance is due than placed out of service and replaced with current operational equipment All proper supplies is present - if not replaced/restocked Employee Knowledge – emergency & evacuation

3.10 Inspector Training

Inspectors shall be formally trained. Training should contain, as a minimum, the following areas:

- Learning objectives and outcomes
- Terms
- The law
- The purpose of an inspection
- Types of inspections
- What to look for
- Health and safety code
- Unsafe act
- Unsafe conditions
- Conducting an inspection
- Classification of hazards
- Date by which the action is expected.
- Actual completion date.

All inspection forms will be dated and indicate the location and inspector.

The person named as responsible for inspection follow-up will be the supervisor in control of the area where the hazard is found. The site manager has overall responsibility for ensuring corrective action has been taken and should review and sign-off all inspections.

4.0 PREVENTATIVE MAINTENANCE

4.1 Purpose

Preventive maintenance is the systematic care and protection of tools, equipment, machines and vehicles in order to keep them in safe working condition, limit downtime and extend productivity. The standards for the maintenance program are based on the manufacturer's recommendations, industry standards, past incidents and data from company hazard assessments. All tools, equipment and vehicles must be properly maintained so that workers are not endangered. Maintenance tasks themselves are potentially hazardous and can result in injury. The material in this document does not take precedence over applicable government legislation which all employees must follow.

4.2 Scope

This program applies to all workers are in charge of ensuring Vector Projects Group Ltd equipment, machines, and tools are maintained in safe working order. It also applies to anyone who drives or operates company equipment, commercial and light duty vehicles.

This maintenance program must be prepared at a site level and

- Be well organized and scheduled
- Controls hazards
- Defines operational procedures
- Trains key personnel

General requirements for equipment maintenance include:

- Vector Projects Group Ltd will purchase tools and equipment in accordance with CSA, provincial and industrial standards.
- Obtaining a copy of the maintenance schedule recommended by the manufacturer
- Ensuring that maintenance is performed as required.
- Ensuring that the person(s) performing the maintenance are competent (e.g. licensed mechanic)
- Retaining records of maintenance/service conducted.
- Specifying who is responsible for overseeing equipment maintenance and where the records are kept.
- Set up a system for removal and tagging of damaged or defective tools and equipment.
- Only properly trained workers are to use tools, equipment and vehicles.
- Inspect all tools, equipment and vehicles before using.
- For vehicles, inspection will consist of doing a circle check.
- If applicable, maintenance schedules for all tools, equipment and vehicles are to be respected.
- Each jobsite supervisor is to conduct a bi-weekly inspection of all tools, equipment and vehicles on the site. This inspection is recorded bi-weekly using an inspection checklist based on the type of equipment and vehicles at that site.
- If at any time a worker judges that a tool, equipment, or vehicle is unsafe for use, they are to properly tag the item and inform the supervisor immediately.
- Tools, equipment, or vehicles that are tagged unsafe shall be either repaired or replaced - Vector Projects Group Ltd management shall be informed.

4.3 Preventative Maintenance Procedures

Maintenance Personnel Qualifications - All individuals who perform maintenance work on company tools shall have the appropriate skills, accreditation and/or certification. This certification applies both to company workers and to contracted maintenance services.

Mobile Equipment Maintenance Program - All individuals who perform maintenance work on company mobile equipment will have the appropriate skills, accreditation and/or certification. This certification applies both to company workers and to contracted maintenance services.

Records - The maintenance program must contain a recording system. Part of this system should be made up of inventories and schedules. In addition, the recording system should document what maintenance work was done, when and by whom.

Monitoring - The monitoring functions in a maintenance program fall into two areas. First, the staff responsible for operating and/or maintaining equipment must monitor that equipment to ensure that appropriate checks and maintenance are done. Secondly, management must monitor the entire program to ensure that it is functioning in accordance with company policy.

Scheduled Inspections and Maintenance - All mobile equipment is to be inspected and maintained according to the following Equipment Inspection Schedule as a minimum. Records of all inspections and maintenance are completed and maintained for review and approval.

Maintenance of equipment, release of lubrication fluids, etc., is performed only in approved areas. Spills and leaks from equipment will be cleaned up promptly.

4.4 Equipment Records Process

As equipment arrives at the site, a determination is made if the equipment should be placed on a preventative maintenance schedule based on the type of equipment, calibration requirements, etc.

To ensure equipment is tracked and preventative maintenance work is performed on a timely basis, the following process is used. The site management representative is responsible for ensuring the process is followed.

All records must be legible, readily retrievable, protected and stored to prevent damage, deterioration or loss.

4.4.1 Preventative Maintenance Records

Each piece of equipment on the Equipment Register is assigned a Preventative Maintenance Record form. This form contains information on the equipment including:

- Equipment data
- Safety instructions for the item
- Description of preventative maintenance requirements for the equipment
- Preventative maintenance frequency and history

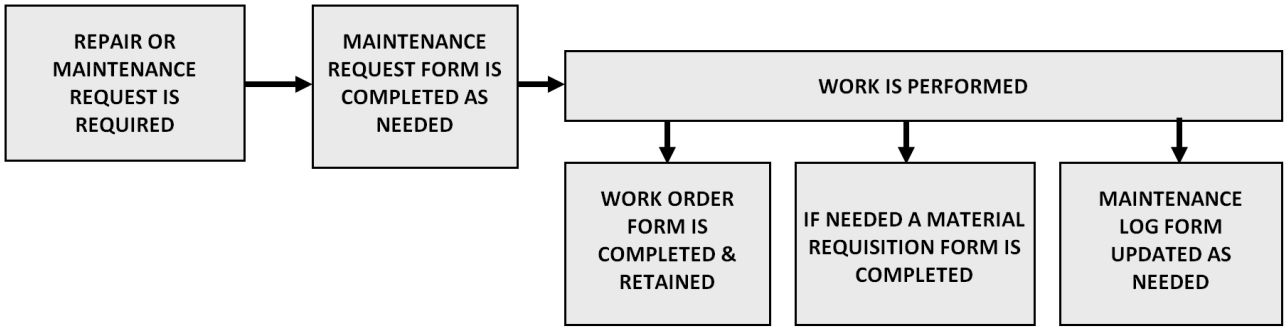
As scheduled preventative maintenance is performed on the equipment, the maintenance record shall be completed. The form is to be retained locally.

4.5 Repair Procedures and Forms

4.5.1 Process

During preventative maintenance work or other requested repairs activity is tracked and documented by use of the following process.

This process ensures documented work performed, costs and management approval for material associated with the project activity.



All records must be legible, readily retrievable, protected and stored to prevent damage, deterioration or loss.

5.0 QUALIFICATIONS, ORIENTATION AND TRAINING

5.1 Purpose

This document is intended to ensure the competence of personnel (physically and mentally capable of the task assignment) to carry out their designated function in a safe and effective manner. The material in this document does not take precedence over applicable government legislation which all employees must follow.

5.2 Assignment of Responsibilities

Safety Manager

- Identifies updates and monitors training for workers.

Site Manager and Supervisors

- Ensure all workers assigned to their project complete training identified.
- Ensure that any work that may endanger a worker must be completed by a worker who is competent to do the work.
- Ensure all workers assigned to their project are trained in procedures until they are competent.
- Ensure all workers have sufficient experience to safely perform work without supervision or with only a minimal degree of supervision.

Employees

- Attend and follow requirements of health and safety management training.

5.3 Qualifications

Minimum qualification and training requirements for each job title have been established by Vector Projects Group Ltd. Qualifications may include a combination of education, certifications and work experience. Health and safety training completion for the specific job title is required before full qualifications are met to allow a worker to begin work. Additional documentation may need to be obtained from workers to demonstrate they meet the qualifications of their job. Based on the job description requirements, documentation may include educational, certifications, licenses, prior acceptable training course completion, etc. Documentation is reviewed and confirmed as actual during the worker hiring process.

5.4 Minimum Standards for Hiring

1. Complete and sign an application
2. Must be neat and clean
3. Copy of current (within 30 days) operator's license abstract (no more than 6 demerits on license)
4. Previous Employment History - should not be on the "not eligible for rehire list"
5. Supply three references
6. Must be able to read and write well enough to perform job duties and comprehend written material
7. Must be willing to participate in a Drug and Alcohol Testing if requested
8. Must be willing to complete a pre-employment medical exam if requested
9. Must be willing and able to obtain all required safety certification training

The competed application form provides detailed background information to allow proper evaluation of a prospective employee.

5.5 Orientations

Employees receive initial orientation training. No work by any worker is allowed to begin until the orientation is completed.

New employee orientations are completed during the first week of employment and before the new employee starts work. The orientation topics are prioritized and critical health and safety information are covered during the first day of employment. Critical issues include:

- Work Site Tour and Introductions
- Vector Projects Group Ltd Health and Safety Manual
- Company rules/enforcement
- Job responsibilities
- Right to Refuse Unsafe Work
- Pertinent Legislation (OHS, WCB, etc)
- Critical job hazards and controls in place
- Training requirements
- WHMIS
- First Aid
- Incident notification/hazard reporting/duty to report
- PPE
- Assigned Co-worker (Mentoring)
- Emergency Response Procedures
- Job specific procedures

Specific safe work procedures and practices are also reviewed during orientation and, if required, health assessments (such as hearing tests) are done at this time.

Transferred or reassigned employees receive orientations before they start their new job. Documentation of when orientations were done, who conducted the training, topics and the names of the workers trained is completed via the Vector Projects Group Ltd Health and Safety Orientation Checklist which requires employee and supervisor sign-off.

Contractors are provided with an appropriate orientation before they start work on Vector Projects Group Ltd work sites. The depth of orientation for contractors will depend on the type of work and level of supervision provided.

Visitors to the work site will receive a work site orientation to make them aware of the hazards and what to do if there is an emergency. At a minimum, Vector Projects Group Ltd will have visitors sign in and provide them with an escort while they are on site.

5.6 Worker Training

5.6.1 Identification of Training and Competency Needs

Training is identified in our training matrix which specifies health and safety training needs. Our training matrix is continually updated based on changing risks. Additional training for identified hazards & competency identification requirements must be completed prior to employee exposure based upon hazard assessment.

TRAINING	FREQUENCY	EVERYONE	MANAGEMENT	POSITION SPECIFIC
Accident Investigation	O, L		✓	
Bloodborne Pathogens	O, PL			✓
Chemical Biological Hazards	O, PL, L			✓
Defensive Driver Awareness | Driving Safety	AT			✓
Drugs and Alcohol	O, L		✓	
Electrical Safety - Unqualified	O, PL	✓		
Emergency Response Plan	O, L-1	✓		
Ergonomics	O, PL			✓
Fire Protection and Fire Extinguishers	O, L-1	✓		
First Aid/CPR	HP, L-3			✓
General Health Precautions	O, PL	✓		
H2S	HP, L, 3			✓
Hand and Power Tools	O, PL			✓
Hazard ID, Assessment, Controls & Reporting	O, L, PL	✓		
Hearing Conservation	O, L-1			✓
Lockout/Tagout	O, PL			✓
Machine Guarding	O, PL			✓
National Safety Code Requirements	HP, L, PL			✓
Noise	O, L, PL			✓
Personal Protective Equipment	O, L, PL			✓
Powered Mobile Equipment	O, L, PL			✓
Respiratory Equipment	O, L-1			✓
Site Specific Orientation	O, CR			✓
Supervisor Safety Training	O, L-2		✓	
Thermal Exposure	O, L, PL			✓
WHMIS	O, L-3	✓		
Working Alone	O, L, PL			✓
Workplace Violence	O, L, PL	✓		
Vehicle Safety	O, PL			✓

0 - Initial Orientation	**L** - Legislation Requirements	**CR** - Client Requirements	**HP** – Hiring Prerequisite	**PL** – As policy indicates

Where numbers appear **1, 2, 3, 5** this refers to the number of years between Review / Recertification requirements
AT - Where a worker shows lack of understanding, incompetence, disregard for rules & requirements – additional training may be required.

5.7 Training Records and Documentation

All training will be documented and each worker's understanding will be subject to a hands-on competency, written, or electronic test.
Documentation will consist of: as a minimum, the worker's name, the trainer's name, the date of the training and an outline of training provided.

All training records are maintained on site either by the Safety Manager or senior representative of management or their designee.

5.8 Supervisor Safety Management Training

Newly hired or promoted supervisors and managers receive safety management system training. Training shall consist of:

- Safe work practices
- HSE supervision
- Toolbox and safety meetings
- Emergency procedures
- Incident investigation methods and responsibilities
- Employee discipline
- New work orientation
- Vector Projects Group Ltd substance abuse program

5.8.1 General

Supervisors will assure that all new, transferred and temporary employees have been through Vector Projects Group Ltd Safety Orientation and have a complete knowledge of the expectations for their job function.

Supervisors will identify all employees and temporary personnel with less than 180 days of service, or those employees they desire to return to a mentoring status for improvement in job and/or safety performance.

Short Service Employee participants will wear high visibility orange hard hats and/or an SSE decal to help identify them. The Vector Projects Group Ltd shall comply with client designated hardhat color for SSE if orange is not acceptable and the method used to identify SSE workers will be communicated to the owner client.

SSE staff is mentored by an experienced / knowledgeable employee. Vector Projects Group Ltd shall have in place some form of mentoring process, acceptable to the owner operator, designed to provide guidance, assistance and development for SSE personnel. A mentor can only be assigned one crew that includes SSE and the mentor must remain onsite with them. Mentors will set the proper safety example for any Short Service Employee assigned them.

A SSE may not work alone. A work crew of less than five shall have no more than one SSE.

Managers and the Safety Department will randomly audit for process compliance. This will involve interviewing employees in the Short Service Employee program (documentation is not required).

5.9 Job Specific Training

Workers will require specific on-the-job training to do their jobs in a safe and effective manner. Using hazard assessment data, Vector Projects Group Ltd must assess which jobs require job-specific training and ensure training is provided for the completion of tasks where specific health and safety hazards are known to exist.

Vector Projects Group Ltd will determine who is competent to provide this training and the supervision required until the worker is deemed competent.

Job-specific training will be provided to both new and transferred workers and refresher training will also be held on a regular schedule.

5.10 Probationary Period

Vector Projects Group Ltd enforces a 120-day probationary period in which time; the job performance will be carefully monitored and evaluated. If the employee is observed to have a disregard for safe practices, they will

be terminated during this time period. If it is discovered that the employee provided false information on the application or the medical questionnaire, the employee will be subject to termination. If the employee is unable to complete the job he/she was hired to do the employee will be terminated. If the employee cannot get along with others then the employee will be terminated.

5.11 No Rehire Policy

Vector Projects Group Ltd enforces a “No Rehire” Policy. If the employee has been terminated for just cause then that person will not be eligible for re-hire.

6.0 EMERGENCY RESPONSE

6.1 Purpose

The purpose of this document is to establish an Emergency Preparedness and Response Program (EPRP) for an emergency that may require rescue or evacuation. The material in this document does not take precedence over applicable government legislation which all employees must follow.

Vector Projects Group Ltd managers and supervisors will consult with affected workers in establishing this plan. The procedures will be reviewed annually to ensure current.

6.2 Assignment of Responsibilities

Safety Manager

- Develop, review and implement emergency response plans and procedures.
- Ensure workers are aware of emergency plans through training.
- Monitor effectiveness of emergency plans.

Site Manager and Supervisors

- Responsible for ensuring necessary assets are made available for all emergency procedures.
- The implementation of the emergency procedures or plans for their work site.

Employees

- Follow all contingency procedures or plans.
- Through the Joint Health and Safety Committee reviewing and revising as required the emergency response plans.

Contractors

- Contractors working on your behalf of Vector Projects Group Ltd must submit a site specific Emergency Action Plan as required per job.
- If contractors are working on the site that Vector Projects Group Ltd is present, then the Vector Projects Group Ltd Plan will be communicated to contractors before the job begins and the contractors are expected to follow it.

6.3 Emergency Response and Planning Components

6.3.1 Identification of Potential Emergencies

Each Vector Projects Group Ltd work site shall have an emergency plan that identifies all potential disasters or emergency situations Vector Projects Group Ltd may face.

Vector Projects Group Ltd will assess the potential for harm to people, property, equipment and the environment for each potential emergency situation stemming from natural disasters, man-made events, equipment failures and technological failures.

Emergencies that have been identified for Vector Projects Group Ltd worksites include:

- Vehicle Collisions/Accidents

- Fire

- Explosion
- Tornado/Weather
- Bomb Threat
- Spill or release of a hazardous substance
- Steam/Gas Leak
- Medical
- Forest Fires
- Tornados
- Medical Emergencies
- Explosion
- Confined Space Rescue
- Fall Protection Rescue
- Workplace Violence

The Emergency response plans shall include instructions for dealing with all identified potential emergencies.

NOTE: For emergencies that may arise at a remote jobsite where workers are under the direction of a prime contractor workers must follow the directions of that prime contractor. Instructions will be communicated to you when you arrive on location or on pre-job hazard or during safety meeting. If Vector Projects Group Ltd is responsible for the site, then the emergency procedures listed in the site plan are to be followed.

6.3.2 Evacuation

Contained within the Vector Projects Group Ltd Emergency Preparedness and Response Program are evacuation procedures for the work site, establishment of safety zones and muster points where people being evacuated can gather. Individuals are assigned specific duties in the event of an emergency evacuation. Alarm systems to be used are established in the event of an emergency and they must suit the specific needs of the work site.

Emergency escape procedures and route assignments have been posted in each work area, and all employees have been trained by supervision in the correct procedures to follow. New employees must be trained when assigned to a work area.

6.3.3 Communication

Specific communication systems for use in the event of an emergency have been developed and emergency contact numbers posted where they are most likely to be needed. Vector Projects Group Ltd will include the names of local responders that could respond quickly in an emergency and will ensure these responders know that they are on the Vector Projects Group Ltd Emergency Contact List Form.

All emergencies during or after hours must be reported by phone or in person to both the Emergency Plan Coordinator and the Vector Projects Group Ltd office.

6.3.4 Control and Direction

In the case of an incident personnel will be assigned duties to perform in order to control the scene and investigation. These duties must be reviewed monthly or more frequent if positions change frequently with location & job to ensure the information is current and that all participants are familiar with their duties.

1. Control the scene
2. Head count at the assembly area with list of all persons on site.

3. Directing emergency response personnel to the scene
4. Accident investigation: witness statements and pictures
5. Contact emergency response personnel

6.3.5 Training

All employees will be trained in what to do should a specific emergency situation occur. Training includes basic emergency response information (ex. alarms, muster points, emergency exits) as part of the new worker safety orientation and staff assigned specific emergency response duties also are to receive specialized training they need to ensure they are competent to perform their assigned tasks.

Employees assigned to be first aiders, fire fighters, floor wardens, etc., must know how to respond appropriately and how to use any emergency equipment required. Those with less responsibility in the event of an emergency must at a minimum know how to respond to an alarm and whom to call for assistance. Everyone should know who will take charge and coordinate the evacuation, who will sound the alarm and who is trained in first aid.

6.3.6 Emergency Equipment

Emergency equipment must be identified, available on site and maintained in good operating condition. Requirements will vary depending on Vector Projects Group Ltd work site locations, the nature of the work performed and worker population. OHS legislation is referred to in order to determine minimum requirements for first aid kits, fire extinguishers, water hoses, emergency showers, emergency lighting, breathing apparatuses, ladders, stretchers, emergency communication equipment, etc.

Emergency equipment is to be in accessible locations and Vector Projects Group Ltd has established a regular schedule to service and inspect all emergency equipment including first aid and rescue equipment.

6.3.7 Disaster Services

If required, the Vector Projects Group Ltd Emergency Preparedness and Response Program may need to be reviewed with local emergency response agencies to ensure they have all the information they need to mount an effective response in the event of an emergency.

6.4 Emergency Response Procedure

6.4.1 Purpose

Each Vector Projects Group Ltd location shall have a written Emergency Response Plan, appropriate to the hazards of the workplace, in order to respond to an emergency that may require rescue or evacuation.

Each Emergency Response Plan shall be prepared to reflect all known probable emergency conditions which may arise from within the workplace and from adjacent workplaces.

6.4.2 Emergency Response Planning, Issuing and Annual Review Guidelines

Emergency Procedures shall be issued and discussed with all new/transferred personnel upon arrival for assignment.

Emergency Response Plans shall be established, implemented, reviewed, maintained and updated annually in conjunction with:

1. Client emergency services department requirements.
2. Vector Projects Group Ltd safety staff and management.

3. The requirement to ensure the plan is up to date to reflect current circumstances at the workplace.

The plan is to be reviewed before the job and when conditions warrant and should be used for routine and non-routine emergencies as well as changes in operation and products or services which warrant new emergency situations.

6.4.3 Evacuation Procedures Planning

The individual site evacuation procedure shall be appropriate to the risk and must be developed and implemented to:

- Notify staff, including the first aid attendant, of the nature and location of the emergency.
- Evacuate employees safely.
- Check and confirm the safe evacuation of all employees.
- Notify the fire department or other emergency responders.
- Notify adjacent workplaces or residences which may be affected if the risk of exposure to a substance extends beyond the workplace. Notification of the public must be in conformity with the requirements of other jurisdictions, including provincial and municipal agencies.

6.4.4 Written Emergency Response Plan

Vector Projects Group Ltd must conduct a risk assessment in any workplace in which a need to rescue or evacuate workers may arise. A workplace must have a written emergency plan, appropriate to the hazards of the workplace. The plan must address emergency conditions which may arise from within the workplace and from adjacent workplaces.

If the risk assessment shows a need for evacuation or rescue, appropriate written procedures must be developed and implemented. Written rescue and evacuation procedures are required for but not limited to:

- Work in confined spaces or where there is a risk of entrapment.
- Work with hazardous substances.
- Underground work.
- Work on or over water.
- Workplaces where there are persons who require physical assistance to be moved.

Procedures for potential emergencies shall be contained within the Emergency Response Plan.

6.5 Inspection and Maintenance Records

Maintenance records must be kept, including but not limited to, the name of manufacturer, the type of equipment, the date put into service, when and for what purpose the equipment has been used, the date of the last inspection and name of the inspecting person, any damage suffered and the date and nature of any of maintenance on emergency response equipment.

Ropes and associated equipment must be inspected visually and physically by qualified employees after each use for rescue, evacuation or training purposes.

Facilities will be inspected monthly and a member of the Joint Health and Safety Committee (JHSC) is to participate in all inspections.

The Vector Projects Group Ltd designated representative will perform and maintain the Vector Projects Group Ltd Emergency Inspection Checklist Form on a monthly basis. The checklist shall be maintained for retention in active files for two years and in on site archives for seven years.

6.6 Training

Workers are provided training on emergency response. Requirements include:

- All workers must be given adequate instruction in the fire prevention and emergency evacuation procedures applicable to their workplace.
- At least once each year, emergency drills must be held to ensure awareness and effectiveness of emergency exit routes and procedures and a record of the drills must be kept.
- Workers designated to provide rescue or evacuation services must be adequately trained.
- The designated site representative shall provide the Emergency Response Plan orientation to all new/transferred personnel before they begin work.
- All personnel shall receive a review/update orientation at least annually, or whenever any new/revised information is to be provided.
- The Emergency Response Plan Orientation Check List shall be completed after orientation and the record maintained in the individual's training records.
- Vector Projects Group Ltd management shall ensure that contractors/consultants working in areas under the supervision of Vector Projects Group Ltd also receive the Emergency Response Plan orientation upon arrival to the area.
- A list of trained staff responders shall be posted and maintained indicating their name, response function, their work location and what type of equipment they have been trained for.

6.7 Location and Use of Emergency Facilities

Vector Projects Group Ltd shall ensure each Emergency Response Plan lists the location and how to use emergency facilities for each work site. For off-site locations, outside services that can provide assistance in the event of an emergency, should be identified and reviewed with workers prior to commencing work activities. A list shall be posted in a conspicuous area showing local emergency facilities and how to contact. Examples include:

- Client Emergency Response Department (Initial Responder for All Emergencies If Applicable)
- RCMP/Police, Local Hospital, Poison Center (Poison Response) 1-800-332-1414

6.8 Fire Protection and Response

Vector Projects Group Ltd shall ensure each Emergency Response Plan provides fire protection and response planning within each site Emergency Response Plan and is utilized during all phases of work. As a minimum, all shall include the following:

6.8.1 Protection

- Smoking is not permitted except in designated 'SMOKING" areas.
- Facilities shall be designed and maintained in accordance with local fire code and regulations.
- Portable fire extinguishers shall be stationed, inspected and maintained in accordance with local fire code and regulations. Vector Projects Group Ltd personnel shall be trained in their use.
- Flammable and combustible liquids shall be properly stored.
- Employees shall report all fire safety issues to their immediate supervisor.
- Facilities shall be inspected by use of the Vector Projects Group Ltd Emergency Inspection Checklist.

6.8.2 Response

In the event of a fire**,** personnel working in facility will adhere to the following procedure for their work area:

1. Warn others in the immediate area. Notify the appropriate emergency response personnel by phone or radio and pull the nearest fire alarm if present.

2. If nearby staff have been trained and it is safe to do so, fight the fire using a portable fire extinguisher. Remember, if in doubt get out.
3. Evacuate the premises via the nearest exit and proceed to the nearest Emergency Assembly Area.
4. Re-enter only after the Emergency Co-coordinator has given an ALL CLEAR.
5. Roads are designated as fire lanes. Vehicles can stop there for unloading, but no parking will be allowed.

6.9 Alarm and Emergency Communication

Each Emergency Response Plan for Vector Projects Group Ltd shall contain methods to address alarms and communications in case of an emergency. For off-site locations, the method of emergency notification should be identified and reviewed with workers prior to commencing work activities**.**

6.9.1 Alarm System

Each Emergency Response plan will describe how to activate an alarm and what to do after either activating or hearing an alarm.

Personnel responding to any alarm shall avoid complacency. Every alarm should be treated as an actual incident until proven otherwise. Treating and responding to alarms as a routine happening can result in injuries, fatalities and destruction of property.

6.9.2 Communications

Vector Projects Group Ltd responders use telephones, cell phones and radios in conjunction with emergency response.

6.10 Rescue and Evacuation Procedures

6.10.1 Procedures for Rescue

Each site Emergency Response Plans shall address who performs rescue services when required. It is the position of Vector Projects Group Ltd that all rescue duties are performed by client emergency responders or local government responders when on their location. For off-site locations, evacuation procedures and methods of rescue should be identified and reviewed with workers prior to commencing work activities.

At least one member of a rescue team must be a first aid attendant trained to immobilize an injured employee.

Effective communications must be maintained between the employees engaged in rescue or evacuation and support persons.

6.10.2 Emergency Evacuation Procedures

Written evacuation procedures appropriate to the risk must be developed and implemented to:

- Notify workers, including the first aid attendant, of the nature and location of the emergency.
- Evacuate workers safely.
- Check and confirm the safe evacuation of all workers.
- Notify the fire department or other emergency responders.
- Notify adjacent workplaces or residences which may be affected if the risk of exposure to a substance extends beyond the workplace.

6.10.3 Preparation for Evacuation

Each site Emergency Response Plan shall contain a procedure for evacuation if required.

The Vector Projects Group Ltd Designated Emergency Coordinator will maintain an active list of all Vector Projects Group Ltd and contract emergency responders.

6.10.4 Evacuation Drills

At least once each year, emergency drills must be held to ensure awareness and effectiveness of emergency exit routes and procedures and a record of the drills must be kept. Before conducting an evacuation drill, a pre-drill assessment of the evacuation routes and assembly points shall be conducted. The pre-drill assessment is intended to verify that all egress components (stairs, doors, etc.) are in proper order and that occupants can use them safely. Records of both drills and actual emergencies will be kept and reviewed after each incident/exercise to identify areas where improvements can be made.

6.10.5 Emergency Evacuation Notification and Routes

In the event of an emergency occurring within or affecting the work site, the Emergency Coordinator makes the following decisions and ensures the appropriate key steps are taken:

1. Advise all personnel of the emergency.
2. Activate the emergency notification sequence to alert the appropriate responders and initiate emergency notification within the building.
3. Evacuate all persons to the identified assembly area and account for everyone including visitors and clients.
4. All personnel will proceed to the primary safe area immediately located at the identified emergency assembly area for their location.

5. A copy of escape routes shall be posted in all offices, at all alarm stations and at all exits.

6.11 Emergency Response Program Management

The Vector Projects Group Ltd site manager will have the overall accountability for administering the Emergency Response Plan.

For the purpose of this Emergency Response Plan guidance the Emergency Coordinator will be designated by the Vector Projects Group Ltd site manager. His/her alternate will be the Vector Projects Group Ltd Site Safety Supervisor or otherwise designated by the site manager.

Employees performing rescue or evacuation must wear personal protective clothing and equipment appropriate to the hazards likely to be encountered.

6.11.1 Duties

Emergency Coordinator ensures that:

- Evacuation drills are conducted on an annual basis.
- Inspections of facilities are performed monthly.
- All necessary repairs of components for evacuation paths are completed.
- Plans for the modification of any part of an evacuation path are reviewed.
- An up to date list of Fire Wardens is maintained.
- Radios and reflective vests and other response equipment are available.

During an evacuation or evacuation exercise, the Vector Projects Group Ltd Emergency Coordinator:

- Coordinates activities in accordance with either local authorities or the client Security and ERT as required.
- Coordinates Fire Wardens and informs them the nature of the emergency via handheld radios.

Following an evacuation or evacuation exercise, the Vector Projects Group Ltd Emergency Coordinator:

- Notifies Fire Wardens that it is safe to re-enter the building.
- Prepares a report following an evacuation (actual or drill).
- Reports to management for follow up or corrective actions.

Vector Projects Group Ltd Site Safety Supervisor:

- Assist the Vector Projects Group Ltd Emergency Coordinator when requested.

Fire Wardens

- Be equipped with radios and reflective vests.
- Be familiar with exits and muster stations for their responsible area.
- Direct residents safely out of the building to the designated muster station or to an alternate location.
- Sweep their effected area, ensuring that the alarms are properly functioning and that residents evacuate safely.
- Complete a head count and reconcile the evacuees with the daily housing report at the assigned muster station or alternate location.
- Radio unaccounted for personnel to Security.
- Notify personnel that they may re-enter the building when permission has been given by the appropriate authorities.

Residents, Contractors and Visitors

- All employees, users, contractors and visitors will follow the instructions of the Fire Wardens, Security, ERT, Safety Personnel, Managers and Supervisors when asked to evacuate the building.
- Know the two safest and most direct evacuation routes from their work area(s).
- Know the designated evacuation assembly point for the building.

6.12 Site Specific Emergency Response Plan

A site specific Emergency Plan will be developed for every Vector Projects Group Ltd worksite.

SITE SPECFIC EMERGENCY RESPONSE PLAN	
LOCATION	**EMERGENCY PLAN COORDINATOR**
GENERAL	Name: Title: Phone #:

POTENTIAL EMERGENCIES
(BASED ON HAZARD ASSESSMENT)

The following are identified potential emergencies:

- Vehicle Collisions/Accidents
- Fire
- Explosion
- Tornado/Weather
- Bomb Threat
- Chemical Spill
- Chemical Leak
- Steam/Gas Leak
- Medical
- Forest Fires
- Tornados
- Medical Emergencies
- Explosion
- Workplace Violence
- Tsunami

NOTE: For emergencies that may arise at a remote jobsite workers must follow the directions of the prime contractor. Instructions will be communicated to you when you arrive on location or on pre-job hazard or during safety meeting. If Vector Projects Group Ltd is responsible for the site, then the emergency procedures listed below will be followed.

EMERGENCY PROCEDURES

VEHICLE COLLISION/ACCIDENTS

DO:

1. Stop - Failure to stop is a criminal offence
2. Call for assistance by phone or radio. (follow their instructions)
3. Give the exact location and details
4. Give first aid to injured (if you are trained)
5. Secure the scene (turn on hazard lights, put reflective triangles in place, direct traffic)
6. Assess the Situation

    ✓ Is there a fire?

- ✓ Is there a spill or leak?
- ✓ What is at risk, people, property or the environment?
- ✓ What should be done? (Is an evacuation necessary?)
- ✓ Is diking necessary?
- ✓ What resources (human and equipment) are required and which are readily available?
- ✓ What can be done right away?

7. Take pictures when able – for investigation: position of vehicles, landscape, etc.
8. Hand out witness cards to witnesses (collect them when they are done filling them out)

***DO NOT*:**

- Do not leave the scene (until directed to do so by your supervisor or the RCMP)
- Do not move injured persons (unless further danger is imminent)
- Do not discuss the incident (except with police officers or a company representative)
- Do not leave your vehicle unguarded
- Do not move any of the vehicles involved until the police arrive

FIRE

1. Warn others in the immediate area. Notify the appropriate emergency response personnel by phone or radio and pull the nearest fire alarm if present.
2. If nearby staff have been trained, and it is safe to do so, fight the fire using a portable fire extinguisher. Remember, if in doubt get out.
3. Evacuate the premises via the nearest exit and proceed to the nearest Emergency Assembly Area
4. Re-enter only after the Emergency Coordinator has given an ALL CLEAR.

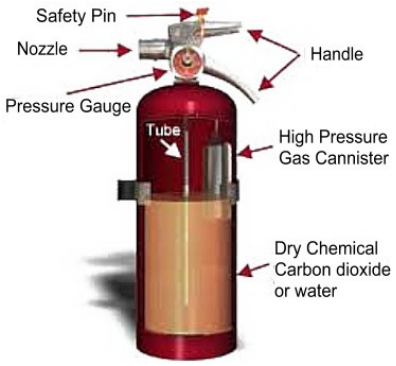
<u>Know how to properly use one:</u>

P. pull the pin

A. aim at the base of the fire

S. squeeze the handle

S. Sweep back and forth at base of fire



<u>Always Remember:</u>

- ➢ Do not let fire spread around you.
- ➢ Keep a safe distance from the fire.
- ➢ Once fire extinguisher is emptied, if fire continues, evacuate the scene and wait for the fire department.
- ➢ Prior to starting to battle the fire, designate someone to call the fire department. Fire fighters are trained to distinguish all types of fires.
- ➢ Always remember extinguishers are made for small fires, containing it until the Fire Department arrives, can save lives and/or property.
- ➢ Portable Fire Extinguishers are not designed to fight large or spreading fires.
- ➢ Fire extinguishers must be recharged after each use.

If a fire extinguisher fails to properly put out the fire, get to an exit and proceed to the gathering point for further instructions. You should **never put yourself at risk** in an attempt to extinguish the fire.

FOREST FIRES

1. Forest and grassland fires can easily ignite and spread quickly. They are very unpredictable!
2. Warn others in the immediate area.
3. Call & Report the fire to the proper emergency response services in your area
4. Get out of area immediately

Crowning forest fires often spread at up to 7 km/ per hour and windblown prairie fires have been known to travel at speeds exceeding 17 km/ per hour.

In the event of a fire, the primary consideration must be for the safety of all personnel.

GAS LEAKS

If you smell gas:

1. immediately open windows and doors,
2. turn off the main gas valve,
3. leave the building
4. Notify the gas company from another location, as well as the police and fire department.
5. Do not re-enter the building unless you are told it is safe to do so.
6. If electrical appliances are wet (and you are NOT wet or standing in water) turn off the main power switch. If any fuses blow when power is restored, turn off the main power switch again and have your building checked by a qualified electrician or call your utility company.
7. Follow the instructions of your local health unit concerning the use of the use of food and water supplies.
8. Check to see that sewage lines are intact before flushing toilets.
9. Report damaged water, sewage, and gas lines to the proper authorities.

CHEMICAL FIRE

Precautions must be used at all times to prevent fires. The following is a list of some guidelines:

1. Gasoline, volatile solvents or any other flammable substance must be stored in containers that are clearly labeled, approved for their contents and located in a safe place away from any source of open flame.
2. Flammable liquids containers must be electrically bonded when liquids are being transferred from one to another.
3. Any portable container which is being used, or has been used, for storage of a flammable agent must never be left exposed to the direct rays of the sun.
4. The fuel tanks of gasoline engines must be filled away from work areas and only when the engines are turned off
5. Approved safety cans and proper grounding techniques must be used when the tank is not filled directly from the storage container or other source of supply.
6. Access to all exits, fire and safety equipment must be kept clear of obstructions at all times.

CHEMICAL SPILL PROCEDURES

Major Chemical Spill Indoors

1. Evacuate immediate area.
2. Call the supervisor or company safety manager. State your name, location, chemical(s) involved, and the amount spilled.
3. Obtain the Material Safety Data Sheet for the material involved.

4. Attend to any persons who may have been contaminated.
5. Consult the Material Safety Data Sheet for first aid information.
6. Wait in a safe area for the response team. Your knowledge of the area will Assist the team.
7. Do not allow unauthorized personnel to enter the contaminated area.
8. Report the incident to your supervisor and who will determine if the spill must be reported to : Provincial Emergency Program (PEP)

Minor Chemical Spill Indoors

STOP - THINK!

Do not rush. Carefully plan cleanup.

GET MATERIAL SAFETY DATA SHEET AND DETERMINE APPROPRIATE CLEANUP PROCEDURES FOR THE MATERIAL

1. Decide if you can safely handle the spill after reviewing the MSDS; **IF UNSURE, CALL FOR ASSISTANCE.**
2. If malodorous/hazardous vapours are generated from the chemical spill which can be spread outside the local area, contact company Safety Manager for directions
3. Eliminate all ignition sources if flammable material is involved.
4. Turn on fume hoods to capture or direct flow of vapours.
5. Use Spill Kit appropriate to the substance type & quantity:
   Confine the spill to a small area.
   Do not allow the material to spread.
   Dike, block or contain the size of spread of liquid spill by using appropriate absorbing material (vermiculite, commercial absorbent, etc.).
   Appropriate protective equipment and cleanup materials (e.g. neutralizers, absorbent, etc.) must be used.
   All lab and shop areas have their own spill kits.
6. Carefully remove other materials, containers, equipment from path of the spill.
7. Sweep solids of low toxicity into a dust pan and place into container for disposal.
8. Dispose of all cleanup materials as hazardous waste. Waste must be properly packaged in a leak-proof container, sealed and labelled with a hazardous waste label.
9. After removal of spilled material, if the chemical is soluble in water, the area should be washed with warm, soapy water to remove any remaining residue.
10. Report the incident to the supervisor

Chemical Spill Outdoors

1. Immediately call the Safety Manager
2. Contain spill rapidly by diking with suitable material (kitty litter, vermiculite, etc.).
3. Attempt to prevent chemical from contaminating ground water and sewer system. Cover opening to sewer if able to do so.
4. Immediately report the incident by calling your supervisor or safety manager
5. Do not leave spill site unattended. Wait until assistance arrives.

EXTREME TEMPERATURES / WEATHER

Heat Stress

1. Seek medical aid immediately
2. Move the worker to a cooler environment
3. Worker should lay down
4. Remove or loosen tight-fitting clothing

5. Sponge worker with cool water and fan them to cool body temperature. (Take care not to cool the worker too much. If the worker begins to shiver, stop cooling)

Heat Stroke

1. Move the worker to the coolest place available.
2. Notify the first aid attendant, call 911, and/or arrange for immediate transportation to medical aid.
3. Maintain airway, breathing, and circulation as required, and monitor patient until help arrives.
4. Remove all outer clothing, and apply cold water to the worker by either dousing or applying wet, cool sheets.
5. Spraying or sponging the entire body with cold water is also effective. Fanning will also help.
6. Continue to cool the worker during transport.

Hypothermia

Mild

1. Move the worker to the coolest place available.
2. Notify the first aid attendant, call 911, and/or arrange for immediate transportation to medical aid.
3. Maintain airway, breathing, and circulation as required, and monitor patient until help arrives.
4. Remove all outer clothing, and apply cold water to the worker by either dousing or applying wet, cool sheets.
5. Spraying or sponging the entire body with cold water is also effective. Fanning will also help.
6. Continue to cool the worker during transport.

Moderate

1. Insulate from ground – pine branches, leaves, moss, anything to provide insulation will work.
2. Change wet clothing for windproof, waterproof gear
3. Add heat - If using hot water bottles or chemical hot packs, wrap them in cloth; don't apply them directly to the skin. – if safe, start a fire

Severe

1. Call 911 for immediate medical treatment
2. Do Not make any attempts to increase body temperature EXCEPT
    a. Skin on skin contact of the torso with 2 other people (person on each side of the victim.)
3. Maintaining temperature and preventing further loss is the most important thing.
4. Don't leave victim alone
5. Do Not let victim go to sleep
6. Do Not administer fluids
7. If a person becomes unconscious
    a. Monitor their breathing and pulse carefully.
    b. If you can detect a faint pulse do not do CPR to support their heart.
    c. Only start rescue breathing, chest compressions or full CPR if you cannot detect any breathing, any pulse or both. **Administering CPR to someone, even someone with a slight pulse can cause his or her heart to stop.**
    d. Check frequently to see if they start breathing on their own, even if it is shallow, the same for a pulse.

Driving

Vehicles shall not operate during adverse weather conditions when:

1. the visibility due to snow or fog is less than 150 metres
2. the roadway is covered with snow, sleet, or ice which impedes the driver's or other motorist's ability to drive in a safe manner.

If you encounter unexpected conditions as listed above while already enroute:

1. Stop at the next safe location (or as directed by an authorized Transportation staff member or a peace officer) and wait for the adverse conditions to subside.
2. DON'T stop on the side of a highway where part of your load extends into a driving lane or shoulder.
3. Radio /call office immediately with your location

Stranded Enroute (Hitting the ditch, vehicle breakdown)

1. Run vehicle if it is safe to do so to stay as warm as possible.
2. Always leave the window down a bit and ensure the exhaust can be vented clearly away from vehicle. Get out and clean away snow from around exhaust pipe (as/if situation requires).
3. If you can smell the exhaust strongly shut vehicle off immediately
4. If you find yourself getting tired, get out of vehicle and breathe some fresh air. (There may be an exhaust problem you are unaware of)
5. If you can't keep vehicle running warm it as much as possible by shutting windows and lighting a candle from emergency kit. Wrap yourself in additional clothing, blankets. Do not overdress as sweating can cause more problems.

TORNADO

Tornados frequently occur throughout the Prairie Provinces. They have the capability to destroy buildings and equipment, and cause serious or fatal injuries. By following certain procedures, the danger can be minimized.

A *Watch* is an advisory only. Nothing may happen but a watch could develop into a warning. Stay alert! Listen to your radio.
A *Warning* means that the event is imminent. Take precautions and listen to your radio. If a tornado is spotted or reported through various media channels, all employees have the responsibility to report it immediately to their manager or supervisor.

If the tornado is in the vicinity of the company, the following procedures apply.
Caught inside a building:

1. Stay away from windows, doors, and outside walls. (seek out inner hallways, washroom, closets)
2. Protect your head.
3. Stay away from mobile machinery; an automobile will not protect you.
4. Stay tuned to radio / television. Select the station with the best continuous information.
5. Hold onto something solid that is fastened down and is not likely to fly away.

If caught outside:
1. lie face down in a ditch, culvert or any other low lying area or lay flat; holding onto the base of a small tree, bush or shrubbery to avoid being lifted or blown away.
2. Get as far away from loose objects as possible

If caught while driving:
- drive away from the funnel at a right angle or to its direction of travel (if possible). If you cannot escape the path of the funnel
    - get out of your vehicle immediately and seek shelter in a ditch or ravine,
    - keep slope between you and the funnel.

If caught in a built up area, seek shelter in a sturdy building.
- Go to an interior hallway or washroom on lower floor, stay away windows, doors and outside walls.
- Protect your head.

- Avoid buildings with large span roofs such as malls or supermarkets, etc.

After the tornado has passed

- check and see if anyone needs help.
- provide first aid to injured
- proceed to the gathering point and wait for further instructions

MEDICAL EMERGENCIES

1. Call for assistance by phone or radio. Give the exact location and details of the medical emergency.
2. If qualified, provide basic first aid, and keep the person comfortable. Do not move the person. Do not leave him/her unattended.
3. Arrange for emergency medical transportation based on the medical planning portion of the site's Emergency Response Plan.

EXPLOSIONS

1. Get down on the floor, take shelter under tables or desks, and protect your face and head against flying glass and debris.
2. Once it is safe to do so, evacuate the premises via the nearest exit and proceed to the nearest Emergency Assembly Area.
3. Re-enter only after the Emergency Coordinator has given an ALL CLEAR.

WORKPLACE VIOLENCE

1. Notify security immediately by phone or radio and report the occurrence.
2. Do NOT attempt to physically intervene. Protect yourself first at all costs.

BOMB THREATS

1. If a threat is received by phone, mail or other means, get as much information as possible.
2. If the threat is received by phone, try to keep the person on the line for as long as possible. Do not hang up the phone, even after the call has been terminated.
3. Contact local emergency response personnel by phone or radio.
4. If a suspicious device is identified, evacuate the immediate area and notify local emergency response personnel

WORKING ALONE

1. Ensure work alone plan is completed including specified routes, specified worksites, jobs being completed, time frames established, all hazards have been identified.
2. Ensure communication with company designated person is available
3. Ensure check-in times are established and followed
4. If person doesn't check in at specified times then they must be called to ensure safety. If the person doesn't answer call every 15 minutes. If still no answer after ½ hour someone must be dispatched to physically check on the worker.

TSUNAMI

1. If you hear a tsunami bulletin, follow information and instructions immediately.
2. Alert others immediately
3. Emergency Responders: Turn off the gas, power and water to your business.
4. Evacuate to higher ground (greater than 10 metres or 30 feet above the tide line)
5. Stay tuned to your radio for further tsunami updates.
6. Follow the instructions of all emergency officials.
7. Do not use the telephone for 24 hours except to report life threatening emergencies.

IDENTIFICATION & LOCATION OF EMERGENCY EQUIPMENT

Emergency equipment is located in each **vehicle**

- Fire Extinguisher
- First Aid Kit
- Communication Devices – Each person has their own cell phone and there is a radio in each truck
- Reflective triangles
- Flares

Emergency equipment is located in each **machine**

- Fire Extinguisher
- First Aid Kit
- Communication Devices – Each person has their own cell phone and there is a radio in each truck

Emergency Equipment in **Shop**

- Fire Extinguisher at each exit
- First Aid Kit
- Emergency lighting
- Exit doors
- Fire Hose
- Automated External Defibrillation

Emergency Equipment in **Office**

- Fire Extinguisher
- First Aid Kit
- Automated External Defibrillation

Emergency Equipment on remote **Jobsite**

- Fire Extinguisher
- First Aid Kit
- Communication Devices

WORKERS TRAINED IN THE USE OF EMERGENCY EQUIPMENT

FIRE EXTINGUISHER	FIRST AID	AUTOMATED EXTERNAL DEFIBRILLATION (If applicable)	EMERGENCY EQUIPMENT FOR VEHICLES

EMERGENCY RESPONSE TRAINING REQUIREMENTS

TYPE OF TRAINING	FREQUENCY
• Use of fire extinguishers • Emergency First Aid Certification • Automated External Defibrillation (if applicable) • Practice drills • Location of Muster Areas	• Orientation and annually • Certification training – 3 years • At the call of site management

FIRE PROTECTION REQUIREMENTS

ALL EMPLOYEES WILL HAVE FIRE EXTINGUISHER TRAINING ON AN ANNUAL BASIS.

NEVER put yourself in unsafe situation. Only use fire extinguisher if you have been trained to do so and only if fire is small and you have easy access to exit. Alert everyone in building to evacuate before attempting to extinguish fire.

Fire extinguisher
Fire Hoses
Fire Alarm

ALARM AND EMERGENCY COMMUNICATION REQUIREMENTS

Pulling the fire alarm automatically alerts the fire department and initiates an alarm within the building.
The fire alarm signal is (Sound Alarm/Horn and Yelling "FIRE" immediately alerts workers in Shop and on Jobsite)

FIRST AID

ALL WORKERS MUST HOLD VALID CERTIFICATION IN FIRST AID

First aid supplies are located at:

- In each truck, in each machine, in shop, in office and available on each worksite.
- First Aid Kits are to be stored in a clean, dry and accessible location which is visible to all workers.

First Aiders onsite are:

1.
2.

Transportation for ill or injured workers is by company vehicle if non-life threatening injury and by ambulance if serious injury.

Radio channel depends on location.

PROCEDURES FOR RESCUE AND EVACUATION

In case of fire:

- Advise all personnel
- Sound alarm
- Evacuate all persons to a safe point in the staff parking lot and account for everyone including visitors and clients
- Assist ill or injured workers to evacuate the building
- Provide first aid to injured workers if required

In case of Confined Space:

Follow instructions in the Confined Space Plan (**each site specific**)

The emergency response plan shall include the emergency procedures to be followed if there is an accident or other emergency, including procedures in place to evacuate the confined space or restricted space immediately:

- If an evacuation should occur or when an alarm is activated,
- If the concentration of oxygen inside the space drops below 19.5% by volume or exceeds 23.0% by volume, or
- If there is a significant change in the amount of hazardous substances inside the space.

In case of Fall from Heights:

1. Do not move victim
2. Call for assistance
3. Give CPR is required
4. Follow directions of emergency responder (911 operator) until help arrives

Call emergency response personnel to arrange for transportation of ill or injured workers to the nearest health care facility if required.

DESIGNATED MUSTER POINT

Determined and Discussed with workers at prejob meeting

EVACUATION ROUTE MAPS

Evacuation routes are communicated at start of each job. Evacuation Maps not posted as each worksite changes per job and posting is not practical.

DESIGNATED RESCUE AND EVACUATION WORKERS

CONTROL & DIRECTIONS

The listed workers are trained in the rescue and evacuation procedures.

1. Control the scene
2. Head count at the assembly area with list of all persons on site.
3. Directing emergency response personnel to the scene
4. Accident investigation: witness statements and pictures
5. Contact emergency response personnel

RESPONSIBLE WORKERS

Job Responsibility	Primary Contact	Secondary Contact	Work Area Assigned
1			
2			
3			
4			

5			

EMERGENCY RESPONDER CONTACTS

(BASED ON LOCATION OF WORKSITE)
(CONTACTS MUST BE SPECIFIC TO EACH WORKSITE)

In case of an Emergency Call: 911

Vector Projects Group Ltd CONTACTS

President		
Vice President		
Safety Manager		

LOCATION AND USE OF EMERGENCY RESPONSE FACILITIES

Fire Dept. (Hazardous Material Spill Response Unit)	**911**	Emergency Assistance
Ambulance	**911**	Medical Aid
Police/RCMP	**911**	Control and direct people during an emergency.
Dangerous Goods Spill	**(613) 996-6666 or** ***666** from cellular **(24 hrs)**	Provides Information & Guidance for: first step response public safety measures potential hazards For additional information in identifying general hazards of most dangerous goods, refer to the, "Initial Emergency Response guide" booklet
Power Company		Shut power off to affected area as applicable
Gas Company		Shut off gas flow to affected area as applicable
Environment Canada	**604-666-6100**	Information and legislation dealing with environmental issues. Oil and Chemical Spill Reports (24 hours)
WHMIS Hotline	**1.800.387.5710**	Ensures you have the information required to work safely with the controlled products in your work area. Know where the MSDS (Material Safety Data Sheets) are located in your work area.
Poison Center	As per province Enter applicable provincial number See Poison Center Contact List	Gives information & direction to people in emergency situations dealing with poisons.

HOSPITALS			
RCMP (Police)			
FIRE DEPARTMENTS			

DATE

SAFETY MANAGER SIGNATURE

7.0 INCIDENT REPORTING & INVESTIGATION

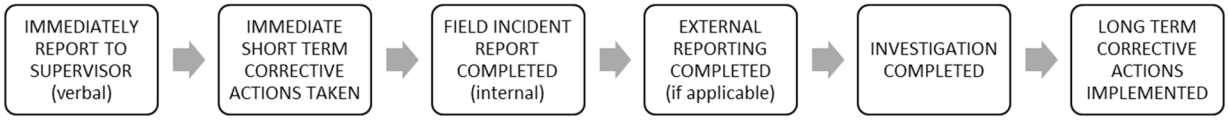
7.1 Purpose

The purpose of this program is to have effective procedures for reporting, investigating and evaluating incidents and non-conformances in order to prevent further occurrences.

Vector Projects Group Ltd requires the immediate (as promptly as is possible) verbal reporting all incidents, workplace-related illness and near misses. The immediate supervisor is initially notified and then the designated Safety Manger shall be contacted. Written notification shall follow verbal notification. All workers will be trained to these standards through employee orientations (Duty to Report) and periodic refreshers will be included in safety meetings to reinforce the importance of incident reporting. Failure to report incidents, hazardous work conditions or near misses shall result in disciplinary action.

All occupational diseases, incidents, accidents, injuries affecting any of the workers must be investigated by a qualified person. It's the responsibility of the prime contractor, or if there is no prime contractor, then the contractor or employer responsible for the worksite to investigate and complete an investigation report. An independent investigation must be completed regardless of whether the government conducts an investigation.

Investigations are necessary because it's the law and because finding out what happened can help prevent a similar injury or incident from happening again. The investigation should identify the causes of the occurrence so that Vector Projects Group Ltd can take the necessary measures to prevent a recurrence.



7.2 Scope

Affected person, supervisor, management, witnesses, and emergency staff will be involved in the investigation as it affects them according to the procedures. All workers are responsible for reporting all near misses, injuries, accidents and potential safety hazards to their supervisor. Investigations are to be conducted for every safety concern, near miss, collision, property damage, all minor injuries as well as the serious accidents and serious injuries. Investigations will be carried out by the site supervisor and the safety manager. External reporting of accidents is to be carried out by the safety manager.

7.3 Responsibilities

Managers

- Establish an environment that encourages employees to actively participate in Vector Projects Group Ltd Health and Safety program.
- Participate in the development, maintenance and implementation of the Incident Investigation process

Safety Manager

- Participate in the development, maintenance and implementation of the Incident Investigation process
- Provide training necessary to facilitate the process.
- Completes all external reporting requirements

- Ensures investigations are conducted and assists in identifying corrective actions.
- Ensures review of all collisions in company vehicles.
- Ensures review of all 'reportable collisions' are completed in full.

Site Manager and Supervisors

- Investigates (or assists in) incident investigations
- Carries out all actions required to prevent recurrences of incident
- Corrects non-conformances

Employees

- Immediately report any injury, job related illness, collision, spill, or damage to any property to their immediate supervisor.
- If their immediate supervisor is not available the worker is then to immediately notify the project manager.
- When an employee is involved in a work related incident or is aware of a condition that may cause one, the employee must report the incident as soon as possible to Vector Projects Group Ltd. Incidents include any near miss, injury, job related illness, spill or damage to any property to their immediate supervisor.
- Employees who could be first responders will be trained and qualified in first aid techniques to control the degree of loss during the immediate post-incident phase.
- Workers must cooperate fully in investigations.

7.4 Summary of Steps - Immediately following an Incident

1. Ensure victim is looked after (safe from further harm and medical services provided as required)
2. Immediately report incident to supervisor (verbal)
3. Corrective actions taken immediately to ensure safety of everyone on site
4. Witness statements gathered
5. Field Incident Report completed by worker(s) and supervisor
6. External reporting completed if applicable (see requirements: 7.12 Legal Reporting Requirements)
7. Complete investigation (root causes
8. Long term corrective actions implemented to ensure this doesn't happen again

7.5 Incident Reporting Policy Statement

Vector Projects Group Ltd requires the immediate (as promptly as possible) verbal reporting of all collisions, incidents, workplace-related illness and near misses. The immediate supervisor is initially notified and then the designated Safety Manger shall be contacted.

Written notification shall follow verbal notification. Supervisors are required to complete the Vector Projects Group Ltd Incident Report Form and the Incident Investigation Report Form and utilize the Vector Projects Group Ltd Witness Statement Form for the workers and witnesses to the incident.

All workers will be trained to these standards through employee orientations (Duty to Report) and periodic refreshers will be included in team or safety meetings to reinforce the importance of incident reporting. Failure to report incidents, hazardous work conditions, or near misses shall result in disciplinary action.

7.6 Incident Investigation Policy Statement and Procedures

Provincial OHS acts require Vector Projects Group Ltd to investigate any serious injuries and report specific types of incidents. These may include any fatalities or injuries where a worker is hospitalized for two or more

days and incidents involving fire, flood, explosion, building collapse and collapse/upset of a crane, derrick or hoist. Vector Projects Group Ltd shall follow the local provincial reporting requirements.

In the case of a major injury or incident, the scene of the event should be closed off and kept "as is" at the time of the incident. This is vital for effective incident investigation.

Incident investigation occurs as soon as possible, while the facts are still fresh within the minds of those involved (ex. witnesses). Take the opportunity to talk to all of those involved before they become unavailable or memory fades. An incident investigation must be thorough and concerned only with cause and prevention and must be separate from administrative disciplinary action.

Employees will be made aware of investigation policies and procedures and investigation results will be routinely shared with employees at safety meetings, posted at the work site and/or emailed to employees and other business units.

The timeframe for investigations is as soon as possible after the injured have been cared for and all of the potential hazards are removed.

A requirement for participation from all levels (including Managers, Supervisors, Health and Safety Committee Members and other workers who might bring specialized skills or knowledge to the investigation process)

Management will finalize the investigations with root cause determinations and corrective actions being taken to prevent recurrence including a review of the incident with employees and corrective measures being implemented, use of safety bulletins, etc.

Basic steps for conducting the investigation.

1. A requirement to identify indirect, direct and root causes.
2. A requirement to identify corrective action, a specific person responsible for follow-up and an associated timeline for completion.
3. A requirement for senior management review and sign-off once investigations are complete and follow-up action has been taken to prevent a recurrence of the incident.

No person shall hinder, obstruct or interfere with or attempt to hinder, obstruct or interfere with an investigating officer during the course of an investigation.

No person shall knowingly provide an officer with false information, or neglect or refuse to provide information required by an officer in the exercise of the investigation.

No person shall knowingly interfere with monitoring equipment or devices in a workplace.

7.7 Incident Communications

Incidents and corrective actions must be communicated to all staff of Vector Projects Group Ltd. Incident Summary Details shall be posted on worker bulletin boards and/or shall be discussed in safety meetings so all workers are informed of the incident and what was implemented to ensure non-recurrence. A copy of the incident summary will be included in the incident report file.

7.8 Incident Classifications

Near Miss – An incident occurred that had the potential of becoming a higher level incident of actual injury, damage, etc.

Job Related Injury – An injury to staff, contractor, or client staff occurring during work related activity.

Job Related Illness – A job related illness effecting staff, contractor, or client staff occurring during work related activity.

Fatality –- An injury resulting in the death of a worker.

Vehicle Damage – Damage to personal, business, contractor, or client owned vehicles or mobile equipment.

Property Damage – Damage to personal, business, contractor, or client owned property occurred.

Security Incident – Any incident involving the security of staff, contractor, or client facilities, theft, violence or other security related incidents.

Fire/Explosion/Flood – Any unplanned incident involving fire, explosion, or flood.

Spill – The unintended release of a hazardous substance that touches the ground.

Contractor Related – Any incident involving a contractor of Vector Projects Group Ltd.

Non-conformance – An incident occurred because a safety, environmental or quality rule, policy or procedure was not followed.

Reportable Collision - Current legislation requires a traffic collision be immediately reported to the police if it results in death, injury, or property damage of a minimum dollar amount.

Regulatory – Any violation of federal, provincial, municipal or client legal or other requirements

7.9 Job Related Injury Classifications

Injuries shall be classified according to the following:

Fatality –- An injury resulting in the death of a worker.

First Aid – Dressing on a minor cut, removal of a splinter, typically treatment for household type injuries.

Lost Work Day Case (LWDC) – An injury that results in a worker being unfit to perform any work on any day after the occurrence of an occupational injury.

Number of Lost or Restricted Work Days – The number of days, other than the day of occupational injury and the day of return, missed from scheduled work due to being unfit for work or medically restricted to the point that the essential functions of a position cannot be worked.

Occupational Injury – An injury which results from a work related activity.

Occupational Illness – Any abnormal condition or disorder caused by exposure to environmental factors while performing work that resulted in medical treatment by a physician for a skin disorder, respiratory condition, poisoning, hearing loss or other disease (frostbite, heatstroke, sunstroke, welding flash, diseases caused by parasites, etc.). Do not include minor treatments (first aid) for illnesses.

Recordable Medical Case (RMC) – An occupational injury more severe than first aid that requires advanced treatment (such as fractures, more than one stitch, prescription medication of more than one dose,

unconsciousness, removal of foreign body embedded in eye (not flushing), admission to a hospital for more than observation purposes) and yet results in no lost work time beyond the day of injury.

Restricted Work Day Case (RWDC) – An occupational injury which results in a person being unfit for essential functions of the regular job on any day after the injury but where there is no time lost beyond the day of injury. An example would include an injured worker is kept at work but not performing within the essential functions of their regular job.

Work or Work Related Activity – All incidents that occur in work related activities during work hours, field visits, etc. are reportable and are to be included if the occupational injury or illness is more serious than requiring simple first aid. Incidents occurring during off hours and incidents while in transit to or from locations that are not considered a worker's primary work are not reportable.

The following are examples of incidents that will not be considered as recordable:

- The injury or illness involves signs or symptoms that surface at work but result solely from a non-work-related event or exposure that occurs outside the work environment.
- The injury or illness results solely from voluntary participation in a wellness program or in flu shot, exercise class, racquetball, or baseball.
- The injury or illness is solely the result of a worker eating, drinking, or preparing food or drink for personal consumption (whether bought on the employer's premises or brought in). The injury or illness is solely the result of a worker doing personal tasks (unrelated to their employment) at the establishment outside of the worker's assigned working hours.
- The illness is the common cold or flu (Note: contagious diseases such as tuberculosis, brucellosis, hepatitis A, or plague are considered work-related if the worker is infected at work).

7.10 Corrective Actions

Site Managers are held accountable for closing corrective actions. Corrective actions for safety improvement input are posted at each site and tracked by the Safety Manager to ensure timely follow up and completion.

Corrective actions are also used as needed for revisions to site specific safety plans and the Vector Projects Group Ltd Health and Safety Management System.

All incident investigations will be brought to closure.

7.11 Legal Reporting Requirements

In addition to internal reporting requirement for Vector Projects Group Ltd there are additional legal requirements for notification:

7.11.1 Occupational Health & Safety Reporting

Vector Projects Group Ltd shall report to the appropriate provincial health and safety officer of the province in which they are working where the incident occurred: the date, time, location and nature of any accident, occupational disease or other hazardous occurrence that had one of the following results, as soon as possible but not later than 24 hours after becoming aware of an incident that resulted in any of the following:

- the death of an employee (immediate)
- a disabling injury to two or more employees
- the loss by an employee of a body member or a part thereof or the complete loss of the usefulness of the body member or a part thereof

- the permanent impairment of a body function of an employee; an explosion
- damage to a boiler or pressure vessel that results in fire or the rupture of the boiler or pressure vessel
- any damage to an elevating device that renders it unserviceable
- a free fall of an elevating device.
-

British Columbia OHS Reporting
WorkSafeBC 6951 Westminster Highway P.O. Box 5350 STN Terminal Richmond BC V6B 5L5 Health & Safety Questions **(604) 276-3100** **1-888-621-SAFE (7233)** General Inquiries: **(604) 273-2266** After hours safety and health emergency reporting: **(604) 273-7711** **1-888-621-SAFE (7233)** Fax: **(604) 276-3247** http://www.worksafebc.com/ Contact List/Regional Offices: http://www.worksafebc.com/contact_us/regional_locations/default.asp

7.11.2 WCB Registration & Renewals

Vector Projects Group Ltd shall report to the appropriate WCB office of the province in which they are working where the incident occurred: the date, time, location and nature of any accident, occupational disease or other hazardous occurrence that had one of the following results, as soon as possible but not later than 24 hours after becoming aware of an incident that resulted in any of the following:

- the death of an employee (immediate)
- a disabling injury to two or more employees
- the loss by an employee of a body member or a part thereof or the complete loss of the usefulness of the body member or a part thereof
- the permanent impairment of a body function of an employee; an explosion
- damage to a boiler or pressure vessel that results in fire or the rupture of the boiler or pressure vessel
- any damage to an elevating device that renders it unserviceable
- a free fall of an elevating device.

WCB legislation requires that Vector Projects Group Ltd only has **24-72 hours** (a fatality is reported immediately) to complete and submit the Employer's Report of Injury or Occupational Disease form after receiving notice or knowledge of an injury or illness that disables or will likely disable a worker beyond the date of accident. Reporting requirement timeframes vary depending on province.

Injuries that need to be reported are:

- Work-related injury that cause (or is likely to cause) a worker to be off work beyond the day of the injury.

- An injury that requires modified work beyond the day of injury.
- An injury that requires medical treatment beyond first aid.
- An injury that may result in a permanent disability.

If an injury is serious or had the potential to be serious, the local province may also conduct an investigation at the work site. When this happens, all employees are required to co-operate with the investigation.

British Columbia WCB Reporting
WorkSafeBC P.O. Box 5350 Vancouver BC V6B 5L5 Telephone: **604-273-2266** Toll-Free in Canada: **1-888-967-5377** Fax: 604-276-3151 www.worksafebc.com Quick Links: Injury/Illness Reporting Employer Registration Clearance Letters Legislation and Policy

7.11.3 RCMP/ Police

Current legislation requires a traffic collision be immediately reported to the police or RCMP or local provincial police if it results in death, injury, or property damage of provincially specified dollar amount. An incident report must be completed and data is then collected from these reports. Must report a collision to police within 24 hours of occurrence. Call **911** to reach local police or RCMP.

7.11.4 Incident Report and Investigation Forms

Vector Projects Group Ltd has developed standard Incident Report and investigation Forms for use. The investigation report must include the following:

1. the place, date and time of the incident
2. the names and job titles of persons injured in the incident
3. the names of witnesses
4. a brief description of the incident
5. a statement of the sequence of events which preceded the incident
6. identification of any unsafe conditions, acts or procedures which contributed in any manner to the incident
7. recommended corrective actions to prevent similar incidents
8. the names of the persons who investigated the incident.

7.11.5 First Aid Report

First aid legislation requires all injuries treated at the work site be recorded and the record be treated as confidential and kept in a secure area for three years. Vector Projects Group Ltd uses a First Aid Report to document all first aid cases.

7.11.6 Incident Report Form

The Vector Projects Group Ltd Incident Report Form is required to ensure that all relevant information is captured and maintained. The incident report form will be completed immediately after the event by the worker(s) involved and a copy given to the worker(s). The Vector Projects Group Ltd copy of the Incident Report Form is used to initiate the incident investigation and will be maintained on file.

7.12 TDG / Hazardous Goods Reporting Provincial Reporting Contacts

PROVINCE	PROVINCIAL AUTHORITY	APPROPRIATE PROVINCIAL AUTHORITY CONTACT #	
	CANUTEC (Federal)	1 (613) 996-6666.	
British Columbia	Provincial Emergency Program	1 (800) 663-3456	and Local Police

7.13 Environment Provincial Reporting Contacts

In the event of an environmental emergency or occurrence, such as an oil or chemical spill, federal and provincial/territorial authorities need to be notified in order to coordinate an adequate oversight of the response. Since environmental emergencies or occurrences are often local in nature and in order to reduce notification burden, the Canadian environmental notification system uses the following federal-provincial/territorial 24-hour authorities as the first point of contact. Environmental emergencies include hazardous or toxic spills, discharges, emissions, as well as dyke and dam failures, debris flows and floods.

British Columbia
Emergency Management British Columbia Ministry of Justice Telephone:: **1 800 663-3456**

8.0 PERSONAL PROTECTIVE EQUIPMENT (PPE)

8.1 Purpose

This Personal Protective Equipment procedure provides direction to managers, supervisors and workers about their responsibilities in the selection, use, care, disposal and safe work procedures related to personal protective equipment. The material in this document does not take precedence over applicable government legislation which all employees must follow.

8.2 Scope

This program is applicable to all employees.

When work is performed on a non-owned or operated site, the prime contractor program shall take precedence and shall be abided by. However, this document covers Vector Projects Group Ltd employees and contractors and shall be used on owned premises, or when a client's program doesn't exist or is less stringent.

8.3 Key Responsibilities

Vector Projects Group Ltd:

- PPE is correct for the hazard and protects the workers, be selected and is used in accordance with recognized standards.
- The PPE is in a condition to perform the function for which it was designed and is at the worksite before work begins.
- Be compatible, so that one item of PPE does not make another item ineffective.
- Ensure that the use of PPE does not in itself create a hazard to or endanger the worker.
- Certifies in writing the tasks evaluated, hazards found and PPE required to protect workers against hazards and ensures exposed workers are made aware of hazards and required PPE before they are assigned to the hazardous task.

Safety Manger

- Assists in the selection of appropriate PPE.
- Where it is not reasonably practicable to protect the health and safety of workers by design of facility and work processes, suitable work practices, engineering or administrative controls Vector Projects Group Ltd shall ensure that every worker wears or uses suitable and adequate personal protective equipment.
- The Safety Manager assists the supervisor and project manager to identify and select PPE suitable for the specific task performed, conditions present and frequency and duration of exposure. Workers need to give feedback to the supervisor about the fit, comfort and suitability of the PPE being selected.
- Assists Supervisor and Project Managers in assuring all PPE obtained meets regulatory and this procedure's requirements.
- Performs Worksite Hazard Assessments - Initially and as needed to assess the need for PPE. Sources of hazards include, but are not limited to: hazards from impact/motion, high/low temperatures, chemicals, materials, radiation, falling objects, sharp objects, rolling or pinching objects, electrical hazards and workplace layout.
- Vector Projects Group Ltd has a written Personal Protective Equipment (PPE) policy. If the hazard assessment indicates the need for PPE, Vector Projects Group Ltd must ensure that workers wear personal protective equipment that is correct for the hazard and protects workers, workers properly use and wear

the personal protective equipment and the personal protective equipment is in a condition to perform the function for which it was designed.

Project Managers and Supervisors

- Project Managers and Supervisors shall regularly monitor workers for correct use and care of PPE and obtain follow-up training if required to ensure each worker has adequate skill, knowledge and ability to use PPE.
- Project Managers and Supervisors shall enforce PPE safety rules following provisions of the Vector Projects Group Ltd progressive disciplinary procedures and ensure required PPE Poster is posted properly.

Workers

- Workers must wear the required PPE. The worker shall wear or use, as the case may be, the individual or collective protective means and equipment.
- Wearing of required PPE is a condition of employment.
- Inspect the equipment before use.
- Maintained PPE in good working order and in a sanitary condition.
- Report any defective equipment or malfunction to the supervisor or Vector Projects Group Ltd.
- A worker who is assigned responsibility for cleaning, maintaining, or storing PPE must do so in accordance with training and instruction provided.
- Reporting changes in exposure to hazardous conditions that might require a follow-up assessment of the task for PPE.
- Take reasonable steps to prevent damage to the PPE.

Employee owned personal protective equipment is allowed. Employee owned PPE must meet the same standards as company provided including care and attention.

8.4 Procedure

8.4.1 Worksite Hazard Assessment

During a hazard assessment Vector Projects Group Ltd looks for the following sample hazard sources:

- High or low temperatures, chemical exposures (use MSDSs for guidance).
- Flying particles, molten metal or other eye, face, or skin hazards.
- Falling objects or potential for dropping objects.
- Employee falling from a height of 6’ or more.
- Sharp objects, rolling or pinching that could crush the hands or feet, electrical hazards.

Where these hazards could cause injury to workers, personal protective equipment must be selected to substantially eliminate the injury potential. A certification of Worksite Hazard Assessment Form is located in each site specific HSE plan that the Safety Manager uses to identify potential workplace hazards.

8.4.2 Provisioning

Workers are responsible for providing clothing needed for protection against the natural elements, general purpose work gloves and appropriate footwear including safety footwear and safety headgear.

Vector Projects Group Ltd is responsible for providing, at no cost to the worker, all other items of personal protective equipment required by local regulatory requirements.

Vector Projects Group Ltd must ensure that PPE is stored in a location that is clean, secure and readily accessible by the worker, immediately repaired or replaced if it is rendered ineffective to provide the protection it was intended for, contaminated or defective with clean or decontaminated equipment.

Where PPE provided to a worker becomes defective or otherwise fails to provide the protection it was intended for, the worker shall return the PPE to Vector Projects Group Ltd or contractor and inform Vector Projects Group Ltd or contractor of the defect or other reason why the PPE does not provide the protection that it was intended to provide. Vector Projects Group Ltd or contractor shall immediately repair or replace any PPE returned.

8.4.3 General

Where there is danger of contact with moving parts of machinery the clothing of the worker shall fit closely about the body. Dangling neckwear, bracelets, wristwatches, rings or like articles shall not be worn and head and facial hair shall be completely confined or cut short so as not to extend to the shirt collar.

8.5 Selection of PPE

*Eye and Face Protectio*n - Workers exposed to eye hazards must wear eye protection. If a worker's eyes may be injured or irritated at a work site, Vector Projects Group Ltd must ensure that the worker wears properly fitting eye protection equipment that is approved to CSA Standard Z94.3-07, Eye and Face Protectors (or current version). Prescription safety eyewear having glass lenses must not be used if there is danger of impact unless it is worn behind safety glasses that meet the standard.

Head Protection - Workers exposed to head hazards must wear protective headgear. If there is a foreseeable danger of injury to a worker's head at a work site, Vector Projects Group Ltd must ensure that the worker wears industrial protective headwear that is appropriate to the hazards and meets the requirements of CSA Standard Z94.1-05, Industrial Protective Headwear (or current version).

Foot Protection - Workers exposed to foot hazards must wear foot protection. Vector Projects Group Ltd must ensure that a worker uses footwear that is appropriate to the hazards associated with the work being performed and the work site. If the hazard assessment identifies that protective footwear needs to have toe protection, a puncture resistant sole, metatarsal protection, electrical protection, chainsaw protection, or any combination of these, Vector Projects Group Ltd must ensure that the worker wears protective footwear that is approved to CSA Standard Z195-02, Protective Footwear (or current version).

Hand Protection - All workers must use gloves when handling objects that could injure the hands. If there is a danger that a worker's hand may be injured, Vector Projects Group Ltd must ensure that the worker wears properly fitting hand protective equipment that is appropriate to the work, the work site and the hazards identified.

Hearing Protection - All hearing protective equipment must conform to CSA standard Z94.2-94, "Hearing Protectors" (or current version).

Fall Protection - Fall protection must be provided when workers are exposed to a vertical fall of six feet or more over a lower level (1.83 meters). Fall protection must comply with CAN/CSA Z259.10-M90 (R1998), Full Body Harnesses.

Skin Protection - Workers exposed to skin hazards must wear protective equipment. Vector Projects Group Ltd must ensure that a worker's skin is protected from a harmful substance that may injure the skin on contact or may adversely affect a worker's health if it is absorbed through the skin.

Respiratory Protection - The use of respirators is not allowed unless approved by the Safety Manager who will insure all legally required respiratory protection procedures are completed. Product substitution is required to eliminate hazards protected by respirators.

Flame Resistant Clothing - Flame resistant clothing is worn by workers if they may be exposed to a flash fire or electrical equipment flashover. If a worker may be exposed to a flash fire or electrical equipment flashover, Vector Projects Group Ltd must ensure that the worker wears flame resistant outerwear and uses other protective equipment appropriate to the hazard.

Caustics - Workers handling or using acids, caustics and other harmful substances shall use personal protective equipment, or other means shall be adopted that will provide equivalent protection against these hazards.

Hazardous Substances - Where workers are routinely exposed to a hazardous material or substance, Vector Projects Group Ltd shall provide and require workers to use, protective clothing, gloves and eyewear or face shields that are adequate to prevent exposure of a worker's skin and mucous membranes to the hazardous material or substances.

Visibility Protection - A worker exposed to the danger of moving vehicles traveling at speeds in excess of 30 km/h must wear high visibility apparel.

8.6 Training

Each employee who may need to wear PPE is properly trained and/or retrained. Workers are trained on the correct selection, inspection, use and care, limitations and assigned maintenance of the PPE (personal protective equipment). Each worker must be trained to know at least the following:

1. When and why personal protective equipment is necessary.
2. What personal protective equipment is necessary?
3. How to properly inspect before use, adjust and wear personal protective equipment.
4. How to properly don, doff, adjust & wear PPE
5. Refrain from wearing personal protective equipment outside of the work area where it is required if to do so would constitute a hazard.
6. Report any equipment malfunction to the supervisor or Vector Projects Group Ltd.
7. Useful life & disposal of PPE
8. The limitations of the personal protective equipment.
9. Proper wearing of flame resistant clothing if used.
10. The proper use, care, cleaning, storage, assigned maintenance duties, useful life and disposal of the personal protective equipment to be used.
11. To not use any PPE unable to perform the function for which it is designed.

Workers shall be trained during orientation by the company assigned safety coordinator. Each worker shall demonstrate an understanding of the training and the ability to use personal protective equipment properly before being allowed to perform work requiring the use of PPE. When Vector Projects Group Ltd has reason to believe that any affected worker who has already been trained does not have the understanding and skill required to use PPE Vector Projects Group Ltd shall retrain the worker.

CSA CERTIFICATION MARK FOR CANADA Indicates footwear is CSA-certified to Canadian national requirements CLASSES OF PROTECTION One or more of these markings will appear on the outer side or the tongue of the right shoe		
	Green triangle indicates sole puncture protection with a Grade 1 protective toe to withstand impacts up to 125 Joules.	For any industry, especially construction and heavy work environments, where sharp objects, such as nails are present.
	Yellow triangle indicates sole puncture protection with a Grade 2 protective toe to withstand impacts up to 90 Joules. Comparable to a 22.7 kg (50 lb) weight dropped from 0.4 m. Sole puncture protection is designed to withstand a force of not less than 1200 Newtons (270 lbs) and resist cracking after being subjected to 1.5 million flexes.	For light industrial work environments requiring puncture protection as well as toe protection.
	Blue rectangle indicates Grade 1 protective toe without sole puncture protection. Grade 1 protective toe withstands impacts up to 125 Joules. Comparable to a 22.7 kg (50 lb) weight dropped from 0.6 m.	For industrial work environments not requiring puncture protection.
	Grey rectangle indicates Grade 2 protective toe without sole puncture protection. Grade 2 protective toe withstands impacts up to 90 Joules. Comparable to a 22.7 kg (50 lb) weight dropped from 0.4 m.	For institutional and non-industrial work environments not requiring puncture protection.
	White label with green fir tree symbol indicates chainsaw protective footwear. Protective features are designed into the boots to prevent a running chainsaw from cutting all the way through the boot uppers so as to protect the shins, ankles, feet and toes.	For forestry workers and others exposed to hand-held chain saws or other cutting tools.
	White rectangle with orange Greek letter omega indicates soles that provide resistance to electric shock. Such certified footwear contains a sole and heel design assembly that, at the point of manufacturing, has electrical insulating properties intended to withstand 18,000 Volts and a leakage current not exceeding 1 mA.	For any industry where accidental contact with live electrical conductors can occur.
	Yellow rectangle with green “SD” and grounding symbol indicates soles are static-dissipative. The outer soles are made from an antistatic compound, chemically bound into the bottom components, capable of dissipating an electrostatic charge in a controlled manner.	For any industry where a static discharge can create a hazard for workers or equipment.
	Red rectangle with black “C” and grounding symbol indicates soles are electrically conductive. The outer soles are made from a conductive compound that is permanently bound to the bottom components to provide electrical grounding of each foot. Test criteria are 0 to 500,000 Ohms.	For any industry where static discharge may create a hazard of explosion.

8.7 Section Forms

PPE MATRIX

D = Depends on customer requirements & situation M = Mandatory _ = Not Mandatory unless hazards become present **SUBJECT TO CHANGE BASED ON INDIVIDUAL WORKSITE CUSTOMER REQUIREMENT &/OR WORKSITE HAZARDS PRESENT**					**JOBSITE**		
CATEGORY	**EQUIPMENT**	**HAZARD**	**INSPECTION**	**MAINTENANCE**	**Office**	**Field Visit**	**Driving**
Head Protection	Hard Hat	Striking Head or Falling Objects	Each use	Dispose			
Eye Protection	Safety Glasses Sun Glasses	Objects Striking Eyes, Flying particles Sun/Snow Glare	Each use	Dispose			
Lung Protection	Respirator/ supplied air	Breathing dangerous chemicals/particles	Each Use	Supplied by customer if risk of dangerous gases/fumes			
Body Protection	Coveralls, Flame Resistant Clothing, Insulated Winter Clothing	Cold Temperature Chemicals Fire/Explosion	Each use	As per manufacturer specifications			
Foot Protection	Steel Toed Boots	Slipping / Falling objects	Each use	Dispose			
Hand Protection	Gloves	Cuts Biohazardous materials Injuries to Hands Environmental Exposure Hot Water Burns	Each use	Dispose			
Hearing Protection	Disposable earplugs	Damage to Hearing (85 db)	Each use	Dispose			

8.8 Traffic Control

Vector Projects Group Ltd shall develop, in writing, and implement a traffic protection plan for its workers at a worksite if any of them may be exposed to a hazard from vehicular traffic that may endanger the safety of any worker. It shall include the following control measures:

- Effective means of traffic control shall be provided whenever the unregulated movement of vehicular traffic constitutes a hazard to workers.
- Vector Projects Group Ltd shall ensure the use of signs, barricades and other control measures to protect workers from traffic hazards. Where workers are working on or near a road where they may be injured by vehicular traffic, a system must be in place to protect the workers. Control measures include:
    - warning signs;
    - barriers;
    - barricades;
    - lane control devices;
    - flashing lights;
    - flares;
    - conspicuously identified pilot vehicles;
    - automatic or remote controlled traffic control systems;
    - proper reflective clothing and equipment for day and night or low visibility operations;
    - speed restrictions;
    - one or more workers who are designated and act as flagpersons.
- Traffic control personnel must wear high visibility work apparel. To ensure optimal visibility, the traffic control person should be provided with a high visibility traffic control paddle and high visibility apparel (brightly colored vest with reflectorized stripes, safety headgear with reflectorized tape, reflective wrist and leg bands, white gloves).
- Traffic control persons operating during hours of darkness or when there is poor visibility are provided with a reflective paddle and a flashlight fitted with a red signalling device. During hours of darkness or when there is poor visibility, the traffic control person should be equipped with a reflective paddle and a flashlight fitted with a red signaling device.
- A means of communication is provided when there is more than one traffic control person. When there are multiple traffic control persons that are not working within sight of each other, an effective means of communication should be provided and used (preferably radios).

8.8.1 Training

- Workers involved in traffic control are provided training.
- Vector Projects Group Ltd must ensure that workers required to perform traffic control duties are adequately trained in their responsibilities and the safe work practices.
- Vector Projects Group Ltd must ensure that before a worker is designated as a flag person, the worker is trained in the safe work procedures for the safe control of traffic operations.

8.9 Driving Safety Requirements

Drivers must possess a valid driver's license. Operators of Vector Projects Group Ltd or client on or off road vehicles are responsible for possessing a valid driver's lines for the type of motor vehicle they operate.

Driver abstracts are obtained and reviewed for all drivers of Vector Projects Group Ltd owned vehicles or drivers of client vehicles. A driver abstract contains information on the operator's license, conviction information, demerit points and suspensions.

Drivers shall have 3 years of driving experience on the vehicle he/she is licensed to drive and regularly drives.

Backing is prohibited whenever practicable. Pull-through (pulling through a space so the vehicle is facing outwards in the next space) parking techniques are to be employed in parking lots whenever practicable. Where pull-through techniques cannot be utilized operators of motor vehicles should back into the parking spot. This provides the operator an easier exit from the parking area as well as a quick exit in case of an emergency. A spotter should be used if required to back up.

Drivers must have either a reversing alarm, use a spotter or walk around the truck/trailer prior to backing.

Cargo must be adequately secured. Passenger compartments are to be free from loose objects that might endanger passengers in the event of an incident. Any cargo on or in motor vehicles must be adequately stored and secured to prevent unintentional movement of the equipment which could cause spillage, damage to the vehicle or injury to the operator.

Vehicles (light vehicles, heavy vehicles and trailers) may not be modified without the endorsement of the manufacturer.

Signs, stickers or labels are to be fitted in such a manner that they do not obstruct the driver's vision or impede the driver's use of any controls.

8.9.1 Employees driving vehicles must:

- Be expected to obey all local and provincial traffic laws and rules of the road as well as requirements of clients while on company business;
- Immediately report any motor vehicle incident, citation, warning, vehicle damage or near miss associated with employer or client owned or leased vehicles to the Vector Projects Group Ltd supervisor. The general procedures include:
  - Immediately call for medical assistance if there are any injuries associated with the incident.
  - Then notify local law enforcement if on public roads or property. Stay at the scene.
  - Then notify Vector Projects Group Ltd supervisor of the situation and if directed also notify the client if on client property.
  - Following any vehicle incident there shall be a drug and alcohol screening.
- Immediately report any restriction or change to their driving privileges to the supervisor.
- Seat belts shall always be worn by the driver and all passengers. Seat belt use is mandatory for the driver and passengers while operating a motor vehicle.
- All vehicles capable of more than 10 mph/15 kph shall have seat belts installed.
- Defensive drivers continually assess conditions and hazards and remain prepared for any challenge that may approach them;
- When speaking with a passenger, always keep your eyes on the road;
- Both hands on the wheel;
- Handheld use of cell phones and/or texting devices while driving is prohibited. All cell phone use, including hands-free, is prohibited while operating a vehicle on any road including when on owner client property.
- Slow down around construction, large vehicles, wildlife, fog, rain, snow, or anything else that adds a hazard to your driving;
- Drive for conditions, not just the speed limit;
- Operators of motor vehicles must not drive while under the influence of alcohol or drugs. Employees are strictly prohibited from operating a motor vehicle while under the influence of drugs or alcohol. This includes blood alcohol level at or above the local legal limit, illegal drugs and prescription medications that cause drowsiness or other conditions that may cause impairment.

8.9.2 Pre-Use Inspections:

Pre-Use inspections must be completed before operating motor vehicles and regular maintenance performed as per manufacturer guidelines. Elements of the pre-use inspection shall include:

- Perform 360 walk around – report new damage or defects;
- Check windshield for cracks that could interfere with vision;
- No barriers blocking the path.
- Inspect for vehicle damage and immediately report any damage to the supervisor if not previously observed;
- Make sure dirt or snow is removed from lights on all sides of the vehicle;
- Brush or clean off snow or ice on all windows to ensure complete vision;
- Check fuel level to be certain the destination can be reached;
- Check to ensure the license plates and inspection tag on vehicle are current;
- Ensure that there is a first aid kit and inspected fire extinguisher in the company vehicle;
- Ensure driver is rested and alert for driving;
- Employees are not to perform repairs or maintenance other than routine fluid additions.

8.9.3 Maintenance and Vehicle Requirements

- Each site shall have a maintenance program in place meeting the minimum manufacturer's recommendation.
- All company vehicles shall be outfitted with an adjustable steering column.
- All company vehicles shall be outfitted with an independently adjustable driver's seat (at a minimum, moveable forward and rearward).
- All company vehicles will be outfitted with a functional air conditioning/heating system that is able to maintain an in-cab temperature range of 5*C/41*F to 30*C/86*F under all local climatic and driving conditions and the air conditioning unit will use a nonozone-depleting refrigerant.
- All drivers of light vehicles shall carry a high visibility jacket for use in case of emergency stops.
- All instrumentation will be in the local unit of measurement (e.g. speedometer, fuel gauge).
- All light duty vehicles (including buses) are to be equipped with an adjustable left, right and central rear view mirrors
- All light duty vehicles carry a minimum of one collapsible hazard warning triangle.
- All light equipment vehicles shall be outfitted with two red high-intensity lights located as high, as far apart, and as far back as practical, wired to the headlight switch, but also with an override switch, if permitted by local regulations.
- All light vehicles registered after July 1, 2006 will be equipped with Anti-Lock Braking Systems (ABS).
- All light vehicles shall be equipped with a securely stowed first aid kit.
- All seats are to be fitted with headrests. Where practical all company vehicles will be outfitted with a radio, cassette or cd player (or equivalent) to help reduce driver fatigue.
- All vehicle door locking systems will be equipped with an override in order that occupants can open the doors after the vehicle has been locked externally.
- All vehicles are to be equipped with a multipurpose fire extinguisher with a capacity of at least 0.9 kg/2 lb. The fire extinguisher shall be securely mounted on a bracket and located so that it is easily accessible in an emergency without becoming a hazard in case of an incident.
- All vehicles shall have a mobile phone, 2-way radio, or other such communication device that allows communication with emergency response personnel or Vector Projects Group Ltd managers.
- All vehicles will be outfitted with an adjustable steering column and the vehicle steering wheel will be located on the left hand side of the vehicle.
- Driver shall ensure that passenger compartments are free from loose objects that might endanger passengers in the event of an incident.
- Drivers must have a reversing alarm, use a spotter or walk around the truck/trailer prior to backing.

- Drivers shall have 3 years of driving experience on the vehicle he/she is licensed to drive and regularly drives. All vehicles will be equipped with a mobile phone, 2-way radio, or other such communication device that allows communication with emergency response personnel or company managers.
- No passengers are allowed on trucks used to deliver goods.
- No vehicle less than 1000 kg is to be used on public roads. All company vehicles (light, heavy and trailers) shall be suitable for operation in local climate conditions
- Only seats fitted with three-pointed inertia-reel type seatbelts shall be used.
- Rollover protection will be installed in any vehicle to address high risk environments. The rollover protection engineered will conform to recognized regulatory standard and industry preferred practices.
- Tire type and pattern is to be recommended by the vehicle or tire manufacturer for use on the vehicle in the area of operation.
- Tires are to be radial with a minimum tread depth of 1.6mm [1/16 inch], 2.0mm across 75% of the tire width and tread-pattern visible across 100% of the tire.
- Tires, including spares if full size, are to be of same type, profile and tread pattern, except when the vehicle or tire manufacturer recommends a different type for certain axles.
- Vehicles (light vehicles, heavy vehicles and trailers) may not be modified without the endorsement of the manufacturer.
- Vehicles are to be fitted with a spare wheel and changing equipment to safely change a wheel, or a suitable alternative.
- Vehicles longer than 6 meters/20 feet or with restricted rear view (i.e. pickup trucks that are fully loaded) are to be fitted with an audible reversing alarm.
- Vehicles must be safety parked prior to using a mobile phone or 2-way radio.
- Vehicles shall be outfitted with an independently adjustable driver's seat (at a minimum, moveable forward and rearward).

9.0 DRUG & ALCOHOL PROGRAM

9.1 Purpose

Vector Projects Group Ltd strives to achieve a safe and healthful work environment for all workers of Vector Projects Group Ltd. This Drug and Alcohol Policy endeavors to prevent accidents and casualties in Vector Projects Group Ltd operations that result from impairment of workers who use alcohol or drugs or their use of alcohol or drugs. Vector Projects Group Ltd has determined that a uniform and effective drug policy be established.

It is also the objective of these policies to protect the well-being and property not only of Vector Projects Group Ltd workers, but also all other persons on company premises, including visitors and guests. By the establishment of these policies, Vector Projects Group Ltd is seeking the protection of all property of Vector Projects Group Ltd and of its workers, from damage, loss or theft.

9.2 Scope

The Vector Projects Group Ltd Drug & Alcohol program applies to all staff in Canada. Employees are required to adhere to the Drug & Alcohol policies already in place at customer locations. Employees are required to participate in the process and follow the process guidelines.

9.3 Requirements

All workers of Vector Projects Group Ltd must accept responsibility for their own safety and fitness to work and for the safety of others. This commitment encompasses conduct or behaviour off site or during non-working hours that may adversely affect their ability to work safely and reliably perform their duties during their shift. The policy is also being established to incorporate COAA Canadian Model for Providing a Safe Workplace - Alcohol and Drug Guidelines and Work Rules and the requirements of the client as per their local requirements.

9.4 Roles and Responsibilities

Project Manager

- provide a safe workplace
- provide prevention programs that emphasize awareness, education and training with respect to the use of alcohol and drugs
- ensure effective worker assistance services are available to workers
- assist workers in obtaining confidential assessment, counselling, referral and rehabilitation services
- actively support and encourage rehabilitation activities and re-employment opportunities where applicable
- ensure completion of supervisory training and awareness in dealing with the use of alcohol and drugs in the workplace
- participate with unions, worker associations and employer organizations to assist in the provision of rehabilitating opportunities for persons who have problems with the use of alcohol and drugs
- ensure that all workers understand the existence of and content of the policy and procedures as part of the worker's orientation.
- ensure that the alcohol and drug testing is performed according to the standards set out in this document.

Supervisors or leaders

- be knowledgeable about the company's alcohol and drug policy and procedures
- ensure they comply with the standards as part of their responsibility to perform their work-related activities in an effective and safe manner
- be knowledgeable about the use of alcohol and drugs and be able to recognize the symptoms of the use of alcohol and drugs
- take action on performance deviations
- take action on reported or suspected alcohol or drug use by workers

Workers

- have an understanding of the alcohol and drug policy and ensure they comply with the policy
- remain fit to work at all times when schedule to be on call and take responsibility to ensure their own safety and the safety of others
- follow appropriate treatment if deemed necessary
- use medications responsibly, be aware of potential side effects and notify their supervisor of any potential unsafe side effects where applicable
- encourage their peers or co-workers to seek help when there is a potential breach or breach of policy.

9.5 Policy Statement

The use, abuse, reporting to work with detectable amounts in the system, bringing onto Vector Projects Group Ltd premises, Vector Projects Group Ltd property (as defined above), possession, transfer, storage, concealment, promotion or sale of the following substances and other items as listed below by workers of Vector Projects Group Ltd is strictly prohibited.

The possession of illegal drugs, unauthorized controlled substances, look-alikes, inhalants of abuse, designer and synthetic drugs, alcohol or intoxicating beverages (including the presence of any detectable amount in the worker's body while working), and any other drugs or substances which may affect a person's perception, performance, judgment, reactions or senses while working or while on Vector Projects Group Ltd business, including any and all drugs declared to be illegal under any Federal or Provincial law is prohibited.

The possession or the reporting to work or working with detectable amounts in the system of alcoholic or intoxicating beverages on Vector Projects Group Ltd premises which may affect a worker's mood, senses, responses, motor functions, or alter or affect a person's perception, performance, judgment, reactions or senses while working or while on Vector Projects Group Ltd premises, the bringing onto Vector Projects Group Ltd premises (as defined above), or the possession, transfer, storage, concealment, transportation, promotion or sale of alcoholic or intoxicating beverages is prohibited.

The possession or the reporting to work or working with drug-related paraphernalia, including any material or equipment used or designed for use in testing, packaging, storing, injecting, ingesting, inhaling or otherwise introducing into the human body an illegal, unauthorized controlled or dangerous substance as defined by this policy is prohibited. The legal use of prescription drugs (Legally Controlled Substances) prescribed by a licensed physician are permitted, however:

- Employees will immediately inform their supervisor prior to using prescribed drugs or medication on the job.
- Medication will be in its original vial or be in a vial provided by the pharmacist commonly referred to as "day carriers" and will be in the worker's name and will have the doctor's name and the prescription number on the label, as well as the date of issuance.
- Each prescription will be not older than one (1) year of the date issued.
- Employees will only possess a reasonable amount of medication for a normal shift.

- The worker whose name appears on the label of the vial will not allow any other company worker, visitor, guest, subcontractor or any other person to consume the prescribed drug or medication.
- The worker will not consume the prescribed drug or medication more often than as prescribed by the worker's physician and as set out on the label of the vial.

9.6 Prevention

This policy stresses the importance of prevention and early identification of potential problem situations. Employees will be provided with information on health and safety, recognizing related performance problems, and the process to access the company Employee Assistance Program for assistance with an alcohol or drug problem, or any other personal problem that may be affecting work performance.

9.7 Assessment Referral

Individuals who suspect they have a substance dependency or emerging alcohol or drug problem are encouraged to seek advice and to follow appropriate treatment properly before performance is affected or violations of this policy occur. No one with an alcohol or drug problem will be disciplined for voluntarily requesting help in overcoming his or her problem. However, they are expected to access help prior to the initiation of disciplinary action under this policy. Employees taking prescription or non-prescription medication, which may cause drowsiness, dizziness, or other potential adverse side effects that could affect work, must notify their supervisor. The supervisor will involve the local occupational health staff in a "fit for duty" assessment. Supervisors, through performance management and in consultation with the local occupational health staff shall address any situation when a worker at works does not appear to be fit for duty.

9.8 Treatment Rehabilitation

Vector Projects Group Ltd philosophy of treatment rehabilitation is if a worker who voluntarily seeks assistance will be referred to local Vector Projects Group Ltd representatives to seek treatment under their medical benefit plan. Where in the opinion of a qualified professional there is a risk an individual could not do their job safely, the individual will be removed from that job until management is confident they are able to return to work safely.

When a worker is voluntarily undergoing treatment for a substance abuse problem, Vector Projects Group Ltd will ensure that they receive the time off that is required to participate in the program. If the worker who is undergoing rehabilitation needs to be placed in a treatment facility, Vector Projects Group Ltd will hold employment for the individual until they have successfully completed the rehabilitation process. Once management is fully confident that the worker has been rehabilitated they can return to work. Employees should understand that Vector Projects Group Ltd reserves the right to inquire with the rehabilitation facility as to the progress with your treatment and as to your commitment to attendance.

Employees should understand that voluntarily accessing assistance does not eliminate the requirement for participation in an aftercare program, and maintenance of satisfactory performance levels. Disciplinary action under the policy cannot be avoided by a request for concealing or treatment, or by disclosure of that when individual is already involved in a treatment program.

9.9 Fit for Duty Procedure

- Each supervisor is responsible for taking appropriate action when he/she has specific, objective and documentable grounds to believe a worker is unfit for duty. Another supervisor may be called to the work location to assist in the investigation as outlined.
- In the interest of safety, the supervisor will ensure the worker is removed from the workplace immediately and escorted to a safe place.

- Supervisor will notify the worker representative, may request another supervisor to observe the worker, and may involve other health or safety personnel as required or appropriate.
- Should the worker request a fellow worker or representative to be present, the supervisor will comply.
- Supervisor will give the worker the opportunity to explain why he/she appears to be in a condition unfit for duty.
- Supervisor should attempt to ascertain the nature and severity of the problem and determine if it is a possible violation of this policy, however, the supervisor should not attempt to diagnose a potential health problem.
- After giving the worker the opportunity to explain his/her condition, and after consultation with a worker representative, if the supervisor still believes the worker is in a condition unfit for normal duty.
- The worker should be referred to the appropriate emergency care center (i.e. hospital) or appropriate contracted treatment facilities for further medical attention if it appears to be a medical problem. The supervisor will involve the local occupational health staff in a "fit for duty" assessment.

10.0 WHMIS

10.1 Purpose

It is the policy of Vector Projects Group Ltd that special precautions are taken when manufacturing, using, handling, storing and disposing of controlled products. The material in this document does not take precedence over applicable government legislation which all employees must follow. WHMIS (Workplace Hazardous Materials Information System) is regulated by the Hazardous Products Act. WCB administers these requirements.

10.2 Scope

This program applies to all workers of Vector Projects Group Ltd, temporary workers and any contractors working for Vector Projects Group Ltd.

When work is performed on a non-owned or operated site, the operator's program shall take precedence, however, this document covers Vector Projects Group Ltd workers and contractors and shall be used on owned premises, or when an operator's program doesn't exist or is less stringent.

10.3 Responsibilities

Managers

It is the responsibility of each manager to ensure WHMIS requirements are met in all locations under his or her authority, which includes -

- Labelling of all containers.
- Educating employees on WHMIS
- Providing personal protective equipment (PPE) and monitoring use.
- Ensuring Material Safety Data Sheets (MSDS) for all controlled products are current and available to employees.
- Maintaining an updated Controlled Product Inventory.
- Providing the designated supervisor with a copy of the current Controlled Product Inventory List.

Employees

- To reduce the risk of a controlled product exposure employees are expected to comply with WHMIS legislation and this program and therefore be familiar with labelling and material safety data sheets (MSDS) of controlled products used in the workplace.
- Employees shall follow all label and MSDS requirements.
- Employees will immediately report any concerns regarding the WHMIS program to their supervisor.

10.4 Procedure

1. No WHMIS controlled products or materials will be allowed to be used unless there is a valid Material Safety Data Sheet available on-site and there is a supplier or workplace label on the container for any controlled product that is produced, manufactured or used at a Vector Projects Group Ltd site.
2. Vector Projects Group Ltd will ensure the MSDS is obtained from the supplier when receiving a controlled product on each job site.
3. Vector Projects Group Ltd will ensure that MSDS are filed at the work site where they will be readily accessible to employees.
4. When a supplier MSDS obtained for a controlled product is 3 years old, Vector Projects Group Ltd must, if possible, obtain from the supplier an up-to-date supplier MSDS for the controlled product if any of the product remains in the workplace.
5. Vector Projects Group Ltd will ensure that MSDS are available and posted near the work site where controlled products are used.

6. Managers will ensure that employees are notified if a controlled product is to be used in an open area or where fumes may migrate.
7. A Controlled Product Inventory List and Material Safety Data Sheets shall be kept at a main location and will be made available to employees for review.

10.5 Storage of Harmful Substances

All containers, used or handled at a workplace, which by reason of toxicity, flammability or reactivity create risk to the health or safety of employees shall be contained, so far as is reasonably practicable in a suitable container which is clearly labelled to identify the substance, the hazards associated with its use or handling, the workplace uses for which it is intended and protective measures to be taken by employees before, during and after its use.

Vector Projects Group Ltd will ensure that residue or waste from the substance or materials used for cleaning or wiping it is placed into suitably labelled containers for safe disposal.

Harmful substances are to be stored in a self-contained enclosure, room or building that is isolated from work-related areas and worksites and is adequately ventilated and protected from conditions, including excessive temperature, shock or vibration that could reduce the stability or increase the potential hazard of the substance.

10.6 Material Safety Data Sheets

Material Safety Data Sheets (MSDS) are obtained for all controlled products. When Vector Projects Group Ltd acquires a controlled product for use at a workplace it must obtain a supplier MSDS for that controlled product if the supplier is required to prepare an MSDS.

MSDS's for hazardous materials to which Vector Projects Group Ltd employees have been exposed must be maintained after the employee leaves the employment of Vector Projects Group Ltd. Before any non-routine task is performed, employees will be advised of special precautions. In the unlikely event that such tasks are required, the operations manager will provide MSDS for involved controlled product.

MSDS are readily available to employees. Vector Projects Group Ltd must ensure that a copy of an MSDS is made readily available at the workplace to workers who may be exposed to the controlled product and to the joint committee or to the worker health and safety representative, as applicable.

If Vector Projects Group Ltd is required to make an MSDS readily available, it may be made available on a computer system if Vector Projects Group Ltd takes all reasonable steps to keep the system in active working order, makes the MSDS readily available on the request of a worker and provides training in accessing computer-stored MSDS to one or more workers working at a workplace where the MSDS is available on a computer terminal and members of the joint committee or the worker health and safety representative as applicable.

The joint health and safety committee, the employee health and safety representative, and the workplace health and safety designate have the right to request MSDS on any controlled product and it must be provided without any issues as well as any further hazard information of which Vector Projects Group Ltd is aware or ought to be aware concerning the use, storage and handling of that product.

10.7 Labels, Labelling and Warnings

Supplier labels must be affixed to the original containers of controlled products. If labels are missing or illegible, they should be replaced with workplace labels.

Vector Projects Group Ltd must ensure that the container of a controlled product or a controlled product received at a workplace is labelled with a supplier label. As long as any amount of a controlled product remains in a workplace in the container in which it was received from the supplier Vector Projects Group Ltd must not remove, deface, modify, or alter the supplier label. If a label applied to a controlled product or a container of a controlled product becomes illegible or is accidentally removed from the controlled product or the container, Vector Projects Group Ltd must replace the label with either a supplier label or a workplace label.

Labels, tags or markings on containers shall list as a minimum:

- Words, pictures, symbols or combinations thereof may be used.
- The trade name of the product as listed on the Material Safety Data Sheet.
- Appropriate hazard warnings to help employees protect themselves from the hazards of the substance.
- Labels provided by controlled product manufacturers, distributors, and importers must also list the name and address of the manufacturer, importer, or vendor responsible for the controlled product, and from whom more information about the controlled product can be obtained.

Workplace labels must be affixed to controlled products that have been transferred from the original container into another container. If a controlled product in a workplace is in a container other than the container in which it was received from a supplier, Vector Projects Group Ltd must ensure that the container has a workplace label applied to it.

Labels provide the following information:

- The product identifier.
- Safe handling information.
- Reference to the fact that a material safety data sheet [MSDS] is available.

Used for the following purposes:

- Storage containers of controlled products produced on-site.
- Storage containers intended to receive bulk shipments (unless the supplier provides a label).
- Portable containers into which product has been transferred by a worker where the container will be used by other workers or for longer than a work shift.

All controlled products are labelled with either a supplier label or a work site label. Vector Projects Group Ltd has a procedure to ensure that a controlled product or its container at a work site has a supplier label or a work site label on it.

Vector Projects Group Ltd will ensure that a controlled product or the container of a controlled product that is received from a supplier at a place of employment is labelled with a supplier label. Vector Projects Group Ltd or any worker, shall not remove, deface, modify or alter the supplier label on the container of a controlled product as long as any amount of the controlled product remains at the place of employment in the container in which it was received from the supplier.

Employees who are unsure of the contents of any container, vessel or piping must contact their supervisor for information regarding the substance including:

- The name of the substance
- The hazards related to the substance
- The safety precautions required for working with the substance.

10.7.1 Hazardous Waste

Hazardous waste is labelled and workers are trained on safe handling of hazardous waste. Vector Projects Group Ltd shall ensure that hazardous waste is handled and stored safely by means of a training and information program and by labels or signs that identify the waste and indicate the precautions to be taken in handling it and in case of exposure to it.

10.7.2 Supplier Labels

Distinctive "hatch mark" border, letters, numbers which contrast distinctly from any other markings on the containers.

Includes seven categories of information:

1. **Product Identifier -** product name or number which will be identical to the product identifier on the MSDS.

2. **Supplier Identifier -** this will include the supplier, manufacturer or importer's name and the location of the principal place of business.

3. **Reference to MSDS** - will appear on the WHMIS label when an MSDS is required.

4. **WHMIS Hazard Symbols -** must meet the regulatory specifications with a distinctive circular border, and must be displayed in a colour that will not be confused with TDG safety marks, such as the orange explosive symbol found in TDG regulations. Prohibited colours are contained in the WHMIS Regulations. Often these are black and white only.

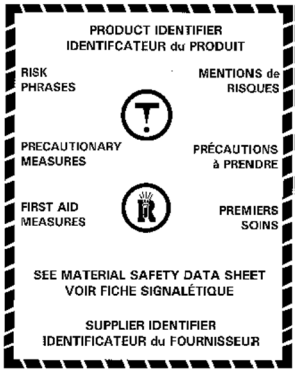
5. **Risk Phrases -** clearly indicates the risks involved when using the product.

6. **Precautionary Measures -** safe handling, use and storage information for the product.

7. **First Aid Measures -** clear description of the immediate steps to be taken in the event of harmful contact with the product

Supplier labels must be affixed to the original containers of controlled products. If labels are missing or illegible, they should be replaced with workplace labels.

Supplier's Label Sample
Source - Health Canada Website



10.7.3 Worksite Label

Provides the following information:

- The product identifier.
- Safe handling information.

- Reference to the fact that a material safety data sheet [MSDS] is available.
- Used for the following purposes -
- Storage containers of controlled products produced on-site.
- Storage containers intended to receive bulk shipments (unless the supplier provides a label).
- Portable containers into which product has been transferred by a worker where the container will be used by other workers or for longer than a work shift.

Worksite Label Sample

Acetone
Extremely Flammable
Keep away from all sources of ignition
Wear butyl rubber gloves and chemical splash goggles
See MSDS

If Vector Projects Group Ltd produces a controlled product in a workplace it shall ensure that the controlled product or the container of the controlled product has a workplace label.

Employees who are unsure of the contents of any container, vessel or piping must contact their supervisor for information regarding the substance including:

- The name of the substance
- The hazards related to the substance
- The safety precautions required for working with the substance.

Labels, tags or markings on containers shall list as a minimum:

- Words, pictures, symbols or combinations thereof may be used.
- The trade name of the product as listed on the Material Safety Data Sheet.
- Appropriate hazard warnings to help employees protect themselves from the hazards of the substance.
- Labels provided by controlled product manufacturers, distributors, and importers must also list the name and address of the manufacturer, importer, or vendor responsible for the controlled product, and from whom more information about the controlled product can be obtained.

10.8 Training

All workers who work with or near controlled products are provided WHMIS training. Vector Projects Group Ltd must ensure that a worker who works with or in proximity to a controlled product is instructed in:

- procedures for the safe use, storage, handling and disposal of the controlled product,
- the safe use, storage, handling, and disposal of a controlled product contained or transferred in a pipe or a piping system including valves, a process or reaction vessel, or a tank car, tank truck, ore car, conveyor belt or similar conveyance,
- procedures to be followed if the controlled product escapes from equipment, or from another product and
- procedures to be followed in case of an emergency involving a controlled product. Instruction must be specific to the workplace and cover the safe work procedures and emergency response procedures to be used in the workplace.

Vector Projects Group Ltd shall review at least annually or more frequently if required by a change in work conditions or available hazard information, and in consultation with the joint health and safety committee, the employee health and safety representative or the workplace health and safety designate, the instruction

and training provided to employees concerning controlled products. The documented additional training shall, as a minimum, include:

- Requirements and rights and responsibilities of Vector Projects Group Ltd and of the employee as contained in the WHMIS regulations.
- Operations and work areas where controlled products are present.
- Location and elements of the written WHMIS Program, and the Controlled Product Inventory List.
- How to access MSDS's or MSDS information.
- How to read labels and Material Safety Data Sheets for pertinent hazard information.
- Content required on supplier labels, work site label and the purpose and significance of the information on the label.
- Content required being on a MSDS and the purpose and significance of the information on the MSDS.
- Procedures for safely storing, using and handling the controlled product.
- How to determine the presence or release of a hazardous substance or fugitive emissions when working with a controlled product.
- Major hazards of the controlled products in use in the workplace.
- Physical and health effects of over exposure to hazardous substances in the workplace and how to work safely with the controlled product.
- How personnel can protect themselves or prevent exposure to hazardous substances, through the use of protective equipment, proper work practices and engineering or environmental controls.
- The proactive steps Vector Projects Group Ltd has taken to prevent exposure to hazardous substances and non-routine tasks.
- Emergency procedures involving a controlled product and emergency first aid procedures to follow for exposure or harm caused by hazardous substances.

Additional training will be provided whenever a new controlled product hazard is introduced into the work area. To reinforce the importance of handling controlled products properly when performing new or non-routine tasks, Vector Projects Group Ltd will conduct supplementary training as needed.

Formal training will be conducted by facility employees or individuals who are knowledgeable in the WHMIS program.

10.9 WHMIS Classifications and Symbols

W.H.M.I.S.	WHMIS provides you with information on the safe use, storage, handling and disposal of hazardous materials at Canadian workplaces. For more information, **consult the MSDS**, and visit the Health Canada WHMIS Web site - **www.health.gc.ca/whmis**
	See Emergency Contact Numbers: Poison Center / Medical / Fire

	Class A Compressed Gas This class includes compressed gases, dissolved gases and gases liquefied by compression or refrigeration. Examples - gas cylinders for oxyacetylene welding or water disinfection.	May displace air Keep Contained Keep away from heat Store cylinders upright
	Class B Flammable and Combustible Material Solids, liquids and gases capable of catching fire or exploding in the presence of a source of ignition. Examples - white phosphorus, acetone and butane. Flammable liquids such as acetone are more easily ignited than combustible liquids such as kerosene.	Vapour may displace air Keep away from heat or flame Keep container sealed NO smoking near product
	Class C Oxidizing Material Materials which provide oxygen or similar substances and which increase the risk of fire if they come into contact with flammable or combustible materials. Examples - sodium hypochlorite, perchloric acid, inorganic peroxides.	May explode Keep away from oil products Avoid contact with other products May react violently
Class D Poisonous and Infectious Material		
	Class D – *Division 1* Materials Causing Immediate and Serious Toxic Effects. This division covers materials which can cause the death of a person exposed to small amounts. Examples - sodium cyanide, hydrogen sulphide.	Immediate hazard Keep product sealed Wear protective equipment Handle with extreme caution
	Class D – Division 2 Materials Causing Other Toxic Effects. This division covers materials which cause immediate eye or skin irritation as well as those which can cause long-term effects in a person repeatedly exposed to small amounts. Examples - acetone (irritant), asbestos (carcinogen), toluene diisocyanate (senzitizer).	Chronic Hazard Avoid contact Wear protective equipment Handle with extreme caution
	Class D – *Division 3* Biohazardous Infectious Material. This division applies to materials which contain harmful microorganisms. Examples - cultures or diagnostic specimens containing salmonella bacteria or the hepatitis B virus.	Chronic hazard Avoid contact Wear protective equipment May cause cancer
	Class E Corrosive Material Acid or caustic materials which can destroy the skin or eat through metals. Examples - muriatic acid, lye.	May react with water Keep container sealed Avoid contact with other products Keep from heat, may explode
	Class F Dangerously Reactive Material Products which can undergo dangerous reaction if subjected to heat, pressure, shock or allowed to contact water. Examples - plastic monomers such as butadiene and some cyanides.	Wear protective equipment Avoid contact with other products Wash thoroughly on contact Avoid inhaling

11.0 BLOODBORNE PATHOGENS

11.1 Purpose

The purpose of the Bloodborne Pathogen Standard is to protect workers from Bloodborne infectious diseases. Protection is particularly targeted toward employees exposed to agents or occupational situations that could cause accidental transmission of any Bloodborne infectious disease in general and both HIV and HBV in particular.

11.2 Scope

First-aid providers and those handling contaminated materials receive training and are included in the written program, including training in universal precautions.

11.3 Responsibilities

Program Administrator/Safety Director

1. Assuring that universal precautions are used when there is a potential for exposure to blood or bodily fluids, even if exposure occurs while performing a 'good Samaritan' act
2. Making available Hepatitis B vaccinations in the event of exposure to blood or bodily fluids at no cost to employees
3. PPE will be provided at no cost to employees
4. Coordinate Bloodborne pathogen training
5. Maintaining training records.
6. Make exposure control plan available to all employees

Employee Services

Maintaining records of when and to whom Hepatitis B vaccinations were offered and/or provided.

Employees

Each employee must be aware of the contents of this Bloodborne pathogen program, and:

1. Utilize universal precautions whenever the potential exists for contact or exposure to blood or other bodily fluids
2. Undergo training including use of universal precautions, potential exposure risks, and availability of Hepatitis B vaccinations.

11.4 Definitions

Bloodborne Pathogens - are pathogenic microorganisms that can be present in human blood and can cause disease in humans. The most prevalent types of Bloodborne pathogens include:

- Human Immunodeficiency Virus (HIV).
- Hepatitis B Virus (HBV).
- Hepatitis C Virus (HCV).

These diseases can create serious health effects and can be fatal.

Body Fluid Carriers - Body fluids capable of transmitting HIV, HBV, and HCV from an infected individual include:

- Blood and all biological fluids visibly contaminated with blood.
- Laboratory specimens that contain concentrated HIV, HBV, and HCV.
- Vaginal secretions or semen (however, both unlikely to transmit HCV).
- Saliva (if a bite is contaminated with blood and only HBV if bite is not contaminated with blood).

- Feces, nasal secretions, sputum, tears, urine, and vomit are not implicated in the transmission of HIV, HBV, and HCV unless contaminated with blood.

11.5 Exposure Control Plan

Identification of the potential for contact with blood or other bodily fluids and universal precautions will be the first line of protection for potential exposure to Bloodborne pathogens. It is not feasible to implement engineering or administrative controls. The exposure control plan includes:

1. Identification of potential for contact with blood other bodily fluids;
2. Implementation and use of universal precautions;
3. Training;
4. Pre- and post-exposure vaccinations;
5. Record keeping.

11.5.1 Exposure Determination

Vector Projects Group Ltd has individuals identified as voluntary first responders who are trained in first aid, AED and CPR and who may respond to an injury involving blood or bodily fluids.

11.5.2 Identification of Jobs or Tasks Where Exposure to Blood May Occur

Vector Projects Group Ltd does not have an assigned task where exposure to blood or bodily fluids is anticipated. Exposure, however, is likely for voluntary first responders who may provide first aid and may cleanup after trauma involving cuts and lacerations where blood is spilled.

11.6 Universal Precautions & Procedures

To prevent the transmission of Bloodborne pathogens, "Universal Precautions" must be used with the assumption that all blood and certain body fluids are potentially infectious. "Universal Precautions" is an approach to infection control and requires the use of exposure control measures and personal safety equipment to protect against exposure to bodily fluids. This includes wearing gloves, masks, goggles, and gowns when appropriate, proper disposal methods and disinfecting contaminated areas.

The universal precautions are as follows:

1. Treat all individuals as potentially infectious when handling bodily fluids.
2. Wash hands with soap and water before and after direct contact with people or objects possibly contaminated with blood and other bodily fluids.
3. Clean all potentially contaminated work surfaces with disinfectant solution (see below) after providing care to each person. Clean immediately if spill occurs.
4. Cover all cuts or sores on hands.
5. Wear gloves when providing personal care where exposure to bodily fluids exists and for disposal of all waste products (i.e. dressings, bandages, discarded syringes and needles).
6. Do not re-use disposable gloves. Wash hands with soap and water after removal of gloves.
7. Wear protective goggles and apron/gown when soiling by blood splatter, bloody secretions, or bodily fluids is expected.
8. Use a pocket barrier device during cardio-pulmonary resuscitation (CPR) procedures.
9. Discard single use (disposable) needles and syringes after use in an appropriate Sharps container. Do not re-cap needles after use.
10. Double bag all waste products that are soiled with blood. Discard in regular garbage.

11.6.1 Spills Procedure

1. Wear gloves, goggles & gown while implementing any spills cleanup.
2. Potentially infected spilled material should be immediately cleaned up.

3. Apply a 1:10 chlorine bleach solution to contaminated surface, leave for 20 minutes, and wipe up.
4. Rinse bloodstained clothing and cleaning equipment (mops) in a 1:10 chlorine bleach solution and then launder normally. Put soiled laundry into a plastic bag if unable to wash immediately, and launder as soon as possible.
5. Wipe contaminated equipment with a 1:10 solution of chlorine bleach and leave to soak in warm sudsy water.
6. Notify your Supervisor of the Incident

11.6.2 Contaminated First Aid Materials

1. The disposal procedures for Contaminated First Aid materials include disposal of contents in a garbage bag (double bagged and tagged). Place the tagged bag in a lavatory garbage receptacle.
2. The disposal procedures of Dirty needles include placing them in a puncture proof container.

11.6.3 Post-Exposure of Blood Borne Pathogen

Decontaminate

Hand sinks are located in Maintenance bay and office area and are readily accessible to all employees who have the potential for exposure. Hand sinks will be provided at job site locations.

1. Skin: wash thoroughly with soap and water
2. Mucous membranes (eyes, nose, mouth): rinse thoroughly with water or normal saline
3. Environmental surface: wash with solution of 1:10-1:100 household bleach and water or other appropriate disinfectant
4. Employees will be provided with antiseptic hand cleaner and paper towels when hand washing is not feasible. However, hand washing must still take place as soon as possible after exposure.

Report Exposure Incident to Designated Individual

1. Document the route of exposure [i.e., needle stick or absorption through mucous membrane (eyes, nose, mouth)]
2. Complete the necessary injury report/ log if medical treatment (beyond first-aid) required
3. Report incident to your supervisor.

11.6.4 Housekeeping

All equipment and environmental and working surfaces shall be cleaned and decontaminated after contact with blood or other potentially infectious materials.

Contaminated work surfaces shall be decontaminated with an appropriate disinfectant after completion of procedures; immediately or as soon as feasible when surfaces are overtly contaminated or after any spill of blood or other potentially infectious materials; and at the end of the work shift if the surface may have become contaminated since the last cleaning.

Broken glassware which may be contaminated shall not be picked up directly with the hands. It shall be cleaned up using mechanical means, such as a brush and dust pan, tongs, or forceps.

11.6.5 Hepatitis B Vaccination and Post-Exposure Evaluation and Follow-Up

Pre- and post-exposure vaccinations are provided to all whose jobs or voluntary actions may result in exposure to blood or other bodily fluids. The hepatitis B vaccination will be offered to all of these individuals within 10 days of initial assignment. Employees may decline this vaccination, but must sign a form stating that they have declined this offered vaccination. Decliners may change their mind at any time and be vaccinated.

An exposure incident is any contact of blood or OPIM's with non-intact skin or mucous membranes. Any employee having an exposure incident shall contact Site Supervisor or Safety Manager. All employees who have an exposure incident will be offered a confidential post-exposure evaluation and follow-up in accordance with the OHS regulations. This includes a visit to a physician selected by the employer. The health care professional written opinion will be provided to the employee within 15 days of the evaluation.

A post-exposure report must be completed including the exposure and how it occurred, identity of the source individual or the place of exposure.

11.7 Training

Training is provided at the time of initial assignment to tasks where occupational exposure may occur, and that it shall be repeated within twelve months of the previous training. Training shall be tailored to the education and language level of the employee, and offered during the normal work shift. The training will be interactive and cover the following:

1. A copy of the legislation and an explanation of its contents
2. A discussion of the epidemiology and symptoms of bloodborne diseases
3. An explanation of the modes of transmission of Bloodborne pathogens
4. An explanation of the Vector Projects Group Ltd Bloodborne Pathogen Exposure Control Plan (program), and a method for obtaining a copy
5. The recognition of tasks that may involve exposure
6. An explanation of the use and limitations of methods to reduce exposure, for example engineering controls, work practices and personal protective equipment
7. Information on the types, use, location, removal, handling, decontamination, and disposal of PPE
8. An explanation of the basis of selections of PPE
9. Information on the Hepatitis B vaccination, including efficacy, safety, method of administration, benefits, and that it will be offered free of charge
10. Information on the appropriate actions to take and persons to contact in an emergency
    a. involving blood or OPIM
11. An explanation of the procedures to follow if an exposure incident occurs, including the
    a. method or reporting and medical follow-up;
12. Information on the evaluation and follow-up required after an employee exposure incident
13. An explanation of the signs, labels, and color-coding systems.
14. The person conducting the training shall be knowledgeable in the subject matter.

11.8 Documentation and Recordkeeping

Three records are required: record of occupational exposure, medical records, and training records.

Medical records include:

1. Name and social security number;
2. Hepatitis B vaccination status including dates and any medical records related to employee's ability to receive vaccinations
3. Result of examinations, medical testing, and post-exposure evaluation and follow-up
4. Any medical opinions written by health care professionals resulting from an exposure incident.

Medical records will remain confidential. Specific written consent must be given for anyone to see the records. Records will be maintained for the duration of employment plus 30 years.

Training records will be maintained for a minimum of three years, and will include:

- Training dates;

- Content of training;
- Name of trainers and the company they represent
- Names of trainees.

12.0 CHEMICAL AND BIOLOGICAL HAZARDS

12.1 Purpose

This program sets forth a plan for the control of any biological or chemical substance used, produced, stored or disposed of at the workplace and is critical to the overall safety and health of employees. The material in this document does not take precedence over applicable government legislation which all employees must follow.

12.2 Scope

This program applies to all employees of Vector Projects Group Ltd, temporary employees, and any contractors working for Vector Projects Group Ltd.

When work is performed on a non-owned or operated site, the operator's program shall take precedence, however, this document covers Vector Projects Group Ltd employees and contractors and shall be used on owned premises, or when an operator's program doesn't exist or is less stringent.

Vector Projects Group Ltd shall at each worksite, develop and implement work procedures that are as safe as is reasonably practicable for the handling, use, storage, production and disposal of chemical and biological substances.

12.3 Policy Statement

All existing and potential risks to the health or safety of employees will be identified through the Vector Projects Group Ltd hazard assessment process.

There will be written procedures to respond to an emergency situation (refer to the Vector Projects Group Ltd Emergency Preparedness and Response Program).

Vector Projects Group Ltd shall take all measures reasonably necessary in the circumstances to protect workers from exposure to a hazardous biological or chemical agent because of the storage, handling, processing or use of such agent in the workplace.

Health and safety will be considered in all tendering and purchasing decisions. Vector Projects Group Ltd shall keep under constant review the use or presence of chemical substances which may be hazardous to the health or safety of employees and shall wherever and so far as is reasonably practicable substitute a safe or less hazardous substance

12.4 Responsibilities

Vector Projects Group Ltd

- Identify, assess and properly control chemical and biological hazards.
-
- Shall develop and maintain a list of all chemical and biological substances that are regularly handled, used, stored, produced or disposed of in the course of work processes and that may be hazardous to the health and safety of the workers at the worksite. All chemical and biological substances that are controlled products must be identified on the list. This list must be readily available to the workers at the worksite.
- Shall take all reasonable steps to ascertain and record the precautions that need to be taken with respect to the substances to ensure the health and safety of workers. Clearly mark the containers holding the substances with the name of the substance as set out in the list of substances.

- Vector Projects Group Ltd shall ensure procedures to be followed in the event of an uncontrolled release or spill are prepared. Vector Projects Group Ltd must ensure that written procedures are prepared and implemented to address emergency and cleanup procedures in the event of a spill or release of a chemical agent or biological agent.
- Workers may not be exposed to a concentration of a harmful substance that exceeds its Occupational Exposure Limits. Vector Projects Group Ltd must ensure that no worker is exposed to a substance that exceeds the ceiling limit, short-term exposure limit or 8-hour TWA limit prescribed by ACGIH.
- Every employee is to be informed of the nature and degree of health effects of the chemical substances to which the employee is exposed by virtue of his or her work the exposure of employees to harmful chemical substances is as little as is reasonably practicable.
- Communication - If a worker is or may be exposed to a chemical or biological substance which could cause an adverse health effect, Vector Projects Group Ltd must ensure that the content and meaning of the information is clearly communicated to the worker.
- Workers are provided training on the chemical and biological hazards they may be exposed to. If a worker is or may be exposed to a chemical or biological substance which could cause an adverse health effect, Vector Projects Group Ltd must ensure that the identity of the substance, its possible effects on worker health and safety and any precautions required to protect the health and safety of the worker are clearly communicated to the worker. Vector Projects Group Ltd must ensure that the supervisor and the worker are trained in and follow the measures for the safe handling, use, storage, and disposal of the chemical agent or biological agent, including emergency and spill cleanup procedures.
- Ensure that an emergency response plan is developed for tasks involving chemical and biological substances.
- Maintain a Material Safety Data Sheet (MSDS) control system.
- Place MSDS' in a highly visible area and to be readily available for staff and student use as required.
- Update the material safety data sheets every three years.

Managers and Supervisors

- Identify all potential chemical and biological hazards and risks to employees in their work area.
- Develop and implement measures to reduce, eliminate or control the identified risks.
- Develop procedures to respond to an emergency.
- Train employees about these hazards and the control strategies.
- Include chemical and biological hazard identification and control strategies as part of the new employee orientation process.
- Ensure employee compliance with safe work procedures.
- Train employees in safe work procedures and inform them of chemical and biological hazards.
- Supervise employees to ensure employee compliance.

Employee

- Comply with safe work practices.
- Inform their supervisor of chemical and biological hazards encountered in their workplace.
- Work with their supervisor to resolve hazardous situations.

Joint Health Safety and Health Committee

- Assist Vector Projects Group Ltd and their supervisors to identify, assess and control chemical and biological hazards.
- Monitor the effectiveness of the implemented controls.
- Ensure training programs regarding identified chemical and biological hazards are developed and implemented for employees.

12.5 Procedure for Identifying and Controlling Harmful Substances

- Define the types of hazards.
- Determine the degree of risk to employees.
- Determine appropriate control measures for each chemical and biological hazard.
- Develop written safe work practices that identify the hazard(s) and state the control measures required, including any written emergency procedures to be implemented in the event of an accumulation, spill or leak.
- Train employees to identify chemical and biological hazard(s) and proceed with tasks using safe work procedures.
- Ensure the identity of the substance, its possible effects on employee health and safety and any precautions required for the health and safety of the employee are clearly indicated by labels, MSDSs, placards, signs, tags or other similar means.
- Ensure employee compliance.

12.5.1 Define Types of Hazards

A hazard is any activity, situation or substance that can cause harm. Categorizing the hazard(s) helps to determine the type of control(s) that may be necessary to protect employees. Biological hazards and chemical hazards are two of the categories and examples are noted below.

Biological hazards - caused by organisms such as viruses, bacteria, fungi, parasites, dusts, molds or other living organisms.

Chemical hazards - caused by solids, liquids, vapours, gases, dust, fumes or mists, such as battery acids, solvents, etc.

How Potential Exposure to Harmful Substances is Assessed to Ensure Exposure Does Not Exceed Occupational Exposure Limits

Vector Projects Group Ltd shall develop procedures to address how potential exposure to harmful substances is assessed to ensure exposure does not exceed occupational exposure limits. Vector Projects Group Ltd must assess all information that is practicably available to Vector Projects Group Ltd respecting a chemical or biological substance present in the workplace to determine if the substance creates or may create a risk to the safety or health of a worker in the workplace.

If a worker is or may be exposed to a hazardous substance, Vector Projects Group Ltd must ensure that a walkthrough survey is conducted to assess the potential for overexposure taking into account all routes of exposure, including inhalation, ingestion, and skin contact, and reassessment is conducted when there is a change in work conditions which may increase the exposure, such as a change in production rate, process, or equipment. If the walkthrough survey reveals that a worker may be at risk of overexposure to an airborne contaminant, Vector Projects Group Ltd must ensure that air sampling is conducted to assess the potential for overexposure.

Each Vector Projects Group Ltd worksite site specific safety plan shall list the potential health hazards associated with any exposure to any chemical or biological hazards applicable to the specific tasks being performed. Listed below are some of the chemicals/substances employees may be exposed. This list is not all-inclusive and other hazards may be present varying by jobsite location and work activity.

- Asbestos
- Benzene
- Cadmium
- Chromium Hexavalent (CrVI)
- Lead

- Hydrogen Sulphide
- Oils and Greases
- Compressed Gases
- Fuels
- Acids and Caustics
- Blood borne Pathogens (result of injury)

These hazards may be encountered near or around the following locations/processes/equipment:

- Tanks
- Pits
- Piping
- Well Heads
- Storage and Containment Facilities

12.6 General Information

If a worker is or may be exposed to a chemical or biological substance which could cause an adverse health effect, Vector Projects Group Ltd must ensure that the identity of the substance, the health hazards associated with the exposure and assess the employee's exposure, its possible effects on worker health and safety and any precautions required for the health and safety of the worker are clearly indicated by labels, MSDSs, placards, signs, tags or other similar means. Some of the most common health hazards associated with the above-referenced substances include but are not limited to:

Asbestos Specific

- Asbestosis: A chronic lung ailment caused by the build-up of scar tissue inside the lungs.
- Asbestosis can cause shortness of breath, permanent lung damage, and increases the risk of lung infections.
- Mesothelioma: Asbestos caused cancer of the chest cavity lining or abdominal cavity.
- Other cancers: Cancer of the lung, esophagus, stomach, colon, and pancreas.

Hydrogen Sulphide (H2S)

- H2S paralyzes the sense of smell. Do Not Rely On Smell To Detect H2s – Rely Strictly On Instruments Designed To Measure Concentrations Of H2s.
- Hydrogen sulphide is a very dangerous and deadly gas: it is colorless and heavier than air.
- Exposure to certain concentrations of H2S can cause serious injury or death.

Benzene

- Short-term exposure causes depression of the central nervous system (CNS), marked by drowsiness, dizziness, headache, nausea, loss of coordination, confusion and unconsciousness.
- Exposure to 50 to 150 ppm produces headache, and tiredness.
- Nose and throat irritation have also been reported following short-term exposure.

Bloodborne Pathogen Specific

- HIV infection
- Hepatitis B infection
- Hepatitis C infection

Multiples Substance Common Health Effects

- Burn
- Eye irritation
- Breathing difficulty

- Confusion
- Sleepiness
- Rapid pulse
- Loss of consciousness
- Anemia
- Damage to the nervous system
- Kidney Damage
- A rise in blood pressure
- Miscarriages and subtle abortions
- Disruption of nervous systems
- Brain damage
- Declined fertility of men through sperm damage
- Suppression of the immune system
- Death

12.7 Identify Chemical and Biological Hazards in the Workplace

Supervisors and local safety staff are responsible for identifying potential chemical and biological hazards and risks to employees. Chemical and biological hazards may be identified through data gathered by any of the following processes:

- Workplace inspections
- Job safety analysis (JSA)
- Dangerous occurrences
- Workplace incident reports (types and causes)
- Incident investigations
- Concerns raised by employees
- Employees' Compensation Board (WCB) claims
- Joint Health Safety and Health Committee minutes
- New or modified jobs
- New or modified equipment or job procedures
- New scientific information regarding hazards or risks
- Legislation (WSH, Transportation of Dangerous Goods, WHMIS)
- Industry standards (infection control)
- Regulatory (codes of practice, ANSI, CSA, provincial and local)
- Supplier, client or manufacturer information.

12.8 Determine the Degree of Risk to the Employee

Hazards need to be assessed by the degree of risk or harm posed to employees. When determining the degree of risk to employees, consider not only the probability or likelihood of the hazard causing harm, but also the potential severity of the harm. Probability is the chance that a hazard will cause harm. Severity is the seriousness of the harm that could be suffered. Risk represents the odds that a hazard will cause harm.

Common questions to ask that will help with assessing the degree of risk include:

How likely is the hazard to cause harm?
Under what conditions is harm likely to occur?
How quickly could an unsafe condition arise?
What type of harm is involved?
How many employees could get hurt?
Is there a history or problems, incidents or dangerous occurrences resulting from this hazard?
What monitoring is required to evaluate the risk?

When looking for hazards for a specific task, ask questions such as:

Can any body part be exposed to the substance?
Do tools, equipment or processes present any problems?
Can the employee make harmful contact with any materials?
Is there a danger from falling/spilling objects?
Is lighting a problem?
Can weather conditions affect the chemical or biological substance?
Is contact possible with hot, toxic or caustic substances?
Are there fumes, dusts, mists or vapours in the air?
What are the task and job specific risks?

12.9 Control Measures

Vector Projects Group Ltd shall use control measures to ensure that workers may not be exposed to a concentration of a harmful substance above its Occupational Exposure Limits. If a worker is, or may be, exposed to an airborne chemical or biological substance in the workplace at a concentration in excess of the occupational exposure limit for the substance, Vector Projects Group Ltd must implement control measures sufficient to ensure that no worker is exposed to the substance in excess of the occupational exposure limit for that substance.

Controls may be implemented at the source of the hazard, along the path between the hazard and the employee, and/or at the employee level. Vector Projects Group Ltd shall protect workers from exposure to a hazardous biological or chemical agent without requiring the workers to wear and use personal protective equipment.

Often, more than one control method needs to be implemented in order to protect the health and safety of employees. Strategies used to reduce, eliminate or control hazards may include any one of the following:

12.9.1 Controls at the Source

Engineering controls either reduce or remove the hazard at the source or isolate employees from the hazard.

- Eliminate the risk by getting rid of the hazardous substance.
- Substitute the hazard with a less hazardous process or material.
- Redesign the layout of the workplaces, workstations, work processes and jobs.
- Isolate, contain or enclose the hazard, often used for chemical or biological hazards.
- Automate dangerous work processes by using mechanical equipment.

12.9.2 Controls along the Path to the Employee

- Relocate by moving the hazard a safe distance from the employee.
- Create barriers between employee and the hazard to block the hazard path. For example, use of screens, walls, aprons or other personal protective equipment.
- Absorb the hazard by using local exhaust ventilation to remove toxic gases (airborne hazards) at the source where they are produced.
- Dilute the hazard, such as hazardous gases, by mixing with clean outside air.

12.9.3 Controls at the Employee

- Work practice controls alter the manner in which a hazardous task is performed, such as minimizing exposure, prohibiting smoking, inspecting equipment and eating in regulated areas.
- Administrative controls such as implementation of new policies, improved and standardized work procedures, job rotations, shift scheduling and good supervision.

- Housekeeping, maintenance and repair to ensure cleaning, waste disposal and spill clean-up at the workplace, as well routine preventive maintenance and repair of equipment.
- Hygiene practices that can reduce the spread of infections such as frequent hand washing, lockers for changing between work and street clothes and footwear, separate eating areas away from the hazardous work area, etc.
- Personal protective equipment (PPE) such as gloves, eye protection and face shields are to be used as controls when other controls are not feasible are reasonably practicable, or where additional protection is required.
- Vector Projects Group Ltd shall provide, and employees shall wear and use, personal protective equipment appropriate in the circumstances to protect the employees from exposure to a hazardous biological or chemical agent.

12.10 Written Safe Work Practices

Once chemical and biological hazards have been identified and control measures have been selected to reduce, eliminate or control the hazard, the safest way to perform the task must be put in writing. Safe work practices outline the step-by-step method for performing a particular task, including any potential or existing hazards present and the control measures that must be taken to eliminate, reduce or manage the risk. Safe work practices should also outline any emergency procedures required in the event that control measures are sufficient to protect the employee from harm.

Decontamination and Emergency Baths, Showers, Eye Wash Equipment

1. Emergency washing equipment is readily available. Vector Projects Group Ltd must ensure that appropriate emergency washing facilities are provided within a work area where a worker's eyes or skin may be exposed to harmful or corrosive materials or other materials which may burn or irritate.

2. Vector Projects Group Ltd must ensure that the emergency washing equipment is located in the workplace and clearly identified and unimpeded access to the equipment is provided.

3. When a worker has used a personal eyewash unit to flush an eye injury, Vector Projects Group Ltd must ensure that the worker immediately uses the emergency washing equipment provided in the workplace.

4. If an eyewash unit is used it shall be refilled and made ready by a competent person following manufacturer's instructions.

Prohibited Activities

Employees shall not eat, drink or smoke tobacco in an area of a work site that is contaminated with a harmful substance.

How potential exposure to harmful substances is assessed to ensure exposure does not exceed occupational exposure limits

Where Vector Projects Group Ltd or an employee has reason to believe that the level of concentration of an air contaminant may be approaching 50% of the threshold limit value, Vector Projects Group Ltd shall ensure that the air is tested to determine the level of concentration of the air contaminant.

12.10.1 Storage of Harmful Substances

1. The Vector Projects Group Ltd must ensure that a harmful substance used or stored at a work site -
2. It shall be clearly identified or the container clearly identified
3. Be used and stored in such a way the use or storage is not a hazard to any person
4. WHMIS guidelines must be adhered to when working with and/or storing harmful substances.

5. All containers, used or handled at a workplace, which by reason of toxicity, flammability or reactivity create risk to the health or safety of employees shall be contained, so far as is reasonably practicable in a suitable container which is clearly labelled to identify the substance, the hazards associated with its use or handling, the workplace uses for which it is intended, and protective measures to be taken by employees before, during and after its use.

6. Vector Projects Group Ltd will ensure that residue or waste from the substance or materials used for cleaning or wiping it is placed into suitably labelled containers for safe disposal.
7. Harmful substances are to be stored in a self-contained enclosure, room or building that is isolated from work-related areas and worksites and is adequately ventilated and protected from conditions, including excessive temperature, shock or vibration that could reduce the stability or increase the potential hazard of the substance.

12.11 Procedures to be followed in the Event of an Uncontrolled Release or Spill

In the Event of an Uncontrolled Release or Spill:

1. Evacuate The Area
2. Report to The Muster Station
3. Perform A Head Count
4. Notify Supervisor/Authorities
5. Coordinate Clean Up
6. Do Not Re-Enter the Area.

Vector Projects Group Ltd will ensure that emergency equipment appropriate for use in the event of escape of a hazardous substance is readily available, any spillage of a hazardous substance is immediately and adequately cleaned up, and a hazardous substance is disposed of so that it will not create a hazard to the health or safety of employees.

Specific Programs if Applicable

If any harmful substance is present as related to the following list, ensure the specific programs are followed:

1. Asbestos Exposure Control Program
2. Benzene Awareness Program
3. H2S Program
4. Ionizing Radiation Program
5. Lead Awareness Program
6. Silica (Abrasive Blasting Program)

Restricted Areas

These are areas where there is a reasonable likelihood that airborne concentrations of asbestos, silica, coal dust or lead will exceed their OELs. Vector Projects Group Ltd shall ensure that only authorized persons or by law to do so enters a restricted area. Signs shall clearly indicate that:

- Asbestos, silica, coal dust or lead is present
- Only authorized person may enter and,
- Eating, drinking and smoking are prohibited

Vector Projects Group Ltd is responsible for laundering clothing used by employees in a restricted area that contains asbestos or lead. This includes towels that are used for employee decontamination.

During storage and transportation, all contaminated protective clothing must be in sealed containers that are clearly labelled to identify the contaminants.

Employees must be warned not to inhale the dust during handling.

Ensure Employee Compliance

Supervisors are responsible to ensure that employees comply with safe work procedures. Procedures are written to provide information and guidance to anyone performing a hazardous task or work process. Employees must comply with safe work procedures by using equipment and/or tools provided in order to do the task safely. Non-compliance with safe work practices may result in disciplinary action of the employee. Working safely is a condition of employment.

12.12 Training

Workers are provided training on the chemical and biological hazards they may be exposed to. Vector Projects Group Ltd must train workers in the safe work procedures respecting the use, production, storage, handling and disposal of any chemical or biological substance that an assessment has determined creates or may create a risk to the safety or health of a worker in that workplace.

Vector Projects Group Ltd shall ensure that, prior to performing any hazardous task(s), employees are trained in:

- If a worker is or may be exposed to a chemical or biological substance which could cause an adverse health effect, Vector Projects Group Ltd must ensure that the supervisor and the worker are trained in and follow the established procedures for safely handling, using, storing and disposing of the substance, including emergency and spill clean-up procedures.
- Work procedures developed and the proper use of any personal protective equipment required by regulations.
- The health hazards associated with exposure to that substance.
- Informed of measurements made of airborne concentrations of harmful substances at the work site.
- Emergency procedures developed that require the involvement of the worker or are necessary to protect the health and safety of the worker.

13.0 ELECTRICAL SAFETY

13.1 Purpose

The purpose of this program is to establish and implement written procedures for compliance to inform Vector Projects Group Ltd personnel of the potential exposure to electrical hazards in operations and to provide guidelines for personnel to use when dealing with those operations.

Vector Projects Group Ltd must ensure that all electrical equipment shall be installed and guarded so that adequate provision is made for the safety of persons and property and for the protection of the electrical equipment from mechanical or other injury to which it is liable to be exposed. The material in this document does not take precedence over applicable government legislation which all employees must follow.

13.2 Scope

This program is applicable to all workers. When work is performed on a non-owned or operated site, the operator's program shall take precedence, however, this document covers Vector Projects Group Ltd workers and contractors and shall be used on owned premises, or when an operator's program doesn't exist or is less stringent.

13.3 Key Responsibilities

Managers and Supervisors

- To ensure all electrical installations, equipment, apparatus and appliances shall be in conformity with the requirements of the local, provincial and national regulatory codes.
- To ensure only approved electrical equipment is used by workers and that the electrical equipment is:
    - Approved for the intended use and location of the electrical equipment;
    - Maintained in proper working condition and capable of safe operation; and
    - Tested in accordance with the manufacturer's recommendations

Employees

- Following the requirements in the electrical safety program.

13.4 General Electrical Safe Work Procedures

During Vector Projects Group Ltd work there are times when overhead or buried lines may be present. Vector Projects Group Ltd staff will use appropriate hazard identification and assessment methods to document hazards and corrective actions needed to eliminate worker exposure to potential electrical hazards.

Vector Projects Group Ltd personnel shall not be allowed to construct, install, alter, repair or maintain electrical equipment, work on electrical systems, including but not limited to connecting wiring, pulling or replacing breakers, fuses, switches, etc. These operations must be performed by a qualified and authorized electrician. They shall have:

- A approved journeyman's certificate in the electrician trade issued pursuant to regulatory requirements, or
- A journeyman's certificate in the power lineman trade issued pursuant to regulatory requirements.

Only nonconductive hardhats are allowed for use where there is a potential for injury from electric shock or burns due to contact with energized parts.

When a portable luminaire is used, Vector Projects Group Ltd shall ensure that the electrical extension cord and fittings are approved for the intended use and location of the extension cord and fittings and are properly maintained and the electrical extension cord is not used to supply power to any equipment other than the portable luminaire unless the cord meets the proper requirements.

All wire joints or connections are to be fitted with an approved cap or other approved cover, enclosed in an approved box or where the wire joints or connections are not permanently installed be protected from damage by another approved means and all dead, abandoned or disused electrical conductors or equipment are removed from the work area or disconnected and secured to prevent inadvertent energization.

Only CSA approved electrical equipment and devices used in electrical installations within the jurisdiction of the local regulatory requirements shall be approved and shall be have a kind or type and rating approved for the specific purpose for which it is to be employed.

Vector Projects Group Ltd must ensure that the path to ground from circuits, equipment, or conductor enclosures shall be permanent and continuous, shall have ample ampacity to conduct safely and currents liable to be imposed on it, and shall have impedance sufficiently low to limit the voltage above ground and to facilitate the operation of the over current devices in the circuit.

When closing contacts at electrical control panels

- If personnel must touch anything on an electrical control panel, first check it with a voltage tester (contact or non-contact). If not available, tap it with the back of your hand. (Prevents hand from grabbing)
- Before operating switches or breakers ensure all protective panels are closed and properly fastened.
- To disconnect the electrical power from the equipment, always shut the control switch off first, before shutting the main switch off.
- To connect the electrical power, always ensure all control switches are off before engaging the master switch.
- When operating the control or master switch, never stand in front of the electrical panel. Always stand off to the side of the panel to operate the switch. Never look at the control panel. Should the panel explode, your eyes or body must not be in a direct line with the explosion.

If a defect or unsafe condition is identified in electrical equipment it shall be immediately reported, tagged out and if possible disconnected or removed from service immediately or as reasonably practical to protect the safety and health of any worker who may be at risk.

13.4.1 Lockout Tagout

Lockout Tagout is used before performing electrical work. Low voltage electrical equipment must be completely disconnected and locked out before starting work on it. High voltage electrical equipment must, if practicable, be completely isolated, grounded, and locked out before starting work on it.

Isolating devices used for safety protection guarantees must provide for visual verification of the opening of the isolation point. Lockable isolating devices must be locked in the position or condition required to protect workers before work commences under a safety protection guarantee.

A distinctive "DO NOT OPERATE" tag must be placed securely on each isolating device used for a safety protection guarantee.

If it is not reasonably practicable to de energize electrical equipment before electrical work is done Vector Projects Group Ltd must ensure that no electrical worker begins work on energized electrical equipment until Vector Projects Group Ltd, in consultation with the worker, has assessed the conditions or circumstances

under which the electrical worker is required to work, and developed safe work procedures that include the use of safety equipment appropriate for the task.

13.4.2 General Facility Requirements

Vector Projects Group Ltd shall ensure that all operating electrical equipment is kept in safe and proper working condition. Electrical equipment maintained for emergency service will be periodically inspected and tested by qualified personnel as necessary to ensure its fitness for service.

Infrequently used electrical equipment maintained for future service shall be thoroughly inspected by qualified personnel before use in order to determine its fitness for service.

Defective equipment shall either be put in good order or permanently disconnected.

Vector Projects Group Ltd will ensure that in locations where explosive or flammable materials or gases are present, special precautions shall be observed including that repairs or alterations shall not be made on any live equipment and fits or seals in enclosures shall be maintained in their original safe condition.

13.4.3 Electrical Fire Safety

Vector Projects Group Ltd shall ensure that electrical installations shall be made so that the probability of spread of fire through fire stopped partitions, floors, hollow spaces, firewalls or fire partitions, vertical shafts, or ventilating or air-conditioning duct is reduced to a minimum. Where a fire separation is pierced by a raceway or cable, any openings around the raceway or cable shall be properly closed or sealed in compliance with the National Building Code of Canada.

Vector Projects Group Ltd shall ensure that a fire extinguisher approved for Class C fires is readily available to workers working on or near energized high voltage electrical equipment.

Flammable materials must not be stored near electrical equipment. Flammable material must not be stored or placed close to electrical equipment.

13.4.4 Signage, Markings and Warnings

Warning techniques will be used to protect workers from injury by electrical equipment. These include:

Safety signs or tags will be used when necessary to warn workers about electrical hazards.

Electrical equipment such as switchboards, panel boards, industrial control panels, meter socket enclosures and motor control centres that are installed in other than dwelling units and are likely to require examination, adjustment, servicing or maintenance while energized shall be field marked to warn persons of potential electric shock and arc flash hazards. The markings shall be located so that it is clearly visible to persons before examination, adjustment, servicing, or maintenance of the equipment.

Barricades, along with safety signs or tags, will be used where necessary to prevent or limit worker access to work areas exposing workers to exposed energized equipment. The barricades should not be conductive if the potential for electrical contact exists.

Where signs and barricades do not provide sufficient warning and protection from electrical hazards, an attendant must be stationed to warn and protect workers.

The entrance to a room or similar enclosure containing exposed live electrical parts shall have a conspicuous sign, warning of the danger, and forbidding entry by unauthorized persons.

Electrical control panels have their covers permanently marked - DANGER" "HIGH VOLTAGE" and must have an approved rubber mat in front of the panel.

Notices reading "DANGER" "HIGH VOLTAGE" shall be placed in prominent positions in proximity to energized electrical equipment, operating at over 750 volts, which may be accessible to workers.

Where high voltage switchgear or transformers are housed, Vector Projects Group Ltd or contractor shall post a warning sign that indicates the highest voltage in use and states that access is restricted to authorized persons only.

All electrical panel switches must be legibly marked to indicate what they control. The markings must be durable to withstand the service environment.

For electrical powered equipment in the shop - air compressors, fans, etc., controls must also be labelled unless the location of the switch makes it obvious what the control switch operates.

13.4.5 Guarding

Work shall not be done in or around an area or structure in proximity to energized electrical conductors or equipment which are normally isolated by position or elevation, unless the electrical connections, conductors or equipment are provided with cabinets or guards who will effectively prevent contact by a worker, or by equipment being used or handled.

Bare live parts shall be guarded against accidental contact by means of approved cabinets or other forms of approved enclosures except where local codes exempts and cabinets or guards shall meet the specifications of an authority acceptable to regulatory authorities.

All switches, receptacles, luminaries and junction boxes shall be fitted with a cover that is approved for the intended use and location of the cover.

13.4.6 Egress

There shall be space around equipment. Passageways and working space around electrical equipment must be kept clear of obstructions, be arranged so as to give authorized persons ready access to all parts requiring attention, and not be used for storage.

A minimum working space of 1 meter with secure footing shall be provided and maintained about electrical equipment such as switchboards, panel boards, control panels, and motor control centres that are enclosed in metal, except that working space is not required behind such equipment where there are no renewable parts such as fuses or switches on the back and where all connections are accessible form locations other than the back.

Each room containing electrical equipment and each working space around equipment shall have suitable means of egress (walk areas, corridors, doors, etc.), which shall be kept clear of all obstructions.

Access to electrical equipment must be kept free of obstruction and allow easy access to all parts which may require maintenance.

Special care will be taken to ensure hazardous or flammable material must not be stored or placed close to or in dangerous proximity to any electrical equipment.

For outdoor installations, arc producing electrical equipment shall not be installed within 1 meter from the discharge of a combustible gas relief device or vent.

13.4.7 Minimum Approach Distances

A safe limit of approach distance is maintained by workers working near energized high voltage electrical equipment.

Vector Projects Group Ltd must ensure that at least the minimum applicable distance specified in below Table 19-1 is maintained between exposed, energized high voltage electrical equipment and conductors and any worker, work, tool, machine, equipment or material, unless otherwise permitted by Occupational Health and Safety (OHS).

Vector Projects Group Ltd must accurately determine the voltage of any energized electrical equipment or conductor and the minimum distance from it required. See specific provincial Occupational Health and Safety (OHS) legislation for information on general limits of approach.

Voltage	Minimum approach distance for working close to exposed electrical equipment or conductors	
Phase to phase	Metres	Feet
Over 750 V to 75 kV	3	10
Over 75 kV to 250 kV	4.5	15
Over 250 kV to 550 kV	6	20

13.4.8 Hazardous Locations

Hazardous locations will be classified as listed below:

- **Class I** - Locations in which flammable gases or vapours are or may be present in the air in quantities sufficient to produce explosive gas atmospheres.
- **Class II** - Locations in which there is a presence of combustible dusts or electrically conductive dusts.
- **Class III** - Locations in which there is a presence of easily ignitable fibres but in which such fibres are not likely to be in quantities sufficient to produce ignitable mixtures.

Where ever reasonably practicable no electrical equipment or devices shall be used or installed within hazardous locations unless the equipment is essential to the process being carried on therein.

Vector Projects Group Ltd will ensure the use or installation of electrical devices is essential within a hazardous location, only electrical equipment rated and approved for use by local regulatory code with the specific gas, vapour, mist or dust hazard which may be present within the hazardous location shall be used.

Service equipment, panel boards, switchboards, and similar electrical equipment shall, where practicable, be located in rooms or sections of the building in which hazardous conditions do not exist.

Tools and other equipment that are capable of conducting electricity and endangering the safety of any worker shall not be used in such proximity to any live electrical installation or equipment that they might make electrical contact with the live conductor.

Electrical equipment shall be adequately ventilated to prevent the development around electrical equipment of ambient air temperatures in excess of those normally permissible for such equipment.

Adequate illumination shall be provided to allow for safe operation and maintenance of electrical equipment.

Vector Projects Group Ltd facilities will have the necessary equipment to Lockout and Tagout breakers. See Vector Projects Group Ltd Lockout Tagout Program.

13.4.9 Use of Portable Electric Equipment

Portable equipment must not be handled in any way that would cause damage. Electrical cords cannot be used for raising or lowering equipment or be fastened by staples or otherwise hung in a manner which could cause damage to the outer insulation.

Extension cords and cords on equipment must be visually inspected before use or at the beginning of each shift to determine if the damage (loose parts, deformed or missing pins, damage to the outer cover or insulation, or pinched/crushed outer jacket) exists. A visual inspection is not required if equipment/cords remain connected and are not exposed to damage. All defective or damaged cords and equipment must be removed from service immediately until repaired and tested if they might expose a worker to injury.

Grounding type cords must be used with grounding type equipment. Receptacles and plugs must be checked prior to connection. Receptacles and plugs must not be altered in a manner which would prevent proper continuity and adapters cannot be used which defeat the grounding connection of equipment. Cord-connected electrical equipment and tools shall have a casing that is adequately grounded.

Portable electrical equipment used outdoors or in damp locations is equipped with ground fault circuit interrupters (GFCI). When used outdoors or in a wet or damp location, portable electrical equipment, including temporary lighting, must be protected by an approved ground fault circuit interrupter of the class A type installed at the receptacle or on the circuit at the panel, unless another acceptable means of protection is provided.

Employee's hands must be dry when plugging or unplugging energized equipment. Also, if energized plugs or receptacles are wet or could otherwise provide a conducting path, only insulating protective equipment may be used for handling the connection devices.

13.5 Electrical Equipment Grounding Assurance

13.5.1 Procedures and Guidelines to Eliminate Injuries from Possible Malfunctions, Improper Grounding and/or Defective Electrical Tools

The following procedures and guidelines are designed to eliminate all injuries resulting from possible malfunctions, improper ground and/or defective tools.

13.5.2 Assured Grounding Site Program Requirement

An assured grounding conductor program must be implemented on all Vector Projects Group Ltd sites covering all cord sets, receptacles which are not part of the building or structure & equipment connected by cord and plug which are available for use or used by employees.

13.5.3 Ground Fault Circuit Interrupters

All 120-volt, single-phase 15 and 20 ampere receptacle outlets on construction or maintenance sites, which are not part of the permanent wiring of the building or structure and which are in use by employees, shall have approved ground fault circuit interrupters for personnel protection.

- All hand portable electric tools and extension cords shall use a GFCI.
- Additionally, approved GFCI's shall be used for 240-Volt circuits in the same service as described above.

- GFCI's must be used on all 120 volt, single-phase 15 amp and 20 amp receptacles within 6 feet of a sink, damp areas or on installed outdoor equipment.
- The GFCI must be the first device plugged into a permanent receptacle.
- The GFCI must be tested before each use.

13.5.4 Assured Equipment Grounding Conductor Program

The Assured Equipment Grounding Conductor Program (AEGCP) shall cover all cord sets, receptacles not a part of the permanent wiring of a structure and equipment connected by cord and plug on all construction and maintenance sites.

This written description of the program shall be kept at the jobsite for inspection and copying by OHS and any affected employee.

13.5.5 Restrictions for Use of Equipment that Does Not Meet Requirements

Restrictions for the use of equipment that does not meet requirements or if is found to be defective shall be applied and enforced. Any equipment which has not met the requirements of this program shall not be available or permitted to be used by Vector Projects Group Ltd. Damaged items shall not be used until repaired. If the equipment is not fit for purpose it shall be destroyed or tagged and isolated from use.

13.5.6 How Often Inspection of Cords and Equipment are to be Made

Daily Visual inspections – The following shall be visually inspected before each day's use for external defects (such as deformed or missing pins or insulation damage) and for indication of possible internal damage:

- Cord sets;
- Attachment caps;
- Plug and receptacle of cord sets;
- Any equipment connected by cord and plug (with the exception of cord sets and receptacles which are fixed and not exposed to damage) such as deformed or missing plug, and
- Insulation damage
- Damaged items shall not be used until repaired or shall be discarded.
- Damaged items shall be tagged "DO NOT USE", removed from service until repaired and tested.

13.5.7 How and When Tests are Performed and What Records are Maintained

All equipment grounding conductors shall be tested for continuity and shall be electrically continuous.

Each receptacle and attachment cap or plug shall be tested for correct attachment of the equipment grounding conductors. The equipment grounding conductor shall be connected to its proper terminal.

When tests are performed:

- Before each use.
- Before equipment is returned to service following any repairs.
- Before equipment is used such as when a cord has been run over.
- At intervals not to exceed 3 months, except that cord sets and receptacles which are fixed and not exposed to damage shall be tested at intervals not exceeding 6 months.

Tests performed as required by this program shall be recorded as to the identity of each receptacle, cord set and cord and plug connected equipment that passed the test and shall indicate the last date tested or interval for which is was tested. This record shall be kept by means of logs, color coding or other effective means and

shall be maintained until replaced by a more current record. These records shall be made available at the job site for inspection by the Assistant Secretary and any affected employees.

All tested cord sets and cord and plug-connected equipment shall be marked, one or both ends, with colored tape to denote the month that the tests were performed. The below color code chart that must be followed for marking.

Month #	Month	Color of Tape to Apply to Cords
1	Jan	Red
2	Feb	Yellow
3	Mar	Green
4	Apr	Blue
5	May	Brown
6	Jun	White
7	Jul	Start over with Red and repeat

13.6 Emergency Procedures

The following emergency procedures shall be required as training to be completed and are to be followed if a person comes in contact with exposed energized electrical equipment and that contact may affect his or her safety or health.

13.6.1 Contact with Normal Electrical Current

1. Don't touch the victim unless the power is off.
2. Unplug the equipment or turn the power off at the main control area.
3. If you can't turn off the power, use a dry wooden board or broom handle to separate the victim from the power source.
4. Call for emergency medical assistance.
5. If the victim is not breathing, perform mouth-to-mouth resuscitation, if trained.
6. If the victim is conscious, keep them calm. Lay them on their back. Elevate their feet. Cover them with a blanket.

13.6.2 Electrical fire

1. Unplug the burning or smoking appliance.
2. Get everyone out at once.
3. If the fire is small, use a CO2 or dry powder fire extinguisher. Never put water on an electrical fire.
4. Call for emergency assistance or the fire department. Tell the dispatcher your name, address, and that you have an electrical fire.

13.7 Training

All employees are provided electrical awareness training. All Vector Projects Group Ltd workers must be informed of the potential electrical hazards before being permitted to do work in proximity to energized electrical conductors or equipment.

14.0 ENVIRONMENTAL – GENERAL WASTE MANAGEMENT

14.1 Purpose

The purpose of this waste management strategy was developed to provide guidance and requirements necessary for efficient, effective and compliant waste management during construction and operations.

14.2 Scope

This procedure applies to all Vector Projects Group Ltd employees. When work is performed on a non-owned or operated site, the operator's program shall take precedence, however, this document covers Vector Projects Group Ltd employees and contractors and shall be used on owned premises, or when an operator's program doesn't exist or is less stringent.

14.3 Procedure

The Vector Projects Group Ltd Safety Manager or other designated person in his or her absence is accountable for managing waste and disposition of wastes generated at the work site.

14.3.1 Recycling

Wastes should be recycled whenever practicable. Vector Projects Group Ltd will encourage proper segregation of waste materials to ensure opportunities for reuse or recycling occurs at each work site. The collection of recycled material will reduce the total load on the environment. Bins of sufficient size must be lined with a plastic bag and clearly labeled for use. Posters from Vector Projects Group Ltd will be posted throughout the work site to encourage recycling. Collection bins will also be placed in administrative areas will follow the following color guiding:

- Blue - Paper
- Green - Aluminum cans
- Yellow - Plastic

Cardboard will be flattened, staples and excess shipping tape removed. No cardboard shall be placed in the dumpster used for the landfill.

14.3.2 Waste Handling Matrix

Each work site will develop a Waste Handling Matrix (sample shown) that will:

- Address safe practices related to the immediate storage and handling of waste, scrap or leftover material.
- The handling, organization and storage of waste and scrap materials to minimize potential impact to the environment. Waste materials shall be properly stored and handled to minimize the potential for a spill or impact to the environment. During outdoor activities receptacles must be covered to prevent dispersion of waste materials and to control the potential for runoff.

WASTE HANDLING						
WASTE STREAM	**LOCATION**	**ACTIVITY GENERATING WASTE**	**HAZARDOUS/NON HAZARDOUS**	**SAFE STORAGE PRACTICE**	**DISPOSAL METHOD**	**PPE OR OTHER PRECAUTIONS**
Aerosol Can Contents	Equipment Repair Shop	Puncturing of aerosol cans	Hazardous	SAA is self-contained in the equipment repair shop	Ship to assigned site for recycling or disposal	Read warnings before use of Aerosolv unit.
Aerosol Can Puncturing Unit Filter	Equipment Repair Shop	Filter Changes	Hazardous	Place in designated labeled container	Ship to assigned site for recycling or disposal	Change filter every 3 months

Aerosol Cans	Various Locations	Painting, lubricants, cleaning	Non-Hazardous if aerosol can is punctured and drained	Place punctured aerosol can in RAA storage drum	Crush RAA storage drum and place in the scrap metal dumpster from client.	See "Scrap Metal" for waste stream management
Ash	Smart Ash Unit	Incineration of acceptable waste	Non Hazardous	Dispose of Immediately	Place in the Burnable Waste Dumpster	Gloves Goggles
Automotive and Heavy Equipment Parts-Used	Equipment Repair Shop and Fab Shop	Replacement	Non-Hazardous	RAA's by equipment repair shop	Returned to vendors for recycling	Starters, Alternators, Pumps, Transmissions
Batteries (Alkaline)	Various Locations	Battery Failures	Universal Waste	Place in the UWAA in the equipment repair shop	"D" cell and below are acceptable in the Non-Burnable Waste Dumpster	Ship to designated site for recycling or disposal
Batteries (Lead Acid)	Equipment Repair Shop and Fab Shop	Battery Failures	Universal Waste	No storage allowed. Containment boxes are labeled and available in the shops.	Lead acid batteries are returned to the Vendor upon removal	Ship to designated site for recycling
Batteries (Nicad)	Various Locations	Battery Failures	Universal Waste	UWAA in the equipment repair shop.	Ship to assigned site for recycling or disposal	Cell phones, radios
Butane Torch Bottle	Various Locations	Mechanic activities	Excluded Hazardous if recycled	Place drained Butane Torch Bottles in RAA storage drum	Crush RAA storage drum and place in the scrap metal dumpster	Prosolv Butane Bottle processor I
Cardboard/Office Paper	Parts Department & Offices	Shipping Boxes & Office Activities	Non-Hazardous	RAA in the Hog Barn	Place on pallet in RAA and band for shipment to assigned site for recycling.	Gloves
Computers Discarded	Parts Department & Offices	Replacement	Non-Hazardous	Place in RAA	Ship to assigned site for recycling or disposal	Gloves
Diesel Filters-Used	Equipment Repair Shop and Fab Shop	Filter Changes	Non-Hazardous	RAA for drained and crushed used filters	Drain for 12 hrs., crush and incinerate in Smart Ash unit	Place metal in recycle metal dumpster
Diesel Rags	Various Locations	Mechanic activities	Non-Hazardous	Oily waste rag in clear bags w/yellow stripes.	Ship to assigned site for recycling or disposal	Gloves
Drained Diesel	Equipment Repair and Fab Shop	Draining diesel fuel and filters	Non-Hazardous when burned as off-Spec fuel	Place in "used oil" tank in the equipment repair shop and fab shop.	Ship to assigned site for recycling or disposal	Gloves
Empty Paint Cans	Various Locations	Painting activities	Non-Hazardous	No storage allowed	Ship to assigned site for recycling or disposal	Paint cans must be RCRA empty.
Fluorescent Light Ballast	Various Locations	Failure	Non-Hazardous unless they	None	Place in Non-Burnable Dumpster	Ballast will say on the label if it contains PCB's

			contain PCB's or DEHP			
Fluorescent Light Bulbs	Shops, Office Areas	Bulb replacement	Universal Waste	Place bulbs in their original container in the RAA in the shop area	Ship to assigned site for recycling or disposal	Label bulbs "Used Bulb" when put into RAA.
Glass	Various Locations	Replacement	Non-Hazardous	None	Place in Non-Burnable Dumpster	Ensure glass containers are empty.
Grinding Wheels	Equipment Repair Shop and Fab Shop	Grinding activities	Non-Hazardous	None	Place in Non-Burnable Dumpster	gloves
Hoses & Belts	Equipment Repair Shop and Fab Shop	Replacement	Non-Hazardous	Place in Non-Burnable Dumpster	Place in Non-Burnable Dumpster	Drain all fluids from hoses
Metal Shavings/Cuttings	Equipment Repair Shop and Fab Shop	Fabricating activities	Excluded Hazardous if recycled	Placed in recycle metal dumpster or metal only RAA's	Place in recycle metal dumpster	Ensure there are no free flowing cutting fluids present before disposal.
Oil Filters-Used	Equipment Repair Shop and Fab Shop	Oil filter changes	Excluded Hazardous	RAA for drained and crushed used filters	Drain for 12 hrs., crush and incinerate in Smart Ash unit	Place metal in recycle metal dumpster
Oil-Used	Equipment Repair Shop, Fab Shop, Service Trucks	Draining oil and filters	Excluded Hazardous if burned for energy recovery	Receiving sumps are located in the Equipment Repair Shop and Fab Shop	Burned for energy recovery in clean burn multi-oil heating system.	Keep lids on receiving sumps at all times. DO NOT PUT SOLVENTS INTO USED OIL
Oily Waste (rags, absorbents)	Various Locations	Mechanic activities, equipment drips and leaks	Non-Hazardous	Oily waste rag WAA's lined w/clear bags w/yellow stripes.	Ship to assigned site for recycling or disposal	Gloves
Paint Waste (rags, rollers, brushes, etc.)	Various Locations	Painting activities	Determine on per occurrence basis. Use MSDS or testing	If hazardous, store in the assigned area. If non-hazardous, no storage is required.	If hazardous, ship to assigned site for disposal. If non-hazardous, place in burnable waste dumpster.	Need to review MSDS, do analytical test, or use generator knowledge to make waste determinations.
Parts Cleaner Rags	Equipment Repair Shop	Cleaning parts	Non-Hazardous	Oily waste rag WAA's lined w/clear bags w/yellow stripes.	Ship to assigned site for recycling or disposal	Gloves
Scrap Metal	Various Locations	Fabrication activities & house cleaning	Excluded Hazardous if recycled	Placed in recycle metal dumpster or metal only RAA's	Place in recycle metal dumpster	Eye Protection Gloves
Sodium Vapor/ Metal Halide Light Bulbs	Various Locations	Bulb replacement	Universal Waste	Place bulbs in their original container in the RAA.	Ship to assigned site for recycling or disposal	Label bulbs "Used Bulb" when put into RAA.
Tires	Various Locations	Replacement	Non-Hazardous	None	Place tires up to 20" rim diameter into dumpster.	Gloves
Toner Cartridges	Offices	Copiers, printers, fax machines	Non-Hazardous	Placed in original container in RAA	Ship to assigned site for recycling or disposal	Verify toner is expended before disposal.

Water Scrubber Filter & Absorbents	Equipment Repair Shop and Fab Shop	Filtering sump water in shops	Non-Hazardous	None	Incinerated in Smart Ash unit	See "Ash" for management and disposal
Welding Rods	Various Locations	Welding activities	Excluded Hazardous	Placed in recycle metal dumpster or metal only RAA's	Ship to assigned site for recycling or disposal	See "Scrap Metal" for waste stream management
Wood Waste	Various Locations	Various activities and shipping pallets	Non-Hazardous	Store on the far back corner of the pad or in the dump truck box if available.	Place in recycle wood dumpster	Pallets are refurbished and recycled when possible

14.4 Storage Requirements

Vector Projects Group Ltd must ensure project related wastes are stored and maintained in an organized fashion to encourage proper disposal and minimize risks to employees. Proper waste receptacles must be provided for trash and materials that may be reused or recycled during a project.

14.5 PPE

For each site waste management plan Vector Projects Group Ltd shall determine a PPE matrix that includes gloves, hand protection, eye and face protection and/or other necessary PPE.

14.6 Education and Training

Employees shall be instructed on managing waste generated at the work site and on the proper disposal method of wastes. Examples include:

- Instruction on the proper handling, storage and disposal of wastes and depending on the waste generated at the site to also include general instruction on disposal of non-hazardous wastes, trash or scrap materials. If wastes generated are classified as hazardous then employees shall be trained to ensure proper disposal and compliance with regulations.
- Minimization methods to reduce waste.
- Recycling methods and proper PPE to be utilized.

15.0 FIT FOR DUTY

15.1 Purpose

Vector Projects Group Ltd full and part-time staff are expected to report for work fit for duty, which means able to perform their job duties in a safe, appropriate and an effective manner free from the adverse effects of physical, mental, or emotional problems in Canada.

15.2 Scope

This program applies to all Vector Projects Group Ltd projects and operations.

15.3 Requirements

It is the goal of Vector Projects Group Ltd to provide a safe workplace for all workers. To accomplish this goal we have adopted the following fitness for duty policy requirements.

15.3.1 Competency

Workers are competent/qualified to perform their job. Vector Projects Group Ltd must ensure that workers have the necessary education, experience and training to perform their job tasks.

15.3.2 Physically Capable

Workers must be physically capable to perform their job. Workers must be physically capable of performing their job tasks.

A Physical Demands Analysis (PDA) should be prepared for each job duty to ensure workers are placed accordingly.

PDAs will be arranged through the Safety Manager.

15.3.3 Medication Reporting Requirements

Workers must notify their supervisor if they are taking prescription or over-the-counter medication that may impair their ability to work safely. Employees must report all medications they are taking.

Over-the-counter medications such as allergy or cold and flu medications could also impair one's ability to perform safely and must also be reported to their supervisor.

15.3.4 Employee Activity and Behavior

Vector Projects Group Ltd is responsible for monitoring workers for unsafe behaviors and removing workers from the job site, if necessary. Employee's activities and behaviors will be monitored to determine if employee(s) should be removed from the work site.

Workers are prohibited from entering the workplace while under the influence of drugs or alcohol. Vector Projects Group Ltd must ensure that no person enters or remains at the job site while under the influence of drugs and/or alcohol.

15.3.5 Employee Assistance

Vector Projects Group Ltd will provide assistance to workers who are unable to safely perform their job duties. If an employee is determined to be unfit for duty, Vector Projects Group Ltd should have a process in place to provide reasonable assistance to the employee. This may include, but is not limited to, transferring the worker to another role, providing a leave of absence, Employee Assistance Programs, etc.

Vector Projects Group Ltd will review each matter on a case by case basis.

Disciplinary action may occur for an employee reporting to work in a condition which could endanger their safety or the safety of any other person(s).

15.4 Training

The Fit for Duty policies and procedures for Vector Projects Group Ltd are communicated to employees. Vector Projects Group Ltd must ensure that workers are trained on the Fit for Duty policies and procedures for Vector Projects Group Ltd.

Safe work practices and procedures must be followed. Safe work procedures must be in place prior to work beginning.

Employees shall follow our and our client's safety requirements. Examples may include, hot work permitting, confined space, lockout tagout, process safety management, electrical safety, operator safety and other standard work practices, safety rules or procedures.

16.0 FIRE PROTECTION

16.1 Purpose

The purpose of this program is to provide fire safety planning regarding fire, explosion, combustible materials and appropriate planning and procedures required to minimize risk for operations. The material in this document does not take precedence over applicable government legislation which all employees must follow.

16.2 Scope

This program applies to all Vector Projects Group Ltd workers and all Vector Projects Group Ltd locations.

16.3 Responsibilities

Safety Manager

Develops local first aid plans or procedures for all worksites in accordance with this procedure and ensures workers are aware of the requirements of the fire and explosion prevention program plans or procedures.

Worksite Project Manager

Responsible for the implementation and maintenance of the fire and explosion prevention program for their facility and ensuring all assets are made available for compliance with the procedure.

Employees

All workers are responsible for following these provisions and attending specified training.

16.4 Procedure

Assessment for Fire and Explosion Hazards

A site specific assessment for fire and explosions shall be developed for each project. The Vector Projects Group Ltd Safety Manager will perform a written assessment review.

Fire Safety Plan

Vector Projects Group Ltd will factor the following into the hazard assessment and development of the site specific fire safety plan and shall:

- Take all reasonably practicable steps to prevent the outbreak of fire at a place of employment and to provide effective means to protect workers from any fire that may occur;
- Develop and implement a written fire safety plan that provides for the safety of all workers in the event of a fire. A plan developed must include:
    - the emergency procedures to be used in case of fire, including: sounding the fire alarm, notifying the fire department and evacuating endangered workers, with special provisions for workers with disabilities;
    - the quantities, locations and storage methods of all flammable substances present at the place of employment;

- the designation of persons to carry out the fire safety plan and the duties of the designated persons;
- the training of designated persons and workers in their responsibilities for fire safety;
- the holding of fire drills at least once during each 12-month period; and
- the control of fire hazards.

- Suitable procedures are developed and implemented to prevent the ignition of flammable liquids or explosive dusts that are present at a worksite;
- All sources or potential sources of ignition are eliminated or controlled where an explosive atmosphere exists or is likely to exist; and
- Static charge accumulations during transfer of flammable liquids or explosive substances from one container to another are prevented by electrically bonding the containers or otherwise designed to control the presence of static electricity.

16.5 Other Planning Requirements

No worker shall enter a workplace where a flammable or explosive substance is present in the atmosphere at a level that is more than 10% of the lower explosive limit of that substance.

Only if in a life-threatening emergency exposure of emergency response workers is permitted above 10% of the LEL provided that only the minimum number of those qualified and properly trained and equipped workers necessary to correct the unsafe condition are exposed to the hazard and every possible effort is made to control the hazard while this is being done.

When portable flare stacks are used these must be located a minimum of 25 meters from the hazardous location.

Good housekeeping and preventative maintenance on all equipment shall be maintained to prevent fire hazards from occurring.

Smoking must be confined to areas specifically designated by Vector Projects Group Ltd management. Smoking is not permitted while around any active/functioning hydrocarbon clean-up/vacuuming equipment, around compressed gas cylinder storage locations or at any Vector Projects Group Ltd or client designated “No Smoking” areas.

Oily/greasy rags, paper waste and other flammable trash will be removed and disposed of in covered metal containers or appropriately marked safety cans, or in over-pack spill containers, whenever these sources are generated, for the prevention of spontaneous combustion.

Matches or cigarette lighters should not be taken into any area where an explosive atmosphere may be present.

16.6 Fire Potential and Response Procedures

All leaks of flammable liquids will be reported immediately and repaired if practicable. If immediate repair is not possible, all spark-producing operations within the vicinity of the leak or spill will be stopped and adequate warning signs or barricade tape will be posted until the hazard is controlled or eliminated.

If a worker’s clothing is contaminated with a flammable or combustible liquid, the worker must avoid any activity where a spark or open flame may be created or exists, remove the clothing at the earliest possible

time and ensure that the clothing is decontaminated before it is used again. If a worker's skin is contaminated with a flammable or combustible liquid, the worker must wash the skin at the earliest possible time.

All fires at a Vector Projects Group Ltd worksite shall be reported to supervisory personnel immediately. A written incident report will be filed by the immediate supervisor in charge of that area once the fire has been addressed.

16.6.1 Fire Extinguishing Theory

Fire is a chemical reaction that occurs when a fuel rapidly unites with oxygen in the presence of a heat source, and a flame is produced. Four elements are necessary to produce and support a fire:

- Fuel source (solid - liquid - gas)
- Heat source (a type of energy)
- Oxygen source (gas for ignition and flame support)
- Chemical chain reaction (occurs when fuel, heat and oxygen are united in the proper proportions to create a fire).

If any one of these four elements is eliminated, the fire will go out. There are four ways that a fire can be extinguished:

- Isolate, contain, separate, cover, or remove the fuel source.
- Remove the heat source by applying a cooling agent which absorbs the heat. Water is the most common cooling agent used to remove the heat from the reaction.
- Separate the oxygen from other essentials that make a fire by smothering the fire with a wet blanket, throwing soil or sand on it, or covering it with a chemical foam or water fog.
- Stop the chemical reaction by applying certain chemical substances that break up this chain reaction, such as sodium bicarbonate (baking soda) or potassium bicarbonate ("purple K") or sodium monophosphate (ABC dry chemical). Application of these chemicals will result in a reduction of the combustion rate and the fire can be extinguished.

16.7 Fire Classifications

There are 3 basic fire classification types present within Vector Projects Group Ltd operations and most host-facility job-sites. A specific class of fire extinguishers may be required based on the type of situation. The classifications are:

CLASS "A"

Fires that involve paper, wood, cardboard, textiles, etc. Foam or water-based liquids are used to extinguish this type of fire.

CLASS "B"

Fires that involve flammable liquid such as gasoline, diesel, grease, oil, paint, solvents, etc., dry chemicals, carbon dioxide or water in a spray-fog form are used to extinguish this type of fire.

CLASS "C"

Fires involving electrical equipment. Dry chemical or carbon dioxide is used to extinguish this type of fire.

Warning: Never use water to extinguish this type of fire due to the potential for electrical shock hazards.

Incipient Stage – Portable Firefighting Procedure

If personnel discover a fire in its early incipient (small) stage, initiate the following procedure if on Vector Projects Group Ltd locations: (if servicing a host-facility client, observes that client's contractor requirements concerning fire prevention.)

- Remain calm
- Report the fire to appropriate supervisory personnel
- If personnel believe the fire can be controlled through the use of a fire extinguisher and personnel are properly trained in the use of a fire extinguisher, seek out and remove the closest fire extinguisher from its securing location in the area of occurrence and put out the fire.

16.7.1 Miscellaneous

Garbage that may constitute a fire hazard is stored in covered receptacles. Where garbage may constitute a fire hazard is present Vector Projects Group Ltd shall provide covered receptacles for the garbage that are suitable to the nature of the hazard.

A person must not enter or work at a work area if more than 20 percent of the lower explosive limit of a flammable or explosive substance is present in the atmosphere. Atmospheric testing results will be assessed before a worker is exposed.

Hydrocarbon resistant gloves will be worn to prevent skin absorption by the hands.

16.7.2 Control Measures for Internal Combustion Engines in Hazardous Locations

Vector Projects Group Ltd must ensure that an internal combustion engine in a hazardous location has a combustion air intake and exhaust discharge that are equipped with a flame arresting device or located outside the hazardous location. Vector Projects Group Ltd must ensure that all the surfaces of an internal combustion engine that are exposed to the atmosphere in a hazardous location are at a temperature lower than the temperature that would ignite a flammable substance present in the hazardous location or shielded or blanketed in such a way as to prevent any flammable substance present in the hazardous location from contacting the surface.

Whenever possible, internal combustion engines should be located outside the hazardous location.

Internal combustion engines in a hazardous location should not be running if possible.

No worker shall undertake any servicing or maintenance of a vehicle while a flammable liquid or gas or an explosive substance is loaded into or unloaded from the vehicle or is present in the vehicle in any place other than the fuel tank.

Any driver who operates a vehicle that contains a flammable liquid or gas or an explosive substance shall ensure that the engine of the vehicle is shut off during the connection or disconnection of the lines for the loading or unloading of the flammable liquid, gas or explosive substance.

16.7.3 Safe Storage and Handling of Flammable Substances

Vector Projects Group Ltd must ensure that flammable substances stored or used at the work area will not be in sufficient quantity to produce an explosive atmosphere if inadvertently released, are not stored within 30 metres of an underground shaft, are not stored in the immediate vicinity of the air intake of a ventilation supply system an internal combustion engine, or the fire box of a fired heater or furnace, and are stored only in containers approved to CSA Standard B376-M1980 (R2008), Portable Containers for Gasoline and Other Petroleum Fuels (or current version).

16.8 Safe Storage and Handling of Compressed Gas Cylinders

Vector Projects Group Ltd must ensure that:

Compressed or liquefied gas containers are used, handled, stored, and transported in accordance with the manufacturer's specifications.

A cylinder of compressed flammable gas is not stored in the same room as a cylinder of compressed oxygen, unless the storage arrangements are in accordance with Part 3 of the Alberta Fire Code (1997).

Compressed or liquefied gas cylinders, piping, and fittings are protected from damage during handling, filling, transportation and storage.

Compressed or liquefied gas cylinders are equipped with a valve protection cap if manufactured with a means of attachment.

Oxygen cylinders or valves, regulators, or other fittings of the oxygen using apparatus or oxygen distributing system are kept free of oil and grease.

All compressed gas cylinders will be stored in their appropriately marked secured (chained) locations and capped when not in use. If in use, all hook-up hoses and equipment used for hot-work purposes will be inspected prior to use. Defective equipment found shall not be used, but instead, tagged out of service or repaired before being used again.

Oxygen is never to be used as a substitute for compressed air in pneumatic tools, to create pressure, for ventilating purposes or to blow out a pipeline.

All regulators and its flexible connecting hose are to be tested immediately after connections to a gas cylinder to ensure that there is no leak of the gas supply. If a leak of the gas supply develops during gas welding or an allied process, the supply of gas is immediately shut off by the worker performing the welding or allied process and the work is not resumed until the lead is repaired.

Storage compartments for compressed and liquefied gas cylinders must meet local legislative requirements.

All welding services will be provided from vehicles that comply with CSA Standard W117.2-06 - Safety in Welding, Cutting and Allied Processes.

All storage cylinders for compressed gas shall be secured in an upright position.

The control valve of a storage cylinder for compressed gas, other than a cylinder connected to a regulator, supply line or hose, shall be covered by a protective cap that is secured in its proper position.

A spent storage cylinder shall not be stored inside a building.

No storage cylinder for propane shall be placed closer than three metres to a source of ignition or fire.

16.9 Fire Extinguishers

Fire extinguishing equipment is readily available. Each work site shall be provided with readily accessible fire extinguishers adequately marked locations at a project.

Every worker who may be required to use fire extinguishing equipment shall be trained in its use.

Vector Projects Group Ltd will ensure that portable fire extinguishers are selected, located, inspected, maintained and tested so the health and safety of workers at the place of employment is protected.

Fire extinguishers that have been partially or completely used will be removed from service and replaced by similar equipment that has been inspected and authorized for service. Spent containers will temporarily be placed at either any work site trailer or each individual main office location.

Every fire extinguisher shall be inspected for defects or deterioration at least once a month by a competent worker who shall record the date of the inspection on the tag attached to it.

All portable fire extinguishers shall also be checked annually by a competent fire extinguisher supplier.

Portable fire extinguishers are to be selected, located, inspected, maintained and tested so that the health and safety of workers at the place of employment is protected. Vector Projects Group Ltd shall ensure that portable fire extinguishers are placed not more than nine meters away from each industrial open-flame portable heating device, tar pot or asphalt kettle that is in use and each welding or cutting operation that is in progress.

<u>All fire extinguishers shall be maintained as follows:</u>

- Fully charged and in operable condition
- Clean and free of defects
- Readily accessible at all times

In the event of a fire, one trained worker will get the nearest fire extinguisher and use it to attempt to put the fire out. All other workers in the immediate area will prepare to evacuate if needed. All other workers in the building need to be advised that a fire is in progress.

The worker attempting to extinguish the fire will break the safety seal on the handle and pull the pin. He will then aim his extinguisher at the base of the fire and discharge it with a sweeping motion from side to side; continuing until the fire is out or the extinguisher is emptied.

Remember that a standard fire extinguisher will be emptied in about 10 to 15 seconds. If the fire is not out when the extinguisher has been completely discharged, the workers must evacuate the area.

16.10 Flammable Liquids and Substances

Flammable liquids such as various fuels or solvents will be transported in appropriately marked safety cans with their contents identified. No glass container use will be allowed.

The use of gasoline as a cleaning agent on Vector Projects Group Ltd property is strictly forbidden. Only low flash point liquids are permissible for use in cleaning parts and machinery. Also no worker shall use gasoline to start a fire or use gasoline or replenish a tank on a heating device with a flammable or combustible liquid while the device is in operation or is hot enough to ignite the liquid.

All materials combustible and flammable liquids contaminated by flammable liquids are placed in receptacles that meet the requirements of the National Fire Code of Canada 1990, including any Revisions and Errata published from time to time, respecting the storage of flammable and combustible liquids that. All shall be non-combustible and have close-fitting metal covers, are labelled “flammable” and are located at least one meter away from other flammable liquids.

No tar pot, while in use, will be placed within three meters of an entrance to or exit from a building.

When a flammable gas or a flammable liquid is handled, used or stored, all sources of ignition must be eliminated or adequately controlled including open flame, spark-producing mechanical equipment, welding and cutting processes, smoking, static discharge and any electrical equipment or installation that is not approved for hazardous locations, as specified by local regulatory requirements and national codes..

Metallic or conductive containers used to transfer flammable liquids must be electrically bonded to each other or electrically grounded while their contents are being transferred from one container to the other.

Only containers approved to CSA Standard B376-M1980 (R1998), NFPA Standard 30 or ULC Standard C30-1995 shall be used to store flammable substances.

Containers of flammable substances will be stored in fire-proof cabinets and no appreciable combustible materials will be stored within 12 meters of any spark producing operation.

16.11 Hot Work

Vector Projects Group Ltd must develop and implement safe work procedures for fire and explosive hazards in the workplace, including hot work if hot work is performed in the workplace additionally, where a flammable substance is or is intended to be handled, used, stored, produced or disposed of at any Vector Projects Group Ltd location the Safety Manager shall develop written procedures to ensure the health and safety of workers who handle, use, store, produce or dispose of a flammable substance that may spontaneously ignite or ignite when in combination with any other substance or perform hot work where there is a risk of fire.

Our site specific procedures are to ensure that hot work is not begun until a hot work permit is issued which must include the nature of the hazard, the type and frequency of atmospheric testing required, the safe work procedures and precautionary measures to be taken, and the protective equipment required.

Vector Projects Group Ltd requires where a flammable substance is or may be present no hot work is to be permitted or performed until suitable tests have been conducted that indicate whether the atmosphere contains a flammable substance in a quantity sufficient to create an explosive atmosphere or risk of fire. We will confirm that the work may be safely be performed through suitable work steps, tests taken at intervals

appropriate to the work being performed and record the results and procedures developed and implemented to ensure continuous safe performance of the work.

Any container or piping that contains or has contained a flammable substance shall be purged using an effective method to remove the flammable substance from the container or piping before any hot work is begun on that container or piping. Vector Projects Group Ltd does not require nor permit any welding or cutting of metal that has been cleaned with a flammable or combustible liquid until the metal has thoroughly dried.

No hot tapping will occur until the Safety Manager develops a hot tap plan specific to the type or class of hot tap work being performed. There will be no exceptions to this requirement.

16.12 Welding Restrictions

All welding will comply with the requirements of CSA Standard W117.2-06, "Safety in Welding, Cutting and Allied Processes."

All welding or allied process equipment is erected, installed, assembled, started, operated, used, handled, stored, stopped, inspected, serviced, tested, cleaned, adjusted, carried, maintained, repaired and dismantled in accordance with the manufacturer's specifications. Additionally, the area surrounding the operation is inspected and all combustible, flammable or explosive material, dust, gas or vapour is removed or alternate methods of rendering the area safe are implemented.

If a welding or allied process if performed above an area where a worker may be present the supervisor shall ensure that adequate means are taken to protect a worker below the operation from sparks debris and other falling hazards.

An operator of an electric welding machine must not leave the machine unattended without removing the electrode.

All appropriate welding and ground leads are used to fasten the electric supply cable securely.

16.13 Training

Where Vector Projects Group Ltd has provided portable fire extinguishers for employees use in the workplace, the company also shall provide an educational program to familiarize employees with the general principles of fire extinguisher use and the hazards involved in incipient stage of firefighting. This includes operators of company owned/leased motor vehicles equipped with fire extinguishers.

Employees are provided training on the fire safety plan. Vector Projects Group Ltd shall ensure that:

- Designated persons and workers who have been assigned fire safety duties are adequately trained in, and implement, the fire safety plan;
- The fire safety plan is posted in a conspicuous place for reference by workers; and
- A fire drill is held at least once during each 12-month period.

Vector Projects Group Ltd shall also provide training for:

- The proper use of portable fire extinguishers, for incipient (small stage) fire-fighting purposes only, upon initial hire and annually thereafter if they are required to use fire extinguishing equipment.
- The safe work procedures for fire, flammable substances and explosive hazards in the workplace including hot work and how to implement the procedures developed.

16.13.1 Retraining

Retraining shall re-establish worker proficiency and introduce new or revised control methods and procedures, as necessary. Retraining shall be provided for all authorized and affected workers whenever there is:

- An annual basis or
- A change in job assignment or
- Vector Projects Group Ltd has reason to believe that there are deviations from or inadequacies in the worker's knowledge or use of fire extinguishers or fire prevention procedures.

16.13.2 Training Documentation

- All training will be documented and each worker's understanding will be subject to a "hands-on" test.
- Documentation will consist of: the worker's name, the trainer's name, the date of the training, and an outline of training provided. All training records will be maintained in the worker’s safety file.

17.0 FIRST AID

17.1 Purpose

The purpose of this program is to provide procedures for first aid equipment and procedures when performing work. The material in this document does not take precedence over applicable government legislation which all employees must follow.

17.2 Scope

When work is performed on a non-owned or operated site, the prime contractor program shall take precedence, however, this document covers Vector Projects Group Ltd employees and shall be used on owned premises, or when an operator's program doesn't exist or is less stringent.

17.3 Responsibilities

Safety Manager

Develops and/or approves local first aid plans or procedures for all worksites in accordance with this procedure and ensures employees are aware of the requirements of the first aid plans or procedures.

Worksite Project Manager

Responsible for the implementation and maintenance of the first aid procedure for their facility and ensuring all assets are made available for compliance with the procedure.

Employees

All workplace injuries shall be reported to the Vector Projects Group Ltd manager or supervisor and the designated first aid attendant for documentation and treatment as soon as practicable possible following an injury.

17.4 Procedure

17.4.1 Assessment for First Aid

A site specific assessment for first aid shall be developed for each project. The Vector Projects Group Ltd Safety Manager will perform a written assessment review and this review will include, but not be limited to, the following areas:

- The number of employees who may require first aid at any time.
- The nature and extent of the risks and hazards in the workplace, including whether or not the workplace as a whole creates a low risk of injury.
- The types of injuries likely to occur.
- Any barriers to first aid being provided to an injured employee.
- The time that may be required to obtain transportation and to transport an injured employee to medical treatment.

17.4.2 Posting Requirements

Each site shall post, at conspicuous places at the work site, in the vicinity of first aid kits or first aid room, signs indicating the location of first aid services, equipment and supplies or, if posting of signs is not practicable, ensure that each worker knows the location of first aid services, equipment and supplies.

A list of all qualified first aid attendants, qualifications and work locations will be posted, revised as needed and annually, and be contained with the site specific safety plan.

The first aid procedures and a telephone list or other instructions for reaching the nearest police, ambulance, fire station, hospital or physician will be posted.

In a conspicuous position at a workplace a written notice which outlines a policy and procedure for the reporting of injuries.

17.4.3 Availability of First Aid Personnel

Workers certified in first aid are readily available to assist injured workers. Vector Projects Group Ltd must provide for each workplace such first aid attendants and services as are adequate and appropriate for promptly rendering first aid to workers if they suffer an injury at work. The type and quantity of first aid attendants must be no less than is required by Occupational Health and Safety legislation based on the jurisdiction.

17.4.4 First Aid Attendant Qualifications

First aid providers are certified. Vector Projects Group Ltd will make available a trained First aid/CPR certified individual if a medical facility is not within a reasonable distance or if one is not provided for you on site. Vector Projects Group Ltd must ensure that a person who is designated as a first aid attendant has successfully completed the first aid training course or first aid examination and has a first aid certificate in good standing.

17.4.5 First Aid Attendant Responsibilities

The first aid attendant must promptly provide injured employees with a level of care only within the scope of the attendant's training.

Objectively record observed or reported signs and symptoms of injuries and exposures to contaminants based on local regulatory requirements.

Refer for medical treatment employees with injuries considered by the first aid attendant as being serious or beyond the scope of the attendant's training.

17.4.6 First Aid Supplies, Equipment and Storage Requirements for First Aid Supplies

First aid supplies are readily available, stocked, and their use recorded in your workplace relative to the number of persons on the work site, company vehicles and easily accessible when required. First aid equipment, supplies and facilities must be kept clean, dry and ready for use, and be readily accessible at any time a worker works in the workplace.

On a monthly basis the site manager or the designated person will conduct an inspection of the first aid facilities (if Vector Projects Group Ltd is providing) and supplies to ensure that they meet provincial legislation requirements as related to the type, number and specification of required kits. These inspections shall be documented by marking an inspection card for each box with the date of the most recent inspection and the signature of the person making the inspection

Vector Projects Group Ltd shall ensure that anything in the workplace that has been contaminated by blood or bodily fluids is disposed of or cleaned by a competent person in a manner that prevents an employee from being exposed to the blood or bodily fluids.

17.4.7 Means of Communication

A means of communication is readily available to notify emergency services of an emergency. Vector Projects Group Ltd must provide an effective means for communication between the first aid attendant and the workers served and the first aid attendant to call for assistance. Examples include: radio, telephone, etc.

The emergency communication plan will be contained within the Vector Projects Group Ltd site specific Emergency Response for each worksite.

The first aid attendant and all other persons authorized to call for transportation for injured workers must be trained in the procedures.

17.4.8 Documentation and Investigation

All work related injuries and illnesses are documented. Vector Projects Group Ltd must maintain at the workplace a record of all injuries and exposures to contaminants that are reported or treated.

All first aid records are to be kept confidential and may not be disclosed except as permitted by law.

All incidents must be investigated. Vector Projects Group Ltd must immediately undertake an investigation into the cause of any accident or other incident that:

- serious incidents, as described in Workers Compensation legislation.
- resulted in injury to a worker requiring medical treatment,
- did not involve injury to a worker, or involved only minor injury not requiring medical treatment, but had a potential for causing serious injury to a worker, or
- was an incident required by regulation to be investigated.

Vector Projects Group Ltd must ensure that an incident investigation report contains:

- the place, date, and time of the incident,
- the names and job titles of persons injured in the incident,
- the names of witnesses,
- a brief description of the incident,
- a statement of the sequence of events which preceded the incident,
- identification of any unsafe conditions, acts or procedures which contributed in any manner to the incident,
- recommended corrective actions to prevent similar incidents, and
- the names of the persons who investigated the incident.

17.4.9 Transportation

Before workers are sent to a work site, Vector Projects Group Ltd must ensure that arrangements are in place to transport injured or ill workers from the work site to the nearest health care facility. Each Vector Projects Group Ltd work site shall have a plan preparing for transportation to the nearest health care facility in the event of an injury or illness. Vector Projects Group Ltd must provide for each workplace such equipment and services as are adequate and appropriate for transporting injured workers to medical treatment.

Vector Projects Group Ltd must ensure that an ambulance service is readily available to the work site when travel conditions are normal. If an ambulance service is not readily available to the work site, or if travel conditions are not normal, an employer must ensure that other transportation is available that:

- is suitable, considering the distance to be travelled and the types of acute illnesses or injuries that may occur at the work site

- protects occupants from the weather
- has systems that allow the occupants to communicate with the health care facility to which the injured or ill worker is being taken, and
- can accommodate a stretcher and an accompanying person if required to.

If a taxi is utilized, a first aid trained employee is to accompany the injured worker to the medical facility.

This information shall be contained with each worksite's Emergency Response Plan. Transportation arrangements need to be approved in advance by the Safety Manager.

18.0 FLAMMABLE AND COMBUSTIBLE SUBSTANCES

18.1 Purpose

The purpose of this program is to provide fire safety planning regarding fire, explosion, combustible materials and appropriate planning and procedures required to minimize risk for operations. The material in this document does not take precedence over applicable government legislation which all employees must follow.

18.2 Scope

When work is performed on a non-owned or operated site, the operator's program shall take precedence, however, this document covers Vector Projects Group Ltd workers and shall be used on owned premises, or when an operator's program doesn't exist or is less stringent.

18.3 Responsibilities

The safety manager is responsible for developing procedures for the design of fire safety plans and procedures at each Vector Projects Group Ltd work site. The site manager is responsible for implementing the requirements and training at his or her location. The supervisors are responsible for enforcing the provisions of this section of the safety manual. All workers are responsible for following these provisions.

Safety Manager

Develops local first aid plans or procedures for all worksites in accordance with this procedure and ensures workers are aware of the requirements of the fire and explosion prevention program plans or procedures.

Worksite Project Manager

Responsible for the implementation and maintenance of the fire and explosion prevention program for their facility and ensuring all assets are made available for compliance with the procedure.

Employees

All workers are responsible for following these provisions and attending specified training.

18.4 Definitions

Carbon dioxide – A colorless, odorless, electrically nonconductive inert gas (chemical formula CO(2)) that is a medium for extinguishing fires by reducing the concentration of oxygen or fuel vapor in the air to the point where combustion is impossible.

Class A fire – A fire involving ordinary combustible materials such as paper, wood, cloth, and some rubber and plastic materials.

Class B fire – A fire involving flammable or combustible liquids, flammable gases, greases and similar materials, and some rubber and plastic materials.

Class C fire – A fire involving energized electrical equipment where safety to the employee requires the use of electrically nonconductive extinguishing media.

Class D fire – A fire involving combustible metals such as magnesium, titanium, zirconium, sodium, lithium and potassium.

Dry chemical – An extinguishing agent composed of very small particles of chemicals such as, but not limited to, sodium bicarbonate, potassium bicarbonate, urea-based potassium bicarbonate, potassium chloride, or

monoammonium phosphate supplemented by special treatment to provide resistance to packing and moisture absorption (caking) as well as to provide proper flow capabilities. Dry chemical does not include dry powders.

Dry powder – An compound used to extinguish or control Class D fires.

Extinguisher classification – The letter classification given an extinguisher to designate the class or classes of fire on which an extinguisher will be effective.

Extinguisher rating – The numerical rating given to an extinguisher which indicates the extinguishing potential of the unit based on standardized tests developed by Underwriters' Laboratories, Inc.

Incipient stage fire – A fire which is in the initial or beginning stage and which can be controlled or extinguished by portable fire extinguishers, Class II standpipe or small hose systems without the need for protective clothing or breathing apparatus.

18.5 Procedures

18.5.1 Assessment for Fire and Explosion Hazards

A site specific assessment for fire protection shall be developed for each project. The Vector Projects Group Ltd Safety Manager will perform a written assessment review.

18.5.2 Fire Safety Plan

Vector Projects Group Ltd will factor the following into the hazard assessment and development of the site specific fire safety plan and shall:

1. Take all reasonably practicable steps to prevent the outbreak of fire and to provide effective means to protect workers from any fire that may occur
2. Develop and implement a written fire safety plan that provides for the safety of all workers in the event of a fire. A plan developed must include:

    a. the emergency procedures to be used in case of fire, including - sounding the fire alarm, notifying the fire department and evacuating endangered workers, with special provisions for workers with disabilities;
    b. the quantities, locations and storage methods of all flammable substances present at the place of employment;
    c. the designation of persons to carry out the fire safety plan and the duties of the designated persons;
    d. the training of designated persons and workers in their responsibilities for fire safety; the control of fire hazards.

3. Suitable procedures are developed and implemented to prevent the ignition of flammable liquids or explosive dusts that are present at a worksite;
4. All sources or potential sources of ignition are eliminated or controlled where an explosive atmosphere exists or is likely to exist; and
5. Static charge accumulations during transfer of flammable liquids or explosive substances from one container to another are to be prevented by electrically bonding the containers or otherwise designed to control the presence of static electricity.
6. Flammable and combustible substances are stored separately from substances they might react with.

18.5.3 Other Fire Hazard Area Planning Requirements

1. Open flames are prohibited in fire hazard areas.
2. Fire hazard areas shall be identified by warning signs, and persons shall not smoke, use open flame lamps, matches or other means of producing heat or fire in designated fire hazard areas.
3. Good housekeeping and preventative maintenance on all equipment shall be maintained to prevent fire hazards from occurring.
4. Garbage that may constitute a fire hazard is stored in covered receptacles. Where garbage may constitute a fire hazard is present Vector Projects Group Ltd shall provide covered receptacles for the garbage that are suitable to the nature of the hazard.
5. Flammable materials shall only be stored in designated areas. Flammable materials shall only be stored in areas approved by the manager and designed for such storage.
6. Smoking must be confined to areas specifically designated by Vector Projects Group Ltd management. Smoking is not permitted while around any active/functioning hydrocarbon clean-up/vacuuming equipment, around compressed gas cylinder storage locations or at any Vector Projects Group Ltd or client designated "No Smoking" areas.
7. Oily/greasy rags, paper waste and other flammable trash will be removed and disposed of in covered metal containers or appropriately marked safety cans, or in over-pack spill containers, whenever these sources are generated, for the prevention of spontaneous combustion.
8. Matches or cigarette lighters should not be taken into any area where an explosive atmosphere may be present.

18.5.4 Storage of Flammable and Combustible Substances

Flammable and combustible substances are stored separately from substances they might react with.

Flammable and combustible substances must be stored in approved containers. Flammable and combustible chemicals must be stored in fire resistant cabinets or a designated storage room or building. Flammable liquids must be stored in a flammable storage cabinet with adequate ventilation.

Vector Projects Group Ltd must ensure that flammable substances stored or used at the work area,

- will not be in sufficient quantity to produce an explosive atmosphere if inadvertently released
- are not stored within 30 metres of an underground shaft
- are not stored in the immediate vicinity of the air intake of
    - a ventilation supply system
    - an internal combustion engine, or
    - the fire box of a fired heater or furnace, and
- are stored only in containers approved to CSA Standard B376 -M1980 (R2008), Portable Containers for Gasoline and Other Petroleum Fuels, NFPA Standard 30, Flammable and Combustible Liquids Code, 2008 Edition, or ULC Standard C30 -1995, Containers, Safety, if manufactured on or after July 1, 2009.

18.5.5 Fire Extinguishers

Fire extinguishing equipment is readily available. Each work site shall be provided with readily accessible fire extinguishers adequately marked locations at a project.

Class B (or ABC) fire extinguisher must be readily available while working with or near flammable and combustible liquids.

Every worker who may be required to use fire extinguishing equipment shall be trained in its use.

Vector Projects Group Ltd will ensure that portable fire extinguishers are selected, located, inspected, maintained and tested so the health and safety of workers at the place of employment is protected.

Fire extinguishers that have been partially or completely used will be removed from service and replaced by similar equipment that has been inspected and authorized for service. Spent containers will temporarily be placed at either any work site trailer or each individual main office location.

Every fire extinguisher shall be inspected for defects or deterioration at least once a month by a competent worker who shall record the date of the inspection on the tag attached to it.

All portable fire extinguishers shall also be checked annually by a competent fire extinguisher supplier.

All fire extinguisher inspection and maintenance records will be maintained by Vector Projects Group Ltd management for the serviceable life of this equipment.

All fire extinguishers shall be maintained as follows:

- Fully charged and in operable condition
- Clean and free of defects
- Readily accessible at all times

18.5.6 Fire Potential and Response Procedures

All leaks of flammable liquids will be reported immediately and repaired if practicable. If immediate repair is not possible, all spark-producing operations within the vicinity of the leak or spill will be stopped and adequate warning signs or barricade tape will be posted until the hazard is controlled or eliminated.

If a worker's clothing is contaminated with a flammable or combustible liquid, the worker must avoid any activity where a spark or open flame may be created or exists, remove the clothing at the earliest possible time and ensure that the clothing is decontaminated before it is used again. If a worker's skin is contaminated with a flammable or combustible liquid, the worker must wash the skin at the earliest possible time.

All fires at a Vector Projects Group Ltd worksite shall be reported to supervisory personnel immediately. A written incident report will be filed by the immediate supervisor in charge of that area once the fire has been addressed.

If personnel discover a fire in its early incipient (small) stage, initiate the following procedure if on Vector Projects Group Ltd locations: (if servicing a host-facility client, observes that client's contractor requirements concerning fire prevention.)

1. Remain calm
2. Report the fire to appropriate supervisory personnel
3. If personnel believe the fire can be controlled through the use of a fire extinguisher and personnel are properly trained in the use of a fire extinguisher, seek out and remove the closest fire extinguisher from its securing location in the area of occurrence and put out the fire.
4. In the event of a fire, one trained worker will get the nearest fire extinguisher and use it to attempt to put the fire out. All other workers in the immediate area will prepare to evacuate if needed.
5. The worker attempting to extinguish the fire will break the safety seal on the handle and pull the pin. He will then aim his extinguisher at the base of the fire and discharge it with a sweeping motion from side to side; continuing until the fire is out or the extinguisher is emptied.
6. Remember that a standard fire extinguisher will be emptied in about 10 to 15 seconds. If the fire is not out when the extinguisher has been completely discharged, the workers must evacuate the area.

18.5.7 Potentially Explosive Atmospheres

Workers must not enter or remain in a work area if more than 10% of the lower explosive limit (LEL) of an explosive substance is present in the atmosphere. If it is not practicable to maintain the airborne concentration of a flammable gas or vapour below the applicable exposure limit, for example, in a temporary situation or an emergency, only the minimum number of workers necessary for the work may be exposed and the concentration of the flammable gas or vapour must not exceed 20% of the lower explosive limit (LEL). See Hot Work.

18.5.8 Vehicle and Combustion Engine Related

No worker shall undertake any servicing or maintenance of a vehicle while a flammable liquid or gas or an explosive substance is loaded into or unloaded from the vehicle or is present in the vehicle in any place other than the fuel tank.

Any driver who operates a vehicle that contains a flammable liquid or gas or an explosive substance shall ensure that the engine of the vehicle is shut off during the connection or disconnection of the lines for the loading or unloading of the flammable liquid, gas or explosive substance.

All internal combustion engines in a hazardous location shall have combustion air intakes and exhaust discharges that are equipped with a flame arresting device or they will be located outside the hazardous location. Whenever possible, internal combustion engines should be located outside the hazardous location.

Internal combustion engines in a hazardous location should not be running if possible. Vector Projects Group Ltd must ensure that an internal combustion engine in a hazardous location has a combustion air intake and exhaust discharge that are equipped with a flame arresting device located outside the hazardous location. Vector Projects Group Ltd must ensure that all the surfaces of an internal combustion engine that are exposed to the atmosphere in a hazardous location are at a temperature lower than the temperature that would ignite a flammable substance present in the hazardous location or shielded or blanketed in such a way as to prevent any flammable substance present in the hazardous location from contacting the surface.

18.6 Procedures for Handling and Storage of Compressed Gases and Cylinders

Flammable substances are stored separately from ignition sources and other substances they might react with. When a flammable gas or a flammable liquid is handled, used, or stored, all sources of ignition must be eliminated or adequately controlled. Sources of ignition include open flame, spark-producing mechanical equipment, welding and cutting processes, smoking, static discharge and any electrical equipment or installation that is not approved for hazardous locations.

All compressed gas cylinders will be stored in their appropriately marked secured (chained) locations and capped when not in use. If in use, all hook-up hoses and equipment used for hot-work purposes will be inspected prior to use. Defective equipment found shall not be used, but instead, tagged out of service or repaired before being used again.

There will be safe storage and handling of compressed and liquefied gas. Vector Projects Group Ltd must ensure that:

1. Compressed or liquefied gas containers are used, handled, stored, and transported in accordance with the manufacturer's specifications.
2. A cylinder of compressed flammable gas is not stored in the same room as a cylinder of compressed oxygen.
3. Compressed or liquefied gas cylinders, piping, and fittings are protected from damage during handling, filling, transportation and storage.

4. Compressed or liquefied gas cylinders are equipped with a valve protection cap if manufactured with a means of attachment.
5. Oxygen cylinders or valves, regulators, or other fittings of the oxygen using apparatus or oxygen distributing system are kept free of oil and grease.
6. Oxygen is never to be used as a substitute for compressed air in pneumatic tools, to create pressure, for ventilating purposes or to blow out a pipeline.
7. All regulators and its flexible connecting hose are to be tested immediately after connections to a gas cylinder to ensure that there is no leak of the gas supply. If a leak of the gas supply develops during gas welding or an allied process, the supply of gas is immediately shut off by the worker performing the welding or allied process and the work is not resumed until the lead is repaired.
8. All storage cylinders for compressed gas shall be secured in an upright position.
9. The control valve of a storage cylinder for compressed gas, other than a cylinder connected to a regulator, supply line or hose, shall be covered by a protective cap that is secured in its proper position.
10. A spent storage cylinder shall not be stored inside a building.
11. No storage cylinder for propane shall be placed closer than three metres to a source of ignition or fire.

18.7 Flammable Liquids and Substances

Flammable liquids such as various fuels or solvents will be transported in appropriately marked safety cans with their contents identified. No glass container use will be allowed.

The use of gasoline as a cleaning agent on Vector Projects Group Ltd property is strictly forbidden. Only low flash point liquids are permissible for use in cleaning parts and machinery. Also no worker shall use gasoline to start a fire or use gasoline or replenish a tank on a heating device with a flammable or combustible liquid while the device is in operation or is hot enough to ignite the liquid.

When a flammable gas or a flammable liquid is handled, used or stored, all sources of ignition must be eliminated or adequately controlled including open flame, spark-producing mechanical equipment, welding and cutting processes, smoking, static discharge and any electrical equipment or installation that is not approved for hazardous locations, as specified by local regulatory requirements and national codes.

Conductive containers are electrically bonded to each other or electrically grounded during transfer of contents. Metallic or conductive containers used to transfer flammable liquids must be electrically bonded to each other or electrically grounded while their contents are being transferred from one container to the other.

18.8 Hot Work

Our site specific procedures are to ensure that hot work is not begun until a hot work permit is issued which must include the nature of the hazard, the type and frequency of atmospheric testing required, the safe work procedures and precautionary measures to be taken, and the protective equipment required.

Vector Projects Group Ltd requires where a flammable substance is or may be present no hot work is to be permitted or performed until suitable tests have been conducted that indicate whether the atmosphere contains a flammable substance in a quantity sufficient to create an explosive atmosphere or risk of fire. We will confirm that the work may be safely be performed through suitable work steps, tests taken at intervals appropriate to the work being performed and record the results and procedures developed and implemented to ensure continuous safe performance of the work.

Any container or piping that contains or has contained a flammable substance shall be purged using an effective method to remove the flammable substance from the container or piping before any hot work is

begun on that container or piping. Vector Projects Group Ltd does not require nor permit any welding or cutting of metal that has been cleaned with a flammable or combustible liquid until the metal has thoroughly dried.

No hot tapping will occur until the Safety Manager develops a hot tap plan specific to the type or class of hot tap work being performed. There will be no exceptions to this requirement.

18.9 Welding Restrictions

All welding will comply with the requirements of CSA Standard W117.2-06, "Safety in Welding, Cutting and Allied Processes."

All welding or allied process equipment is erected, installed, assembled, started, operated, used, handled, stored, stopped, inspected, serviced, tested, cleaned, adjusted, carried, maintained, repaired and dismantled in accordance with the manufacturer's specifications. Additionally, the area surrounding the operation is inspected and all combustible, flammable or explosive material, dust, gas or vapour is removed or alternate methods of rendering the area safe are implemented.

If a welding or allied process if performed above an area where a worker may be present the supervisor shall ensure that adequate means are taken to protect a worker below the operation from sparks debris and other falling hazards.

An operator of an electric welding machine must not leave the machine unattended without removing the electrode.

All appropriate welding and ground leads are used to fasten the electric supply cable securely.

18.9.1 Training

Employees are provided training on the fire safety plan. Vector Projects Group Ltd shall ensure that:

1. Designated persons and workers who have been assigned fire safety duties are adequately trained in, and how to implement the fire safety plan;
2. The fire safety plan is posted in a conspicuous place for reference by workers.
3. Vector Projects Group Ltd shall also provide training for:
    - The proper use of portable fire extinguishers, for incipient (small stage) fire-fighting purposes only, upon initial hire and annually thereafter if they are required to use fire extinguishing equipment.
    - The safe work procedures for fire, flammable substances and explosive hazards in the workplace including hot work and how to implement the procedures developed.
    - Workers are trained in safe handling of flammable and combustible substances.

18.9.2 Retraining

Retraining shall re-establish worker proficiency and introduce new or revised control methods and procedures, as necessary. Retraining shall be provided for all authorized and affected workers whenever there is:

1. An annual basis or
2. A change in job assignment or
3. Vector Projects Group Ltd has reason to believe that there are deviations from or inadequacies in the worker's knowledge or use of fire extinguishers or fire prevention procedures.

18.9.3 Training Documentation

All training will be documented and each worker's understanding will be subject to a "hands-on" test as needed.

Documentation will consist of, as a minimum, the worker's name, the trainer's name, the date of the training, and an outline of training provided.

All training records will be maintained in the worker’s training file.

19.0 GAS HAZARDS

19.1 Purpose

It is the intention of Vector Projects Group Ltd to provide gas hazards training and detection equipment to minimize risk to our employees. This program is associated with our Respiratory Protection Program.

19.2 Scope

This procedure applies to Vector Projects Group Ltd operations where employees whose work activities exposes them to gas hazards. When work is performed on a non-owned or operated site, the operator's program shall take precedence, however, this document covers Vector Projects Group Ltd employees and contractors and shall be used on owned premises, or when an operator's program doesn't exist or is less stringent.

19.3 Procedures

19.3.1 Gas Hazards Equipment

- A personal portable gas detector shall be used in high gas hazard areas. Each employee shall use a portable gas detector as required in all high gas hazard areas.
- All gas monitors shall and must be calibrated per manufacturer's recommendations and have a current calibration sticker on the monitor providing the date of calibration.
- Daily bump tests are performed on all gas monitors that are to be used to ensure the monitor and alarms are working correctly. Bump test are required to be completed at the beginning of each day the monitor is in use per the requesting owner client and manufacturer's guidelines to ensure the monitor is functioning correctly.

19.3.2 Use, Maintenance and Care of Gas Monitors

- Only utilize monitors issued by either Vector Projects Group Ltd or made available by the Owner Client - no personal monitors are allowed.
- Have the gas monitor on the outside of all clothing.
- Check the calibration date prior to bump testing. If the calibration date is expired turn the unit in immediately and do not use.
- Bump test each shift prior to using the monitor.
- Monitors are sensitive equipment - avoid physical damage and immediately report any monitor that does not appear to be performing as expected.

19.3.3 Training

Workers are trained on procedures to be followed in the event of an uncontrolled release. Employees will be aware of the owner's contingency plan provisions including evacuation routes and alarms. Employees should participate in emergency evacuation drills and practice rescue procedures.

Workers are provided training on the hazardous gases they may be exposed to on the job. Workers shall be informed of the hazardous gases they may be exposed to on the job. This training should be provided initially, and annually thereafter.

Gas Hazards training includes gas characteristics, health effects and personal protective equipment (PPE) requirements. Training shall address, as a minimum:

- Locations of alarm stations

- Gas Monitoring Equipment- Portable and Fixed Detection
- Gas Alarms
- Gas Hazards - Characteristics of gases. Include, at minimum: oxygen deficiency, oxygen or nitrogen enrichment, carbon monoxide and hydrogen sulfide. Hazard training must also include any plant-specific gases or department-specific gases of concern. Training must include signs and symptoms of overexposure.
- Personnel Rescue Procedures
- Use and care of Self-Contained Breathing Apparatus (SCBA) - includes donning and emergency procedures (if applicable)
- Evacuation Procedures - Employees will be aware of the owner's contingency plan provisions including evacuation routes and alarms. Employees should participate in emergency evacuation drills and practice rescue procedures.
- Staging Areas – Primary and Secondary

Gas Hazard Awareness annual training shall be documented and available for review.

20.0 GROUND DISTURBANCE

20.1 Purpose

The purpose of this program is to protect employees from safety hazards that may be encountered during work in trenches and excavations. The material in this document does not take precedence over applicable government legislation which all employees must follow.

20.2 Scope

This program applies to work performed.

When work is performed on a non-owned or operated site, the operator's program shall take precedence; however, this document covers Vector Projects Group Ltd employees for awareness purposes and shall be used when an operator's program doesn't exist.

20.3 Key Responsibilities

Managers and Supervisors

- Vector Projects Group Ltd must develop and implement safe work procedures for the work to be done at an excavation including the installation, use and removal of shoring.
- Before any excavation work begins workers must be made aware of the potential hazards of the job functions they are to perform.
- Only trained personnel can be involved in working in trenches or excavations.

Employees

- Attend training and follow all known safety requirements related to ground disturbance.
- To refuse unsafe work and to report and unsafe condition.

20.4 Procedures

20.4.1 Competent Person Duties

Vector Projects Group Ltd will designate a competent person to supervise work at an excavation site. The supervisor must be present at the site whenever a worker is in the excavation or work on the excavation is being performed.
Utilities and Pre-work Site Inspection
Buried facilities must be located and marked before the ground is disturbed. Before excavating or drilling with powered tools and equipment, the location of all underground utility services in the area must be accurately determined and any danger to workers from the services must be controlled.

Buried facilities must be exposed by hand digging or other non-destructive techniques within the hand expose zones. Vector Projects Group Ltd must ensure that work with mechanical excavation equipment is not permitted within the hand expose zone of a buried facility until the buried facility has been exposed to sight by hand digging, by a non-destructive technique acceptable to the owner of the buried facility or by an equivalent method.

Pointed tools must not be used to probe for underground gas and electrical services. Powered equipment used for excavating must be operated so as to avoid damage to underground utility services, or danger to workers.

Where there is contact with or damage to an underground pipeline, cable or conduit Vector Projects Group Ltd shall immediately notify the owner of the pipeline, cable or conduit that contact or damage has occurred

and take steps to protect the health and safety of any worker who may be at risk until any unsafe condition resilient from the contact or damage is repaired or corrected.

20.4.2 Barriers, Marking and Guarding of Excavations

Barriers are set up around excavations and trenches to protect employees. If an excavation is a hazard to workers, it must be effectively covered or guarded.

Guardrails, fences, or barricades shall be provided on excavations adjacent to walkways, driveways and other pedestrian or vehicle thoroughfares. Warning lights or other illumination shall be maintained as necessary for the safety of the public and employees from sunset to sunrise.

Walkways or bridges protected by standard guardrails shall be provided where employees and the general public are permitted to cross over excavations. Where workers in the excavation may pass under these walkways or bridges, a standard guardrail and toe board shall be used.

20.4.3 Structural Ramps

Structural ramps used solely by employees as a means of access or egress from excavations shall be designed by a competent person. Structural ramps used for access or egress of equipment shall be designed by a person qualified in structural design, and shall be constructed in accordance with the design.

Ramps and runways constructed of two or more structural members shall have the structural members connected together to prevent movement or displacement.

Structural members used for ramps and runways shall be of uniform thickness.

Cleats or other appropriate means used to connect runway structural members shall be attached to the bottom of the runway or shall be attached in a manner to prevent tripping.

Structural ramps used in place of steps shall be provided with cleats or other surface treatments on the top surface to prevent slipping.

20.4.4 Ladders

Ladders are provided for workers entering and exiting an excavation. Safe means of entry and exit must be provided for an excavation a worker enters. If workers are required to enter a trench over 1.2 meters (4 feet) deep, the safe point of entry and exit must be located within 8 meters (25 feet) of the workers and the excavation must be safely supported or sloped to the entry and exit location.

Ladders shall have nonconductive side rails if work will be performed near exposed energized equipment or systems.

Ladders will be inspected prior to use for signs of damage or defects. Damaged ladders will be removed from service and marked with "Do Not Use" until repaired.

Ladders shall be used only on stable and level surfaces unless secured. Ladders placed in any location where they can be displaced by workplace activities or traffic shall be secured, or barricades shall be used to keep these activities away from the ladder.

Non-self-supporting ladders shall be positioned so that the foot of the ladder is one-quarter of the working length away from the support.

Employees shall not be allowed to carry any object or load while on the ladder that could cause them to lose their balance and fall.

20.4.5 Exposure to Vehicular Traffic

Employees exposed to vehicular traffic shall be provided with, and shall wear warning vests or other suitable garments marked with or made of reflectorized or high-visibility material. Warning vests worn by flagmen shall be red or orange, and shall be of reflectorized material if worn during night work.

20.4.6 Employee Exposure to Falling Loads

No employee shall be permitted underneath loads handled by lifting or digging equipment. Employees shall be required to stand away from any vehicle being loaded or unloaded to avoid being struck by any spillage or falling materials. Operators may remain in the cabs of vehicles being loaded or unloaded when the vehicles provide adequate protection for the operator during loading and unloading operations.

20.4.7 Employee Exposure to Overhead Power Lines

Where an excavation or trench is to be made in the vicinity of an overhead power line Vector Projects Group Ltd will ensure that the work is carried out in a manner that will not reduce the original support provided for any overhead power line pole unless permission has previously been obtained from the utility provider responsible for the overhead power line.

20.4.8 Warning System for Mobile Equipment

A warning system shall be used when mobile equipment is operated adjacent to the edge of an excavation if the operator does not have a clear and direct view of the edge of the excavation. The warning system shall consist of barricades, hand or mechanical signals, or stop logs. If possible, the grade should be away from the excavation.

20.5 Hazardous Atmospheres

The atmosphere in excavations over 4 feet deep shall be tested if a hazardous atmosphere exists or could reasonably be expected to exist. A hazardous atmosphere could be expected, for example, in excavations in landfill areas, in excavations in areas where hazardous substances are stored nearby, or in excavations near or containing gas pipelines.

Adequate precautions shall be taken to prevent employee exposure to atmospheres containing less than 19.5 percent oxygen and other hazardous atmospheres. These precautions include providing proper respiratory protection or forced ventilation of the workspace.

Forced ventilation or other effective means shall be used to prevent employee exposure to an atmosphere containing a flammable gas in excess of 10 percent of the lower flammability limit of the gas.

When controls are used that are intended to reduce the level of atmospheric contaminants to acceptable levels, continuous air monitoring will be performed. The device used for atmospheric monitoring shall be equipped with an audible and visual alarm.

Atmospheric testing will be performed using a properly calibrated direct reading gas monitor. Direct reading gas detector tubes or other acceptable means may also be used to test potentially toxic atmospheres.

20.6 Personal Protective Equipment

All employees working in trenches or excavations shall wear approved hard-hats and steel toed shoes or boots.

Employees exposed to flying fragments, dust, or other materials produced by drilling, sawing, sanding, grinding and similar operations shall wear approved safety glasses with side shields.

Employees exposed to hazards produced by, or performing, welding, cutting, or brazing operations shall wear approved spectacles or a welding face shield or helmet.

Employees entering bell-bottom pier holes or other similar deep and confined footing excavations shall wear a harness with a lifeline securely attached to it. The lifeline shall be separate from any line used to handle materials and shall be individually attended at all times while the employee wearing the lifeline is in the excavation.

Employees shall wear approved gloves or other suitable hand protection.

Employees using, or working in the immediate vicinity of, hammer drills, masonry saws, jackhammers or similar high noise producing equipment shall wear suitable hearing protection.

Emergency rescue equipment, such as breathing apparatus, a safety harness and line, and a basket stretcher shall be readily available where hazardous atmospheric conditions exist or may develop during work in an excavation. This equipment shall be attended when in use. Only personnel that have received approved training and have appropriate equipment shall attempt retrieval that would require entry into a hazardous atmosphere.

20.7 Stability of Adjacent Structures

Adjacent structures that might be affected by ground disturbance activities are adequately supported before work begins. Trees, utility poles, rocks and similar objects adjacent to an area to be excavated must be removed or secured if they could endanger workers.

Excavation below the level of the base or footing of any foundation or retaining wall that could be reasonably expected to pose a hazard to employees shall not be permitted.

20.8 Protection from Hazards Associated with Water Accumulation

Water must not be allowed to accumulate in an excavation if it might affect the stability of the excavation or might endanger workers. Erosion of slopes by surface water must be prevented if workers may be endangered.

Effective means shall be provided to prevent the accumulation of water in excavations.

If water is controlled or prevented from accumulating by the use of water removal equipment, the water removal equipment and operation shall be monitored by a competent person trained in the use of the equipment.

If excavation work interrupts the natural drainage of surface water (such as streams), diversion ditches, dikes, or other suitable means shall be used to prevent surface water from entering the excavation. Precautions shall also be taken to provide adequate drainage of the area adjacent to the excavation.

The competent person shall inform workers of the precautions or procedures that are to be followed if water accumulates or is accumulating in an excavation.

20.9 Procedures for Stabilization of Soil

Vector Projects Group Ltd must stabilize the soil in an excavation and workers may not enter an excavation unless the sides are adequately sloped and secured via shoring, bracing, or other means.

Before a worker enters any excavation over 1.2 meters (4 feet) in depth or, while in the excavation, approaches closer to the side or bank than a distance equal to the depth of the excavation Vector Projects Group Ltd must ensure that the sides of the excavation are:

- sloped as specified in writing by a qualified registered professional,
- sloped at angles, dependent on soil conditions, which will ensure stable faces,
- benched,
- supported as specified in writing by a professional engineer,
- supported, or
- supported by manufactured or prefabricated trench boxes or shoring cages, or other effective means.

If the end of a trench over 1.2 meters (4 feet) in depth is not adequately sloped, end shoring must be installed unless

- a worker in the trench is not required to approach closer to the end of the trench than a distance equal to the depth of the trench at that end,
- where, for the prevailing soil conditions at the end of the trench, the permissible spacing of uprights equals or exceeds the width of the trench, or
- otherwise authorized in writing by a professional engineer or professional geoscientist.

If end shoring is required, the whalers for the end shoring must be installed to bear against the whalers that extend along the sides of the trench, or in a manner that will provide equivalent structural restraint.

End shoring must be designed by a professional engineer if the end shoring whaler length exceeds 1.8 meters (6 feet).

Shoring must extend from at least 30 cm (1 foot) above ground level to as close to the bottom of the trench as the material being installed will allow, but in no case more than 60 cm (2 feet) from the bottom.

Shoring need not extend above ground level where traffic crossing plates need to be used, provided that other measures are taken to prevent excavated or other material from entering the excavation.

20.10 Procedures for Cutting Back Walls

If the walls of an excavation are cut back, Vector Projects Group Ltd must ensure that:

- if the soil is classified as “hard and compact soil”, the walls are sloped to within 1.5 meters of the bottom of the excavation at an angle of not less than 30 degrees measured from the vertical,
- if the soil is classified as “likely to crack or crumble soil” the walls are sloped to within 1.5 meters of the bottom of the excavation at an angle of not less than 45 degrees measured from the vertical, and
- if the soil is classified as “soft, sandy or loose soil” the walls are sloped from the bottom of the excavation at an angle of not less than 45 degrees measured from the vertical.

Shoring materials must be installed from the top down and removed in reverse order.

Workers must not enter an excavation to remove shoring materials if ground conditions have deteriorated so as to make entry for shoring removal unsafe. Shoring or manufactured or prefabricated support systems must be installed in firm contact with the faces of the excavation, and in a manner which ensures no loss of soil from behind or below the bottom of the shield or shoring while the excavation is open.

Unless otherwise indicated by the manufacturer or a professional engineer, in writing, voids between the shoring and the excavation face must be backfilled or blocked.

20.10.1 Excavated Material

Excavated materials must be piled a minimum of 1.2 meters away from the edge of an excavation. Excavated material must be kept back a minimum distance of 60 cm (2 feet) from the edge of a trench excavation and 1.2 meters (4 feet) from any other excavation. Under no circumstances may excavated material be piled so that it endangers workers.

The slope of a spoil pile adjacent to the excavation should be at an angle of more than 45 degrees from the horizontal and loose materials are scaled and trimmed from the spoil pile.

20.11 Daily Inspection

The competent person shall conduct daily inspections of excavations, adjacent areas and protective systems for evidence of a situation that could result in possible cave-ins, failure of protective systems, hazardous atmospheres, or other hazardous conditions. Inspections shall also be made after every rainstorm or other hazard increasing occurrence. These inspections are only required when the trench will be or is occupied by employees.

Where the competent person finds evidence of a situation that could result in a possible cave-in, failure of protective systems, hazardous atmosphere or other hazardous conditions, exposed employees shall be removed from the hazardous area until precautions have been taken to assure their safety.

There shall be a written log of all inspections conducted. This log shall include the date, work site location, results of the inspection and a summary of any action taken to correct existing hazards.

20.12 Training

All personnel involved in trenching or excavation work shall be trained in safe work practices, the requirements of this program and regulatory requirements. Training shall be performed before the employee is assigned duties in excavations.

Workers shall ensure workers are made aware of the potential hazards of the job functions they are to perform.

Training records shall include the date(s) of the training program, the instructor(s) of the training program, a copy of the written material presented, and the names of the employee(s) to whom the training was given.

Retraining will be performed whenever work site inspections conducted by the competent person or Health Safety Officer indicate that an employee does not have the necessary knowledge or skills.

21.0 HAND AND POWER TOOLS

21.1 Purpose

The purpose of this program is to provide establish requirements for the safe operation of hand and power tools and other portable tools, including proper guarding. All hand and power tools shall be maintained in a safe condition. The material in this document does not take precedence over applicable government legislation which all employees must follow.

21.2 Scope

This program applies to all Vector Projects Group Ltd employees who use hand and power tools while engaged in work at Vector Projects Group Ltd facilities and/or facilities operated by others.

21.3 Responsibilities

Any tool which is not in compliance with any applicable requirement of this plan is prohibited and shall either be identified as unsafe by tagging or locking the controls to render them inoperable or shall be physically removed from its place of operation.

Managers/Supervisors

- Ensure that all employees using portable tools have been trained and fully understand the operations and maintenance procedures of such tools, including their proper use.
- Provide and train employees with all additional PPE that may be needed for the safe operation of portable tools.
- Ensure that each tool, machine and piece of equipment in the workplace is capable of safely performing the functions for which it is used, and selected, used and operated in accordance with
    - the manufacturer's instructions, if available,
    - safe work practices, and
    - the requirements of the Regulation.

Employees

- Shall ensure they have correct tool for each task.
- Shall follow manufactures safety and operating instructions before using

21.4 Personal Protective Equipment

Employees using hand and power tools and exposed to the hazard of falling, flying, abrasive, and splashing objects, or exposed to harmful dust, fumes, mists, vapors or gases shall be provided with the particular PPE necessary to protect them from the hazard.

21.5 Practices/Procedures Relating to Hand Tools

The installation, inspection, testing, repair and maintenance of a tool, machine or piece of equipment must be carried out in accordance with the manufacturer's instructions and any standard the tool, machine or piece of equipment is required to meet or as specified by a professional engineer.

- All tools, regardless of ownership, shall be of an approved type and maintained in good condition.
- Tools are subject to inspection at any time.
- All employees have the authority and responsibility to condemn unsafe tools, regardless of ownership.
- Unsafe tools shall be tagged with a DO NOT USE OR OPERATE tag to prevent their use.
- Any modification of a tool, machine or piece of equipment must be carried out in accordance with

- the manufacturer's instructions, if available
- safe work practices
- the requirements of OHS legislation.

- Employees shall always use the proper tool for the job to be performed. Makeshift and substitute tools shall not be used.
- Hammers with metal handles, screwdrivers with metal continuing through the handle, and metallic measuring tapes shall not be used on or near energized electrical circuit or equipment.
- Tools shall not be thrown from place to place or from person to person; tools that must be raised or lowered from one elevation to another shall be placed in tool bags/buckets firmly attached to hand lines.
- Tools shall never be placed unsecured on elevated places.
- Impact tools such as chisels, punches, and drift pins that become mushroomed or cracked shall be dressed, repaired, or replaced before further use.
- Chisels, drills, punches, ground rods, and pipes shall be held with suitable holders or tongs (not with the hands) while being struck by another employee.
- Shims shall not be used to make a wrench fit.
- Wrenches with sprung or damaged jaws shall not be used.
- Tools shall be used only for the purposes for which they have been approved.
- Tools with sharp edges shall be stored and handled so that they will not cause injury or damage. They shall not be carried in pockets unless suitable protectors are in use to protect the edge. They shall not be carried in pockets unless suitable protectors are in use to protect the edge.
- Wooden handles that are loose, cracked, or splintered shall be replaced. The handle shall not be taped or lashed with wire. The handle shall not be taped or lashed with wire.
- Tools shall not be left lying around where they may cause a person to trip or stumble.
- When working on or above open grating, a canvas or other suitable covering shall be used to cover the grating to prevent tools or parts from dropping to a lower level where others are present or the danger area shall be barricaded or guarded.
- The insulation on hand tools shall not be depended upon to protect users from high voltage shock (except approved live line tools).
- Vector Projects Group Ltd must ensure that before the tool, machine or piece of equipment is used in the workplace the manual has been obtained, and the supplier has provided sufficient information to identify the standard or standards to which the tool, machine or equipment has been manufactured.

21.5.1 Portable Electric Tools

- All portable electric tools used by employees shall meet the standards set out in CSA Standard CAN C22.2 No. 71.1-M89, Portable Electric Tools.
- All portable electric tools used by employees in a fire hazard area shall be marked as appropriate for use or designed for use in the area of that hazard.
- The non-current carrying metal parts of portable electric tools such as drills, saws, and grinders shall be effectively grounded when connected to a power source unless:
- The tool is an approved double-insulated type
    - The tool is connected to the power supply by means of an isolating transformer or other isolated power supply.
    - All powered tools shall be examined prior to use to ensure general serviceability and the presence of all applicable safety devices.
    - Powered tools shall be used only within their design and shall be operated in accordance with manufacturer’s instructions. The use of electric cords for hoisting or lowering tools shall not be permitted.
- All tools shall be kept in good repair and shall be disconnected from the power source while repairs or adjustments are being made.
- Electrical tools shall not be used where there is hazard of flammable vapors, gases, or dusts without a valid Hot Work Permit.

- Ground fault circuit interrupters or use of an Assured Grounding Program shall be used with portable electric tools. This does not apply to equipment run off of portable or truck mounted generators at 5KW or less, that are isolated from ground or to equipment ran directly off of secondaries.

21.5.2 Pneumatic Tools

- Pneumatic tools shall never be pointed at another person.
- Pneumatic power tools shall be secured to the hose or whip by some positive means to prevent the tool from becoming accidentally disconnected.
- A restraining device must be attached where an air hose is connected to a portable air-powered tool.
- Safety clips or retainers shall be securely installed and maintained on pneumatic impact (percussion) tools to prevent attachments from being accidentally expelled.
- Compressed air shall not be used for cleaning purposes, except where reduced to less than 30 psi and then only with effective chip guarding and personal protective equipment.
- Compressed air shall not be used to blow dust or dirt from clothing.
- The manufacturers stated safe operating pressure for hoses, pipes, valves, filters, and other fitting shall not be exceeded.
- The use of hoses for hoisting or lowering tools shall not be permitted.
- Before making adjustments or changing air tools, unless equipped with quick-change connectors, the air shall be shut off at the air supply valve ahead of the hose. The hose shall be bled at the tool before breaking the connection.
- Compressed air tools, while under pressure, must not be left unattended.
- All connections to air tools shall be made secure before turning on air pressure.
- Air at the tool shall not be turned on until the tool is properly controlled.
- All couplings and clamps on pressurized air hose shall be bridged (pinned) with suitable fasteners.
- Hose and hose connections used for conducting compressed air to utilization equipment shall be designed for the pressure and service to which they are subjected.
- Use only approved end-fitting clamps (screw type heater hose clamps are not acceptable).
- While blowing down hose, do not point it toward people.
- Power tools are to be operated only by competent persons who have been trained in their proper use.
- Conductive hose should not be used near energized equipment.
- Foot protection shall be worn while operating paving breakers, tampers, rotary drills, clay spades, and similar impactor-type tools or at other times when instructed by supervision.
- All pneumatically driven nailers, staplers, and other similar equipment provided with automatic fastener feed, which operate at more than 100 psi. pressure at the tool shall have a safety device on the muzzle to prevent the tool from ejecting fasteners, unless the muzzle is in contact with the work surface.
- Airless spray guns of the type which atomize paints and fluids at high pressures (1,000 pounds or more per square inch) shall be equipped with automatic or visible manual safety devices which will prevent pulling of the trigger to prevent release of the paint or fluid until the safety device is manually released.
- In lieu of the above, a diffuser nut (which will prevent high pressure), high velocity release (while the nozzle tip is removed), plus a nozzle tip guard (which will prevent the tip from coming into contact with the operator), or other equivalent protection, shall be provided.

21.5.3 Powder Actuated Tools (Tools Actuated by an Explosive Charge)

- All explosive actuated fastening tools used by employees shall meet the standards set out in CSA Standard Z166-1975, Explosive Actuated Fastening Tools
- Only those employees who have been trained certified in their use shall operate these tools.
- Explosive charges shall be carried and transported in approved containers.
- Operators and assistants using these tools shall be protected by means of eye, face, and hearing protection.

- Tools shall be maintained in good condition and serviced regularly by qualified persons. The material upon which these tools are to be used shall be examined before work is started to determine its suitability and to eliminate the possibility of hazards to the operator and others.
- Prior to use, the operator shall ensure that the protective shield is properly attached to the tool.
- Before using a tool, the operator shall inspect it to determine to his satisfaction that it is clean, that all moving parts operate freely, all guards and safety devices are in place, and that the barrel is free from obstructions.
- Before using tools the operator shall read and become familiar with the manufacturers operating guidelines and procedures.
- When a tool develops a defect during use, the operator shall immediately cease to use it, until it is properly repaired in accordance with the manufactures specifications.
- Tools shall not be loaded until just prior to the intended firing time, nor shall an unattended tool be left loaded. Empty tools are to be pointed at any workmen.
- In case of a misfire, the operator shall hold the tool in the operating position for at least 30 seconds. He shall then try to operate the tool a second time. He shall wait another 30 seconds, holding the tool in the operating position; then he shall proceed to remove the explosive load in strict accordance with the manufacturer's instructions.
- A tool shall never be left unattended in a place where it would be available to unauthorized persons.
- Fasteners shall not be driven into very hard or brittle materials including, but not limited to, cast iron, glazed tile, surface hardened steel, glass block, live rock, face brick, or hollow tile.
- Driving into materials easily penetrated shall be avoided unless such materials are backed by a substance that will prevent the pin or fastener from passing completely through and creating a flying missile hazard on the other side.
- Tools shall not be used in an explosive or flammable atmosphere.

21.5.4 Hydraulic Power Tools

The manufacturer's safe operating pressures for hoses, valves, pipes, filters, and other fittings shall not be exceeded.

All hydraulic tools, which are used on or around energized lines or equipment, shall use non-conducting hoses having adequate strength for the normal operating pressures.

21.5.5 Hydraulic Jacks

Loading and Marking

- The operator shall make sure that the jack used has a rating sufficient to lift and sustain the load.
- The rated load shall be legibly and permanently marked in a prominent location on the jack by casting, stamping, or other suitable means.

Operation and Maintenance

- In the absence of a firm foundation, the base of the jack shall be blocked. If there is a possibility of slippage of the cap, a block shall be placed in between the cap and the load.
- The operator shall watch the stop indicator, which shall be kept clean, in order to determine the limit of travel. The indicated limit shall not be overrun.
- After the load has been raised, it shall be cribbed, blocked, or otherwise secured at once.
- Hydraulic jacks exposed to freezing temperatures shall be supplied with adequate antifreeze liquid.
- All jacks shall be properly lubricated at regular intervals.
- Each jack shall be thoroughly inspected before each use. Jacks, which are in unsafe condition, shall be tagged accordingly, and shall not be used until repairs are made.

21.5.6 Abrasive Blast Cleaning Nozzles

The blast cleaning nozzles shall be equipped with an operating valve, which must be held open manually. A support shall be provided on which the nozzle may be mounted when it is not in use.

21.5.7 Fuel Powered Tools

All fuel-powered tools shall be stopped while being refueled, serviced, or maintained, and fuel shall be transported, handled, and stored in accordance with the Flammable and

When fuel powered tools are used in enclosed spaces, the applicable requirements for concentrations of toxic gases and use of personal protective equipment shall be adhered to.

21.5.8 Guarding Portable Tools

Guards shall be in place and operable at all times while the tool is in use. The guard may not be manipulated in such a way that will compromise its integrity or compromise the protection in which intended. Guarding shall meet the requirements set forth in provincial OHS legislation: Tools, Machinery & Equipment.

Portable Circular Saws

- All portable, power-driven circular saws having a blade diameter greater than 2 in. shall be equipped with guards above and below the base plate or shoe.
- The upper guard shall cover the saw to the depth of the teeth, except for the minimum arc required to permit the base to be tilted for bevel cuts.
- The lower guard shall cover the saw to the depth of the teeth, except for the minimum arc required to allow proper retraction and contact with the work.
- When the tool is withdrawn from the work, the lower guard shall automatically and instantly return to covering position.
- All cracked saw blades shall be removed from service.

Switches and Controls

- All hand held powered tools, circular saws, drills, tappers, fastener drivers, horizontal or vertical angle grinders, etc., shall be with a constant pressure switch or control, and may have a lock-on control provided that turnoff can be accomplished by a single motion of the same finger or fingers that turn it on.
- All handheld powered circular saws having a blade diameter greater than 2 inches, electric, hydraulic or pneumatic chain saws, and percussion tools without positive accessory holding means shall be equipped with a constant pressure switch or control that will shut off the power when the pressure is released. All handheld gasoline powered chain saws shall be equipped with a constant pressure throttle control that will shut off the power to the saw chain when the pressure is released.
- The operating control on handheld power tools shall be so located as to minimize the possibility of its accidental operation, if such accidental operation would constitute a hazard to employees.
- Grounding of portable electric powered tools shall meet the electrical requirements that can be found in the Electrical Safety Program. All electric power tools shall be equipped with a three-prong plug.

21.5.9 Portable Abrasive Wheels

Safety Guards Exceptions

- Wheels used for internal work while within the work being ground.
- Mounted wheels used in portable operations 2 inches and smaller in diameter.
- Types 16, 17, 18, 18R, and 19 cones, plugs, and threaded hole pot balls where the work offers protection.
- Guards shall be made of steel or other material with adequate strength.

- A safety guard shall cover the spindle end, nut and flange projections. The safety guard shall be mounted so as to maintain proper alignment with the wheel, and the strength of the fastenings shall exceed the strength of the guard.
- Exception: safety guards on all operations where the work provides a suitable measure of protection to the operator may be so constructed that the spindle end, nut and outer flange are exposed. Where the nature of the work is such as to entirely cover the side of the wheel, the side covers of the guard may be omitted.
- Exception: the spindle end, nut, and outer flange may be exposed on portable machines designed for, and used with, type 6, 11, 27, and 28 abrasive wheels, cutting off wheels, and tuck pointing wheels.

Mounting and Inspection of Abrasive Wheels

- Immediately before mounting, all wheels shall be closely inspected and a ring test performed, to make sure they have not been damaged in transit, storage, or otherwise.
- Ring test – "tap" wheels about 45 degrees each side of the vertical centerline and about 1 or 2 inches from the periphery; then rotate the wheel 45 degrees and repeat the test; a sound and undamaged wheel will give a clear metallic tone If cracked, there will be a dead sound and not a clear "ring."
- The spindle speed of the machine shall be checked before mounting of the wheel to be certain that it does not exceed the maximum operating speed marked on the wheel.
- Grinding wheels shall fit freely on the spindle and remain free under all grinding conditions.
- A controlled clearance between the wheel hole and the machine spindle (or wheel sleeves or adaptors) is essential to avoid excessive pressure from mounting and spindle expansion.
- The machine spindle shall be made to nominal (standard) size plus zero minus.002 inch, and the wheel hole shall be made suitably oversize to assure safety clearance under the conditions of operating heat and pressure.
- All contact surfaces of wheels, blotters, and flanges shall be flat and free of foreign matter.
- When a bushing is used in the wheel hole it shall not exceed the width of the wheel and shall not contact the flanges.

21.5.10 Portable Grinders

Special "revolving cup guards" which mount behind the wheel and turn with it shall be used. They shall be made of steel or other material with adequate strength and shall enclose the wheel sides upward from the back for one-third of the wheel thickness. It is necessary to maintain clearance between the wheel side and the guard. The clearance shall not exceed one-sixteenth inch.

Vertical portable grinders, also known as right angle grinders, shall have a maximum exposure angle of 180 degrees and the guard shall be located between the operator and the wheel during use. Adjustment of the guard shall ensure that pieces of an accidentally broken wheel will be deflected away from the operator.

Other Portable Grinders

The maximum angular exposure of the grinding wheel periphery and sides for safety guards used on other portable grinding machines shall not exceed 180 degrees and the top half of the wheel shall be enclosed at all times.

21.5.11 Portable Abrasive Wheels

Employees using hand and power tools and exposed to the hazard of falling, flying, abrasive, and splashing objects, or exposed to harmful dust, fumes, mists, vapors or gases shall be provided with the particular PPE necessary to protect them from the hazard.

22.0 HOT WORK

22.1 Purpose

The purpose of this program is to develop and implement safe work procedures respecting hot work processes performed in the workplace. The material in this document does not take precedence over applicable government legislation which all employees must follow.

22.2 Scope

This program is applicable to all employees directly involved or assisting in the welding, cutting and hot work operations.

When work is performed on a no owned or operated site, the operator's program shall take precedence, however, this document covers Vector Projects Group Ltd employees and contractors and shall be used on owned premises, or when an operator's program doesn't exist or is less stringent.

22.3 Definitions

Welding/Hot Work Procedures – is any activity which results in sparks, fire, molten slag, or hot material which has the potential to cause fires or explosions.
Examples of Hot Work: Cutting, Brazing, Soldering, Thawing Pipes, Grinding, using an electric tool in a hazardous area and Welding.

Special Hazard Occupancies - any area containing Flammable Liquids, Dust Accumulation, Gases, Plastics, Rubber and Paper Products.

Hazards - includes, but not limited to the following; fires and explosions, skin burns, welding "blindness", and respiratory hazards from fumes and smoke.

22.4 Key Responsibilities

Managers and Supervisors

- Determine if its property is safe for welding and cutting operations.
- Establish safe areas for welding and cutting operations.
- Provide training for all employees whose task includes heat, spark or flame producing operations such as welding, brazing, or grinding.
- Develop and monitor effective hot work procedures.
- Provide safe equipment for hot work.
- Provide proper and effective PPE for all hot work.
- Monitor all hot work operations.
- Ensure all hot work equipment and PPE are in safe working order.
- Allow only trained and authorized employees to conduct hot work and conduct inspections of the hot work area before operations begin.
- Ensure permits are used for all hot work outside authorized areas.

Employees

- Follow all hot work procedures; properly use appropriate hot work PPE.
- Inspect all hot work equipment before use; report any equipment problems or unsafe conditions.

22.5 Procedure

Vector Projects Group Ltd must ensure a hot work permit is completed before performing hot work:

1. A hot work permit is issued that indicates the nature of the hazard, the type and frequency of atmospheric testing required, the safe work procedures and precautionary measures to be taken and the protective equipment required.
2. The hot work location is cleared of combustible materials or suitably isolated from combustible materials.
3. Procedures are implemented to ensure continuous safe performance of the hot work.
4. Testing shows that the atmosphere does not contain a flammable substance, in a mixture with air, in an amount exceeding 20 percent of that substance's lower explosive limit for gas or vapours, or the minimum ignitable concentration for dust.

Vector Projects Group Ltd hot work must comply with the requirements of CSA Standard W117.2-06, Safety in Welding, Cutting, and Allied Processes (or current version).

Gas welding, burning, and/or cutting equipment shall be properly maintained. No gas welding, burning, or cutting equipment shall be used unless it is free from defects, leaks, oil and grease.

Precautions to prevent a fire shall be taken when using a blow torch or welding or cutting equipment or a similar piece of equipment. Before cutting or welding is permitted the area shall be inspected by a Vector Projects Group Ltd supervisor responsible for inspection and granting authorized welding and cutting operations. Precautions that are to be taken shall be in the form of a written Hot Work permit.

The work area is inspected before hot work begins. Vector Projects Group Ltd must ensure that, before a welding or allied process is commenced, the area surrounding the operation is inspected and all combustible, flammable, or explosive material, dust, gas, or vapour is removed, or alternate methods of rendering the area safe are implemented.

Ducts, conveyor systems, and augers that might carry sparks to distant combustibles shall be protected or shut down. Where cutting or welding is done near walls, partitions, ceilings, or openings in the floor (grating, manholes, etc.), fire-resistant shields or guards shall be provided to prevent ignition.

If welding is to be done on a metal wall, partition, ceiling, or solid decking/flooring, precautions shall be taken to prevent ignition of combustibles on the other side, due to conduction or radiation of heat. Where combustibles cannot be relocated on the opposite side of the work a fire watch person shall be provided on the opposite side of the work.

Welding shall not be attempted on a metal partition, wall, and ceiling or decking/flooring constructed of combustible sandwich panels.

Cutting or welding shall not be permitted in the following situations:

- In areas not authorized by management.
- In sprinkled buildings while such protection is impaired.
- In the presence of potentially explosive atmospheres, e.g. flammables.
- In areas near the storage of large quantities of exposed, readily ignitable materials.
- All dust accumulation shall be cleaned up before welding or hot work is permitted.

Whenever welding or cutting is performed in locations where other than a minor fire might develop or any of the conditions mentioned above cannot be met, a fire watch shall be provided:

- The fire watch shall be provided during and for a minimum of 1/2 hour past the completion of the welding project.
- The fire watch shall be trained in the use of fire extinguishers and the facility's alarm system.
- During this time the fire watch will have appropriate fire extinguishers readily available.

- Suitable extinguishers shall be provided and maintained ready for instant use.
- A hot-work permit will be issued on all welding or cutting outside of the designated welding area.

The connections between the cylinder, hose and regulator are tested for leaks before operation. Before using gas welding or burning equipment, the operator must ensure that the equipment is free from defects, leaks, oil and grease.

Welding work areas shall be kept free of electrode stubs, metal scrap and other slipping or tripping hazards and receptacles for electrode stubs shall be provided and used.

Cutting or welding on pipes or other metal in contact with combustible walls, partitions, floors, ceilings or roofs shall not be undertaken if the work is close enough to cause ignition by combustion.

Vector Projects Group Ltd must protect persons when performing hot work above workers. If a welding or allied process is performed above an area where a worker may be present, Vector Projects Group Ltd must ensure that adequate means are taken to protect a worker below the operation from sparks, debris, and other falling hazards.

Containers that may have held an explosive or flammable substance are purged before performing hot work on them. A container which may have held a combustible substance must be thoroughly cleaned before any welding or burning operation is carried out on the container.

Burning, welding, or other hot work must not be done on any vessel, tank, pipe or structure, or in any place where the presence of a flammable or explosive substance is likely until tests have been made by a qualified person to ensure the work may be safely performed and suitable safe work procedures have been adopted, including additional tests made at intervals that will ensure the continuing safety of the workers.
Cleaning Compounds
In the use of cleaning materials, because of their possible toxicity or flammability, appropriate precautions such as manufacturer instructions shall be followed.

Degreasing and other cleaning operations involving chlorinated hydrocarbons shall be so located that no vapours from these operations will reach or be drawn into the atmosphere surrounding any welding operation.

In addition, trichloroethylene and perchloroethylene shall be kept out of atmospheres penetrated by the ultraviolet radiation of gas-shielded welding operations.

A designated welding area shall be established to meet the following requirements:

- Floors swept and cleaned of combustibles.
- Flammable and combustible liquids and material will be kept away from work area.
- A fire extinguisher must be readily available while hot work is performed. At least one fire extinguisher of a suitable type and capacity must be immediately available at a work location where welding or cutting is done.
- Fire extinguisher locations must be marked and made known to workers
- Protective dividers such as welding curtains or non-combustible walls will be provided to contain sparks and slag to the combustible free area.

22.6 Fire Watch Requirements

A fire watch shall be under these conditions as a minimum:

- Locations where other than a minor fire might develop.
- Combustible materials are closer than 35 feet to the point of operation.
- Combustibles that are 35 feet or more away but are easily ignited.
- Combustible materials are adjacent to the opposite side of metal partitions, ceilings or roofs.

Fire watch personnel MUST be maintained at least a half an hour after welding or cutting operations have been completed. Requirements for welding conducted outside the designated welding area:

- Portable welding curtains or shields must be used to protect other workers in the welding area.
- A hot-work permit must be completed and complied with prior to initiating welding operations.
- Respiratory protection is mandatory unless an adequate monitored airflow away from the welder and others present can be established and maintained.
- Plastic materials must be covered with welding tarps during welding procedures.
- Fire Watch must be provided for all hot-work operations.

Recently welded or flame cut work must be labelled/signed. Recently welded or flame cut work must be marked "HOT" or effectively guarded to prevent contact by a worker, if a worker not directly involved in the hot work is likely to enter the work area.

22.7 Safe Storage and Handling of Compressed Gas Cylinders

Vector Projects Group Ltd must ensure that:

A compressed gas cylinder must not be hoisted by a sling or magnet, dropped, subjected to impact, handled by the regulator, or used as a roller or work support.

A compressed gas cylinder must be secured to prevent falling or rolling during storage, transportation and use, and where practicable, must be kept in the upright position.

The valve on a compressed gas cylinder must be kept closed when the cylinder is empty or not in use.

A worker must not stand directly in front of a regulator attached to a compressed gas cylinder when the cylinder valve is being opened.

Unless a compressed gas cylinder is equipped with an integral valve guard, the valve cover must be in position when the cylinder is not connected for use.

An empty compressed gas cylinder must be identified as being empty and must be stored separately from other compressed gas cylinders.

A compressed gas cylinder containing acetylene must be used only in the upright position.

If the cylinder has been stored or transported in a horizontal position, it must be placed in the upright position for at least 1 hour before it is used.

A suitable device for closing the valve on an acetylene cylinder must be immediately available when the cylinder is connected for use.

Assigned storage spaces shall be located where cylinders cannot be knocked over or damaged by falling objects or subject to tampering by unauthorized persons.

Special care must be taken when transporting gas cylinders:

- Cylinders must be secured with valve cap installed.
- Removed regulators must be carried in the cab of the vehicle.
- They shall be handled carefully - rough handling, knocks, or falls are liable to damage the cylinder, valve or safety device and cause leakage.

Safety devices shall not be tampered with.

Additionally:

Gas management systems are equipped with flash back arrestors between the torch and regulator. Suitable safety devices to prevent reverse gas flow and to arrest a flashback must be installed on each hose in an oxyfuel system, between the torch and the regulator.

Back flow protection shall be provided by an approved device that will prevent oxygen from flowing into the fuel-gas system or fuel from flowing into the oxygen system.

An approved device that will prevent flame from passing into the fuel-gas system shall provide flashback protection.

An approved pressure-relief device set at the appropriate pressure shall provide backpressure protection.

22.8 Welding Equipment and Safety

All equipment will meet manufacturer's specifications. Vector Projects Group Ltd must ensure that welding or allied process equipment is erected, installed, assembled, started, operated, used, handled, stored, stopped, inspected, serviced, tested, cleaned, adjusted, carried, maintained, repaired and dismantled in accordance with the manufacturer's specifications.

Protective screens are used to protect employees in the area of arc welding activities from harmful radiation. Arc welding must not be carried out unless workers who may be exposed to radiation from the arc flash are protected by adequate screens, curtains or partitions or wear suitable eye protection. A screen, curtain or partition near an arc welding operation must be made of or be treated with a flame resistant material or coating, and must have a non-reflective surface finish.

All personnel operating, installing, and maintaining welding equipment shall be qualified or trained to operate and maintain such equipment.

All workmen assigned to operate or maintain equipment shall be familiar with and electrical welding equipment shall be chosen for safe operation and comply with applicable standard.

- Arc welding equipment must be designed to meet conditions such as exposure to corrosive fumes, excessive humidity, excessive oil vapour, flammable gasses, abnormal vibration or shock, excessive dust and seacoast or shipboard conditions.
- It shall be operated at recommended voltage in accordance to the manufacturer recommendations.
- All leads shall be periodically inspected and replaced if insulation is broken or splices are unprotected.
- Leads shall not be repaired with electrical tape.

All ground connections shall be checked to determine that they are mechanically strong and electrically adequate for the required current.

A disconnecting switch or controller shall be provided at or near each welding machine along with over current protection.

All direct current machines shall be connected with the same polarity and all alternating current machines connected to the same phase of the supply circuit and with the same polarity.

Additionally:

To prevent electrical contact with personnel, all electrode holders shall be placed where they do not make contact with persons, conducting objects or the fuel of compressed gas tanks.

All cables with splices within 10 feet of the holder shall not be used.

Work involving welding, cutting and burning can create fires and breathing hazards for workers on any job. The following should be considered prior to the start of work.

22.9 Safework Practice - Welding, Cutting and Burning

1. Always ensure that adequate ventilation is supplied since hazardous fumes can be created during welding, cutting or burning.
2. Where other workers may also be exposed to the hazards created by welding, cutting and burning, they must be alerted to these hazards and protected by the use of “screens”.
3. Never start work without proper authorization.
4. Always have fire fighting equipment on hand before starting.
5. Check the work area for combustible material and possible flammable vapours.
6. A welder should never work alone. A fire or sparks watch should be maintained.
7. Protect cables and hoses from slag or sparks.
8. Never weld or cut lines, drums, tanks, etc. that have been in service without making sure that all have been purged or other necessary precautions are in place.
9. Never enter, weld or cut in a confined space without proper air quality testing and a qualified safety lookout in place.
10. When working overhead, use fire resistant materials (blankets, tarps) to control or contain slag and sparks.
11. Cutting and welding must not be performed where sparks and cutting slag will fall on cylinders. Move all cylinders away to one side.
12. Open all cylinder valves slowly. The wrench used for opening the cylinder valves should remain on the valve spindle.

22.10 Resistance Welding

All personnel operating, installing, and maintaining welding equipment shall be qualified or trained to operate and maintain such equipment.

Voltage, interlocks, guarding, grounding and shields shall be in accordance with manufacturer recommendations.

Precautions such as flash guarding, ventilation and shields shall be provided to control flashes, toxic elements and metal fumes.

If the object to be welded or cut cannot readily be moved, all moveable fire hazards should be removed.

22.11 Transmission Pipeline

When arc welding is performed in wet conditions, or under conditions of high humidity, special protection against electric shock shall be supplied.

Pressure testing:

- In pressure testing of pipelines, the workers and the public shall be protected against injury by the blowing out of closures or other pressure restraining devices.
- Protection shall be provided against expulsion of loose dirt that may have become trapped in the pipe.

The welded construction of transmission pipelines shall be conducted in accordance with the applicable standard.

22.12 Oxygen Fuel Gas Welding and Cutting

Only approved apparatuses such as torches, regulators or pressure-reducing valves, setting generators and manifolds shall be used:

- Mixtures of fuel gases and air or oxygen may be explosive and must be guarded against.
- All hoses and hose connections shall comply with the applicable standards.
- Workers in charge of the oxygen or fuel-gas supply equipment, including generators, shall be instructed and judged competent by Vector Projects Group Ltd before being left in charge.

22.13 First Aid Equipment

First aid equipment shall be available at all times. All injuries shall be reported as soon as possible for medical attention. First aid shall be rendered until medical attention can be provided.
Personal Protective Equipment (PPE) Requirements for Workers Involved in Hot Work Activity
A worker involved in welding or burning operations must wear:

- flame resistant work clothing,
- gauntlet gloves of leather or other suitable material and arm protection,
- an apron of leather or other suitable material for heavy work,
- eye and face protection against harmful radiation, particles of molten metal, and while chipping and grinding welds, and
- substantial safety footwear made of leather or other suitable material.

22.14 Training

Persons performing hot work shall be adequately trained. Every worker who as part of his or her work performs welding, burning, or cutting operations shall be a competent person. Training must include:

- Safe work and hot work procedures
- Position Responsibilities
- Cutters, welders and their supervisors must be suitably trained in the safe operations of their equipment and the safe use of the process.
- Fire Watch Responsibilities - specifically, the fire watch must know:

    1. That their ONLY duty is Fire Watch.
    2. When they can terminate the watch.
    3. How to use the provided fire extinguisher(s).
    4. Be familiar with facilities and how to activate fire alarm, if fire is beyond the incipient stage.
    5. Operator Responsibilities
    6. Contractor Responsibilities

7. Documentation requirements
8. Respirator Usage requirements
9. Fire Extinguisher training.

This Hot Work Permit is required for any temporary operation involving open flames or producing heat and/or sparks. This includes, but is not limited to: Brazing, Cutting, Grinding, And Soldering, Thawing Pipe, Torch Applied Roofing and Welding.

Project Manager or Designee

- Verify precautions listed at right (or do not proceed with the work).
- Complete and retain this permit.
- Send a completed copy to the Safety Manager

Hot Work Being Performed by:

☐ EMPLOYEE
☐ CONTRACTOR -

_____

DATE -	PROJECT -	
LOCATION OF WORK -		
NATURE OF JOB -		
NAME OF EMPLOYEE PERFORMING HOT WORK -		
I verify the above location has been examined, the precautions checked on the Required Precautions Checklist have been taken to prevent fire, and permission is authorized for this work.		
SIGNED (PROJECT MANAGER OR DESIGNEE)		
PERMIT EXPIRES	DATE	TIME A.M. P.M.

THIS PERMIT IS TO BE POSTED AT THE HOT WORK WHERE WORK IS BEING PERFORMED
THIS PERMIT IS GOOD FOR ONE DAY ONLY!

Required Precautions Checklist

☐ Available sprinklers, hose streams and extinguishers are in place, current for inspection and fit for purpose.

Requirements within 10 m (35 ft.) of work

☐ Flammable liquids, dust, lint and oily deposits removed.
☐ Explosive atmosphere in area eliminated.
☐ Floors swept clean.
☐ Combustible floors wet down, covered with damp sand or fire-resistive sheets.
☐ Remove other combustibles where possible.

Otherwise protected with fire-resistant tarpaulins or metal shields.

☐ All wall and floor openings covered.
☐ Fire resistant tarpaulins suspended beneath work.

Work on walls or ceilings/enclosed equipment

☐ Construction is non-combustible and without combustible covering or insulation.
☐ Combustibles on other side of walls moved away.
☐ Danger exists by conduction of heat into another area.
☐ Enclosed equipment cleaned of all combustibles.
☐ Containers purged of flammable liquids/vapours.
☐ Pressurized vessels, piping and equipment removed from service, isolated and vented.

Fire watch/hot work area monitoring

☐ Fire watch will be provided during and for 30 minutes after work, including any coffee or lunch breaks.
☐ Fire watch is supplied with suitable extinguishers.
☐ Fire watch is trained in use of this equipment and in sounding alarm.
☐ Fire watch may be required for adjoining areas above, and below.
☐ Monitor Hot Work area for 30 minutes after job is completed.

Other precautions taken

☐ Confined space entry permit required if necessary.
☐ Ample ventilation is used to remove smoke/vapour from work area.
☐ Lockout/tagout required if necessary

23.0 LADDER SAFETY

23.1 Purpose

The purpose of the program is to prescribe rules and establish minimum requirements for the construction, care, and use of the common types of ladders. The material in this document does not take precedence over applicable government legislation which all employees must follow.

All ladders that are purchased and placed into service; or, any ladders that are engineered, manufactured and installed on any Vector Projects Group Ltd equipment shall follow the requirements set forth by this program.

23.2 Scope

This program is applicable to all workers who may utilize ladders. When work is performed on a non-owned or operated site, the operator's program shall take precedence, however, this document covers Vector Projects Group Ltd workers and contractors and shall be used on owned premises, or when an operator's program doesn't exist or is less stringent.

23.3 Key Responsibilities

Managers and Supervisors

- Managers and supervisors are responsible for ensuring that all workers, and/or contractors have been trained in the use and inspection of ladders in accordance to the manufactures guidelines.
- Managers and supervisors are responsible for ensuring that all workers and contractors are aware that if an inspection discovers a defect, the ladder shall not be used and taken out of service.

Employees

- Employees shall inspect ladders prior, during and at the completion of each use to ensure the condition of the ladder and the safety of its occupants.
- Employees are responsible for following this program and reporting any damage or repairs that may be needed to their supervisor.

23.4 Procedure

Ladders should not be used if a safer means of accessing an elevated work area is available. Vector Projects Group Ltd shall ensure that workers do not use a ladder to enter or leave an elevated or sub-level work area if the area has another safe and recognizable way to enter or leave it. If work cannot be done from a ladder without hazard to a worker, a work platform must be provided. A worker must not carry up or down a ladder, heavy or bulky objects or any other objects which may make ascent or descent unsafe.

23.5 Inspection, Care and Safe Work Practices of Ladders

23.5.1 Inspection

Ladders are inspected before use and defective ladders are removed from service. A ladder must be inspected before use on each shift, after any modification and any condition that might endanger workers must be remedied before the equipment is used.

A ladder found to be broken or defective may not be used until it has been repaired and restored to its original design specifications. Any ladder that has developed defects shall be withdrawn from service for repair or destruction and tagged or marked as "Dangerous, Do Not Use."

Ladder rungs, cleats and steps shall be parallel, level and uniformly spaced.

Portable ladders shall be CSA certified. Vector Projects Group Ltd must ensure that a portable ladder meets the requirements of CSA Standard CAN3-Z11-M81 (R2005), Portable Ladders. The applicable ANSI Standard is also acceptable (managers can refer to the Provincial Occupational Health and Safety (OHS) Code/regulations for details for the province in which they are working).

Portable single or extension ladders shall be equipped with a non-slip type base or shall be held, tied or otherwise secured to prevent slipping.

If a ladder is tipped over, it shall be inspected by a competent person for side rail dents or bends, or excessively dented rungs; check all rung to side rail connections; check hardware connections; check rivets for shears.

Ladders with loose, broken or missing rungs, split side rails or other hazard producing defects shall not be used. Improvised repairs shall not be made.

All wood parts shall be free from sharp edges and splinters; sound and free from accepted visual inspection from shake, or other irregularities. Wooden ladders must not be painted.

23.5.2 Care

Ladders shall be maintained in good condition at all times, the joint between the steps and side rails shall be tight, all hardware and fittings securely attached, and the movable parts shall operate freely without binding or undue play.

Metal bearings of locks, wheels, pulleys, etc., shall be frequently lubricated.

Frayed or badly worn rope shall be replaced. Safety feet and other auxiliary equipment shall be kept in good condition to ensure proper performance.

Rungs shall be kept free of grease and oil.

Ladders shall be stored in a well-ventilated area in a manner to prevent sagging and warping.

23.5.3 Safe Work Practices

Ladders shall be used only for the intended purpose for which they were designed.

Portable ladders are placed against the top support at a minimum 4 -1 incline. A ladder must be positioned so that the horizontal distance from the base to vertical plane of support is approximately ¼ of the ladder length.

Ladders used when servicing energized electrical equipment must be non-conductive. Vector Projects Group Ltd shall ensure that a ladder used during the servicing of energized or potentially energized electrical equipment is made of non- conductive material. Metal ladders or wire reinforced wooden ladders shall not be used in proximity to energized electrical equipment.

Portable ladders in use are secured against movement and placed on a stable base. A ladder must be placed on a firm and level base and secured to ensure stability during use.

Ladders shall not be placed on boxes, barrels, or other unstable bases to obtain additional height.

If an extension ladder is used by a worker is must be equipped with locks that securely hold the sections of the ladder in the extended position.

No ladder shall be lashed to another ladder to increase its length.

Ladders shall not be used in a horizontal position as platforms, runways or scaffolds.

Ladders shall not be used by more than one worker at a time.

The upper supports of ladders used to access elevated work areas must extend a minimum of one meter above the elevated surface. A ladder must have sufficient length to project approximately 1 m (3 ft) above the upper landing to which it provides access.

Ladders shall not be placed in front of doors opening toward the ladder unless the door is blocked open, locked, or guarded.

If a ladder is used in a high traffic area, barricades shall be placed to avoid accidental displacement due to collisions.

Performing work from the top two rungs of a portable ladder is prohibited. A worker must not perform work from either of the top two rungs, steps, or cleats of a portable ladder unless the manufacturer's specifications allow the worker to do so.

- The worker shall maintain a three (3)-point grip on the ladder at all times and carry tools/equipment on a belt or hoist up. Do not carry anything in the hands that could cause injury in case of fall.
- The worker shall face the ladder while ascending or descending.
- The bracing on the back legs of stepladders is designed solely for increasing stability and not for climbing.
- The ladder shall not be moved while occupied.

23.5.4 Training

All workers will be trained for this ladder safety program contents prior to using a ladder.

24.0 POWERED MOBILE EQUIPMENT

24.1 Purpose

This program is to provide safety requirements for mobile equipment used. The material in this document does not take precedence over applicable government legislation which all employees must follow.

24.2 Scope

This program applies to all employees of Vector Projects Group Ltd performing work. When work is performed on a non-owned or operated site, the operator's program shall take precedence, however, this document covers Vector Projects Group Ltd employees and contractors and shall be used on owned premises, or when an operator's program doesn't exist or is less stringent.

24.3 Key Responsibilities

Safety Manager

- The designated Safety Manager is responsible for developing and maintaining the requirements of this program.

Site Manager and Supervisor Responsibilities

- Responsible for the implementation and maintenance of this program for their site and ensuring all assets are made available for compliance with this Vector Projects Group Ltd program.
- A supervisor must not knowingly operate or permit a worker to operate mobile equipment which is, or could create, an undue hazard to the health or safety of any person, or is in violation of Occupational Health and Safety (OHS) or this Vector Projects Group Ltd program.

Operators Responsibilities

- All shall be familiar with this program.
- The operator of mobile equipment must operate the equipment safely, maintain full control of the equipment and comply with the laws governing the operation of the equipment.
- Follow all requirements, report unsafe conditions, and follow all posted requirements.
- Shall use the safeguards, safety appliances and personal protective equipment while following all safe work practices and procedures for the workplace.

24.4 ATV Vehicles

If a Vector Projects Group Ltd work site utilizes ATV vehicles, then the following shall apply:

If the manufacturer has not set limits for operation of the ATV on sloping ground, 5% is the maximum allowable slope unless Vector Projects Group Ltd has developed and implemented written safe work procedures appropriate for any steeper slope on which the equipment is to be used and ensured that their operators have been trained and certified as competent.

Loading and unloading of an ATV onto or off a carrier vehicle must be done in a safe manner. If ramps are used when loading or unloading an ATV they must be placed at a suitable angle, be sufficiently wide and have a surface finish which provides an adequate grip for the ATV's tires.

24.4.1 Operator and Supervisor Responsibilities

- The operator must operate the UTV in a safe manner, maintaining full control and complying with the regulations that apply to the operation of the machine.
- The supervisor must not either knowingly operate or allow a worker to operate mobile equipment that could present an undue risk to anyone or that is in violation of the legislation.

24.4.2 Modifications

- Any modification that could impact the structural integrity or stability of an ATV must be certified by a Professional Engineer (e.g., the addition of drills to ATVs, spray or fluid tank packages, other accessory additions to the unit, jacking up the frame, and oversized tires).
- Some accessories and add-ons are allowed by manufacturers. Check with the manufacturer's manual to find out what is or is not allowed.

24.4.3 Operator's Manual

- The ATV operator's manual must be kept with the unit or at another location nearby where it is readily accessible to the operator. The usual location is in a waterproof bag or case under the operator's seat.

24.4.4 Operator's Responsibilities

- The ATV operator must use the unit in accordance with the operator's manual supplied by the manufacturer.
- The ATV must be operated in a safe manner at all times, with the operator maintaining full control of the unit and complying with the sections of the Regulation that apply to its operation. (This would prohibit the operator from doing tricks and extreme riding)
- The operator must conduct and document pre-use inspections of the ATV
- Operator must not drink alcohol or use drugs of any kind while operating the machine. (see: Drug & Alcohol program)

24.4.5 Use on Slopes

- If the manufacturer's manual contains slope limits for the ATV (up, down, and cross slope), these are the maximum slopes that the unit can be operated on.
- If the manufacturer has not established maximum safe operating slopes, a 5% slope is the maximum allowable slope.
- In the absence of guidance from the manufacturer, the employer can develop and implement appropriate safe work procedures for the equipment to be used. Such procedures will be specific to the type and mode of ATV and will include:
    - Maximum up, down, and side slopes
    - Assessment of the types of loads that may be carried and where any loads may be carried
    - The means by which slope gradient will be assessed by the ATV operator
- Maximum allowable slopes must be based upon criteria that will ensure the stability of the ATV when it is operated on the slope (e.g., manufacturer's guidance or stability testing, Professional Engineer's principles, etc.).
- Workers must be trained and educated in the safe work procedures

24.4.6 Operator Training

- The employer must ensure that all ATV operators are properly trained in the safe operation of the equipment.
- Any ATV operator training must cover:
  - Manufacturer's Operating Manual
  - Knowledge regarding all safety signs on the machine
  - Pre-trip inspections
  - Use of appropriate PPE
  - Operating skills in accordance with the manufacturer's instructions
  - Basic mechanical requirements of the machine
  - Proper safe loading and unloading of the machine
  - Safe use of winches as outlined by the manufacturer of the UTV/ATV
- Before operating the ATV, the operator must demonstrate competency in operating the machine to a qualified supervisor or instructor.

24.4.7 Personal Protective Equipment (PPE)

- When operating an ATV, the operator and any passengers (if allowed by the manufacturer) must wear:
  - Appropriate eye and hearing protection
  - clothing suitable for the environmental conditions and when necessary to protect against the hazards presented at the worksite, suitable gloves and clothing which covers the ankles and legs and the arms to the wrists and appropriate footwear
  - Approved motorcycle helmet (a full-face helmet is recommended as it provides protection to the jaw area, which has been a common area of injury in ATV operators)
  - CSA Standard CAN3-D230-M85 approved helmets shall be worn by the operator and passenger.
  - CSA Standard Z94.3 approved eye or face protectors is required if the all-terrain vehicle, snowmobile or towed conveyance does not have an enclosed cab.
  - hearing protection as required by local regulatory requirements and the Vector Projects Group Ltd PPE Program.

24.4.8 Safe Loading and Unloading

- Loading and unloading the ATV on or off a vehicle or trailer carrier must be done in a safe manner.
- If used, ramps must be at a suitable angle, be wide enough, and have an appropriate grip surface for the ATV tires to properly grip and not slip.

24.4.9 Operation and Maintenance

- Maintenance records must be kept and made available to the operator.
- Proper servicing and maintenance appropriate to conditions of use includes modifications to the structural supports of the drive train of these units (For example, raising the frame of the UTV to permit the installation of oversized tires raises the centre of gravity and makes the unit unstable and prone to rolling over.)
- Pre-use inspections must be performed and documented.

24.4.10 Guarding

- UTV operators must be protected from falling, flying, or intruding objects by means of suitable guards or structures. Operating these units without proper side doors and undercarriage skid plates has resulted in serious injuries and incidents involving operators of these units.

- Side doors and metal skid plates are needed to properly protect the operators.

24.4.11 Rollover Protective Structures (ROPS) and Seatbelts

- ROPS may be required to be installed if the design of the equipment or circumstances of use indicate the need (for example, steep or uneven terrain)
- Seatbelts must be worn whenever the equipment is in motion or could become unstable. Note: Some UTVs come with a roll cage that is NOT a certified ROPS.

24.5 Mobile Equipment

24.5.1 Equipment and Operational Use Requirements

Where there is a danger to the operator of a unit of powered mobile equipment or any other worker who is required or permitted to be in or on a unit of powered mobile equipment from a falling object or projectile Vector Projects Group Ltd requires that the powered mobile equipment is equipped with a suitable and adequate cab, screen or guard.

Mobile equipment used for lifting or hoisting or similar operations shall have a permanently affixed notation stating the safe working load capacity of the equipment and the notation must be kept legible and clearly visible to the operator.

The operator's manual for powered mobile equipment must be readily available to a worker who operates the equipment.

24.5.2 Wheel and Tire Repairs

Vector Projects Group Ltd must ensure that a competent person services, inspects, disassembles and reassembles a tire or tire and wheel assembly of powered mobile equipment in accordance with the specifications of both the tire manufacturer and the manufacturer of the powered mobile equipment.

24.5.3 Guarding Moving Parts

Exposed moving parts on mobile equipment which are a hazard to the operator or to other workers must be guarded according to a standard acceptable to the Board, and if a part must be exposed for proper function it must be guarded as much as is practicable consistent with the intended function of the component.

24.5.4 Signalling

Where the operator of a vehicle, mobile equipment, crane or similar material handling equipment does not have a full view of the intended path of travel of the vehicle, mobile equipment, crane or similar material handling equipment or its load, the vehicle, mobile equipment, crane or similar material handling equipment shall only be operated as directed by a signaller who is a competent person.

The signaller shall be stationed, in full view of the operator and with a full view of the intended path of travel of the vehicle, mobile equipment, crane or similar material handling equipment and its load; and clear of the intended path of travel of the vehicle, mobile equipment, crane or similar material handling equipment and its load.

24.5.5 Rider Restriction

The operator of mobile equipment is the only worker permitted to ride the equipment unless the equipment is a worker transportation vehicle.

24.5.6 Seatbelt Use

If mobile equipment has seat belts required by any law, the operator and passengers must use the belts whenever the equipment is in motion or engaged in an operation which could cause the equipment to become unstable.

24.5.7 Warning Signal Device or Equipment

Mobile equipment in which the operator cannot directly or by mirror or other effective device see immediately behind the machine must have an automatic audible warning device which activates whenever the equipment controls are positioned to move the equipment in reverse, and if practicable, is audible above the ambient noise level.

24.5.8 Lights and Mirrors

All mobile equipment must be equipped with a means of illuminating the path of travel at any time and tail lights when, because of insufficient light or unfavourable atmospheric conditions; adequate illumination of the cab and instruments; suitable clearance lights and reflectors and a mirror providing the operator with an undistorted reflected view to the rear of the mobile equipment.

24.5.9 Securing Tools and Equipment

The operator must maintain the cab, floor and deck of mobile equipment free of material, tools or other objects which could create a tripping hazard, interfere with the operation of controls or be a hazard to the operator or other occupants in the event of an accident.

24.5.10 Securing of Unattended Equipment

The operator of mobile equipment must not leave the controls unattended unless the equipment has been secured against inadvertent movement such as by setting the parking brake, placing the transmission in the manufacturer's specified park position and by chocking wheels where necessary.

24.5.11 Fire Suppression

Adequate and approved fire suppression equipment shall be provided on mobile equipment. All vehicles must be equipped with a fire extinguisher. Every vehicle shall carry at least one fire extinguisher of adequate size and of the proper type.
Worker Clearances
Under no circumstance will a worker be directed, required or permitted to work under or remain in the range of a swinging load or part of unit of powered mobile equipment due to the inherent danger.

24.5.12 Maintenance Records

Maintenance records for any service, repair or modification which affects the safe performance of the equipment must be maintained and be reasonably available to the operator and maintenance personnel during work hours.

24.5.13 Servicing, Maintenance and Repair

All mobile equipment shall be maintained in safe operating condition and operation, inspection, repair, maintenance and modification shall be carried out in accordance with manufacturer's instructions or, in the absence of the instructions, in accordance with good engineering practice.

No person shall fill the fuel tanks of mobile equipment with gasoline or vaporizing liquids while the engine is running or while a person is smoking in or about the equipment or while there is a known source of ignition in the immediate vicinity.

When a worker is required to work beneath elevated parts of mobile equipment including trucks, the elevated parts shall be securely blocked.

Servicing, maintenance and repair of mobile equipment must not be done when the equipment is operating unless continued operation is essential to the process and a safe means is provided and the process is approved by Vector Projects Group Ltd.

24.5.14 Inspections

An inspection must be made in accordance with the manufacturer's specifications.

A written record of the inspections carried out on the powered mobile equipment is kept at the workplace and made readily available to the operator of the equipment.

The operator must inspect the equipment before the start of operation on the shift and thereafter as required to ensure the safe operating condition of the equipment. The manufacturer's guidelines shall be followed.

24.5.15 Defects

The operator must report defects and conditions affecting the safe operation of the equipment to the site supervisor. Any defect that affects the safe operation of the equipment must be repaired before the equipment is put to work.

24.5.16 Training

A person must not operate mobile equipment unless the person has received adequate instruction in the safe use of the equipment and has demonstrated to a qualified supervisor or instructor competency in operating the equipment.

Any person who operates a vehicle must have in their possession, a valid operator's licence for the vehicle they are operating as well as the province they are working.

To be certified, equipment operators will show competence in the machine they are operating including but not limited to:

- Provincial Legislation
- Site Evaluations
- Equipment Operations
- Equipment Controls
- Reporting Requirements
- Inspections
- Maintenance
- Signalling
- Maintenance Repair Records
- Safety Meeting Attendance
- Rigging (if applicable)

25.0 RESPIRATORY PROTECTION

25.1 Purpose

It is our intention to provide a respiratory protection program that meets or exceeds all standards for Canada. The material in this document does not take precedence over applicable government legislation which all employees must follow.

25.2 Scope

This program applies to all Vector Projects Group Ltd projects and operations.

25.3 Requirements

25.3.1 General

Respiratory hazards are controlled using ventilation. Where ventilation is not practicable, entrants must wear supplied air respiratory protective devices. When a worker is or may be exposed to an oxygen deficient atmosphere or harmful concentrations of air contaminants, atmospheric contamination shall be prevented to the extent practicable by accepted engineering controls and when engineering or other controls are not practicable, appropriate respiratory protection equipment shall be used.

25.3.2 When Respiratory Equipment is Required

Workers must wear respiratory protective equipment when airborne contaminants exceed occupational exposure limits. If a worker is or might be exposed in a workplace to an air contaminant that exceeds an 8-hour TWA limit, ceiling limit or short-term exposure limit set by ACGIH for the air contaminant, Vector Projects Group Ltd must provide an appropriate respirator and ensure that the worker uses it.

Vector Projects Group Ltd must consider:

- The nature and exposure circumstances of any contaminants or biohazardous material,
- The concentration or likely concentration of any airborne contaminants,
- The duration or likely duration of the worker's exposure,
- The toxicity of the contaminants,
- The concentration of oxygen,
- The warning properties of the contaminants, and
- The need for emergency escape.

Additionally, during routine, temporary or emergency conditions an employee who is required or permitted to work in a place, including a work area where danger from toxic or corrosive gases may exist or evolve, where there is danger to health from harmful concentrations of gases, vapours, fumes, aerosol, mists or dusts, oxygen deficiency or any airborne contaminate that may be present in any amounts that are harmful or offensive to the employee, shall wear respiratory protective equipment appropriate to the circumstances.

25.3.3 How Respiratory Hazards Are Assessed in the Workplace

For work performed at a client's location, Vector Projects Group Ltd must ensure that employees observe posted respiratory hazard signage and implement controls as needed.

Vector Projects Group Ltd shall identify and evaluate the respiratory hazards in the workplace, and the evaluation shall include an employee's potential exposure to respiratory hazards and an identification of the contaminant's chemical composition and physical state. There will be a site specific respiratory hazard assessment conducted before any employee is exposed to respiratory hazards.

Access points shall display signs warning that respiratory protection equipment is required and naming the contaminant or hazard involved. Where Vector Projects Group Ltd cannot identify the exposure it shall take immediate precautions to protect a worker from immediate danger.

25.3.4 Respiratory Program Administrator Responsibilities and Duties

Overall responsibility for the respiratory protection program is assigned to the Vector Projects Group Ltd Safety Manager in order to ensure that specific requirements are followed. This assignment is made, however, with the understanding that individual supervisors will have to implement and enforce major portions of the program. It is understood that the Program Administrator will report performance problems to the appropriate manager for resolution. The person who will have responsibility for administering all the aspects of this program will be the site manager.

The responsibilities of the Program Administrator will include, but are not limited to:

Conducting an assessment of the nature of airborne contaminants, the concentration or likely concentration of any airborne contaminants, the duration or likely duration of the employees exposure, the toxicity of the contaminants, the concentration of oxygen, the warning properties of the contaminates and the need for emergency escape.

Conducting an annual written evaluation of the program. The program evaluation should be completed no later than December, 31, of each year.

Ensuring an adequate supply of respirators, cartridges, and repair/replacement parts are always available at each work site. The Program Administrator may delegate this duty but will retain overall responsibility. The person(s) to whom this duty has been delegated is the site manager.

Ensuring that only respirators that have been approved ordered and used. Under no circumstances will respirators be used that have not been approved by current CSA standards.

Ensuring that all respirator users have been trained in the use, selection and limitations of the type of respirators they will be using prior to the first time the respirator must be used. While the duty of conducting the training may be delegated, the Program Administrator retains final responsibility for seeing that all employees are appropriately trained.

Ensuring that all respirator users have been medically evaluated and found fit to use the type of respirators that will be required in their job. The medical evaluation must be completed prior to assigning any employee to a task that requires use of a respirator.

Ensuring that all respirator users are fit-tested at least annually and more often if other local regulatory requirements apply.

Ensuring that respirators are individually issued, are cleaned and sanitized on a regular basis and respirators are stored in a clean and accessible location. This duty may also be delegated but the Program Administrator retains final responsibility for seeing that it is done.

Ensuring that employee exposure is monitored to assure correct respirator type is used. Exposure monitoring may be delegated to others; however, the Program Administrator has final responsibility of monitoring completion and to request assistance when necessary.

Ensuring surveillance of employees wearing respirators shall leave the area they are wearing respirators in to wash, change cartridges or if they detect break through or resistance with their PPE.

Ensuring that the elements of the Respiratory Protection Program for the selection, use, cleaning/maintenance, storage and fit-testing of respirators are followed.

Ensuring that respirator parts are not exchanged between brands of respirators.

Ensuring medical evaluations, respirators and required training are provided at no cost to the employee.

25.4 Respirator Selection Criteria

25.4.1 Identification of Respiratory Hazards

Respiratory protective equipment must be selected based on respiratory hazards. The Vector Projects Group Ltd written program describes the type of equipment that is used in the workplace, and the level of protection it affords. Vector Projects Group Ltd shall select and provide appropriate respiratory protection equipment based on the respiratory hazard to which a worker is exposed and workplace and user factors that affect the performance and reliability of the equipment.

25.4.2 Common respiratory hazards that can be encountered include:

- Dust, Fumes, Gases,
- Chemical particles
- Oxygen Deficiency

To aid in the selection process the Vector Projects Group Ltd safety manager will use the following to identify the proper respirator and filters or cartridges, where appropriate -

25.4.3 Standard for Respirators

Vector Projects Group Ltd, in consultation with the worker and the occupational health and safety committee, if any, or the worker health and safety representative, if any, must select appropriate respiratory protective equipment in accordance with CSA Standard CAN/CSA-Z94.4-93, Selection, Use, and Care of Respirators.

25.4.4 Characteristics of Hazardous Operation or Process

Hot operations - welding, chemical reactions, soldering, melting, melding and burning

Liquid operations - painting, degreasing, dipping, spraying, brushing, coating, etching, cleaning, pickling, plating, mixing, galvanizing and chemical reactions

Solid operations - pouring, mixing, separations, extraction, crushing, conveying, loading, bagging and demolition.

Pressurized spraying - cleaning parts, applying pesticides, degreasing, sand blasting and painting

Shaping operations - cutting, grinding, filing, milling, melding, sawing and drilling

25.4.5 Nature of Hazard

Gaseous Contaminants

- Inert gases (helium, argon, etc.), which do not metabolize in the body but displace air to produce an oxygen deficiency.
- Acid gases (SO2, H2S, HCl, etc.) which are acids or produce acids by reaction with water.
- Alkaline gases (NH3, etc.), which are alkalies or produce alkalies by reaction with water.
- Organic gases (butane, acetone, etc.), which exist as true gases or vapours from organic liquids.

- Organometallic gases (tetraethyl lead, organo-phosphates, etc.), which have metals attached to organic groups.

Particulate contaminants

- Dusts are mechanically generated solid particulates (0.5 to 10µm)
- Fumes are solid condensation particles of small diameter (0.1 to 1.0 µm)
- Mists are liquid particulate matter (5 to 100 µm)
- Smoke is chemically generated particulates (solid and liquid) of organic origins (0.01 to 0.3 µm)

Concentration of Contaminant

The concentration of contaminant will determine the model and type of respirator and cartridges or filters to be used. The concentration is based on a sampling of the atmosphere.

Location of Hazardous Area

(Confined Space, nearby contaminants, etc.)

Employee Activity

(Extreme heat, cold, welding hood requirement, etc.)

25.4.6 Types of Respirators

Air-purifying Respirators

Air-purifying respirators can be either full-face or half masks with mechanical or chemical cartridges to filter dusts, mists, fumes, vapours or gases. They are available in three types - disposable, reusable, and disposable/reusable.

- Disposable air-purifying respirators are intended to be used once or until the cartridge expires. The cartridges are permanently attached and have no replacement parts.
- Reusable air-purifying respirators use both replaceable cartridges and parts. NOTE - The replaceable cartridges and parts must be from the same manufacturer.
- Disposable/reusable air-purifying respirators have no replaceable parts except cartridges.

Cartridge respirators and canister masks shall be marked to identify the nature of protection provided, shall not be used otherwise than as marked, shall not be used for periods of time in excess of their usefulness and shall not be used in atmosphere deficient in oxygen.

Gas masks are designed for slightly higher concentrations of organic vapours, gases, dusts, mists and fumes. The volume of sorbent used as the medium is higher than a chemical cartridge.

Powered air-purifying respirators use a blower to pass the contaminated air through a filter. The purified air is then delivered into a mask or hood. They filter dusts, mists, fumes, vapours and gases, just like ordinary air-purifying respirators.

Air-purifying respirators cannot be used in oxygen-deficient atmospheres, which can result when another gas displaces the oxygen or consumption of oxygen by a chemical reaction occurs. Oxygen levels below 19.5% require either a source of supplied air or supplied-air respirator protection. Levels below 16% are considered to be unsafe and could cause death.

Cartridge Types

To determine the proper cartridge for air-purifying respirators, either contact the Vector Projects Group Ltd Safety Manager or a qualified on-site safety representative of the client. You may also consult the Material Safety Data Sheet of the substance that needs to be filtered.

All cartridges and/or filters shall be changed at the beginning of each shift.

Cartridge respirators cannot provide protection in all instances. Some of their limitations include:

- They do not provide oxygen and so cannot be used in oxygen deficient atmospheres.
- They cannot be used to enter atmospheres that are Immediately Dangerous to Life or Health (IDLH)
- They should not be used to enter unknown atmospheres.

Mixing parts from other respirator manufacturers is prohibited. This includes airline hoses, valves, gaskets, cartridges, etc. For example, do not use North cartridges or calve gaskets with an MSA product.

25.4.7 Maintenance and Inspection of Respirators

Inspection of compressed air cylinders must be done in accordance with CSA Standard CAN/CSA-Z94.4-02, Selection, Use, and Care of Respirators. Self-contained breathing apparatus, including regulators, must be serviced and repaired by qualified persons.

Maintenance records for air supplying respirators, powered air purifying respirators and for sorbent cartridges and canisters will be maintained.

Respirator Maintenance Checklist

Facepiece	Cracks, tears, holes
	Facemask distortion
	Cracked or loose lenses or faceshield
Headstraps	Breaks or tears
	Broken buckles
Valves	Residue or dirt
	Cracks or tears in valve material
Filters/cartridges	Approval designation, labels intact
	Gaskets
	Cracks or dents in housing
	Proper cartridge for hazard

Cartridge Replacement Schedule

Respirator	Use	Schedule
3M 8210 N95	General particulate exposure; insulation block cutting; abrasive blasting	Use a new respirator for each new task
3M 8512 N95 welding fume respirator	Welding, brazing, or other particulate exposure	Use a new respirator daily
North 770030 Facepiece; 7583P100 Cartridges for organic vapors and acid gases	Painting, other organic solvents	For average use, replace cartridges weekly
		For heavy use, replace cartridges every 2 days
		For light use, replace cartridges every two weeks, max.

25.4.8 Cleaning and Disinfecting Requirements

Vector Projects Group Ltd shall ensure that respirators are cleaned and disinfected using the procedures in this Respiratory Protection Program, or procedures recommended by the respirator manufacturer, provided that such procedures are of equivalent effectiveness.

Respiratory equipment is not shared by employees, unless it is cleaned and sanitized before different employees use it. Respirators issued for the exclusive use of an employee shall be cleaned and disinfected as often as necessary to be maintained in a sanitary condition. Respirators used in fit testing and training shall be cleaned and disinfected after each use.

Each individual who is assigned a cartridge respirator is responsible for seeing that the respirator is cleaned, inspected and properly stored.

25.4.9 Cleaning Procedures

1. Remove filters, cartridges, or canisters. Disassemble face pieces by removing speaking diaphragms, demand and pressure-demand valve assemblies, hoses, or any components recommended by the manufacturer. Discard or repair any defective parts.

2. Wash components in warm water with a mild detergent or with a cleaner recommended by the manufacturer. A stiff bristle (not wire) brush may be used to facilitate the removal of dirt.

3. Rinse components thoroughly in clean, warm, preferably running water. Drain.

4. When the cleaner used does not contain a disinfecting agent, respirator components should be immersed for two minutes in commercially available cleansers of equivalent disinfectant quality. Another alternative is to use wipes containing alcohol that are intended for use with respirators.

5. Rinse components thoroughly in clean, warm, preferably running water. Drain. The importance of thorough rinsing cannot be overemphasized. Detergents or disinfectants that dry on face pieces may result in dermatitis. In addition, some disinfectants may cause deterioration of rubber or corrosion of metal parts if not completely removed.

6. Components should be hand-dried with a clean lint-free cloth or air-dried and sanitized. Reassemble face piece, replacing filters, cartridges, and canisters where necessary. Test the respirator to ensure that all components work properly.

25.4.10 Respirator Inspection

Vector Projects Group Ltd shall ensure that any respiratory protective device for emergency use is thoroughly inspected by a competent person at least once a month and after each use. The date of every inspection made and the name of the person who made the inspection are recorded and conspicuously displayed at the location where the respiratory protective device is stored and any defects identified during the inspection carried out are corrected immediately by a competent person.

Vector Projects Group Ltd shall ensure that respirators are inspected additionally as follows:

- All respirators used in routine situations shall be inspected by the employee before each use and during cleaning. A check by the employee of respirator function, tightness of connections, and the condition of the various parts including, but not limited to, the face piece, head straps, valves, connecting tube, and cartridges, canisters or filters; and
- A check of elastomeric parts for pliability and signs of deterioration.

25.4.11 Repairs

Vector Projects Group Ltd shall ensure that respirators that fail an inspection or are otherwise found to be defective are immediately removed from service, and are discarded or repaired or adjusted in accordance with the following procedures:

- Repairs or adjustments to respirators are to be made only by persons appropriately trained to perform such operations and shall use only the respirator manufacturer's approved parts designed for the respirator;
- Repairs shall be made according to the manufacturer's recommendations and specifications for the type and extent of repairs to be performed.

25.4.12 An IDLH or Oxygen Deficient Atmosphere

Supplied air respiratory protective equipment must be used in conditions that are immediately dangerous to life or health (IDLH). If a worker is required to enter or work in an IDLH or oxygen deficient atmosphere the worker must wear a full face piece positive pressure respirator which is either an SCBA or an airline respirator with an auxiliary self- contained air cylinder of sufficient capacity to permit the worker to escape unassisted from the contaminated area if the air supply fails.

All respirators maintained for use in emergency situations shall be inspected at least monthly and in accordance with the manufacturer's recommendations and shall be checked for proper function before and after each use.

If a worker is required to enter or work in an IDLH or oxygen deficient atmosphere the worker must be attended by at least one other worker stationed at or near the entrance to the contaminated area and is similarly equipped and capable of effecting rescue.

25.4.13 Respirator Storage

Respiratory protective equipment kept ready to protect a worker must be:

1. Stored in a readily accessible location,
2. Stored in a manner that prevents its contamination,
3. Maintained in a clean and sanitary condition,

4. Inspected before and after each use to ensure it is in satisfactory working condition, and
5. Serviced and used in accordance with the manufacturer's specifications.
6. Respirators should be stored in a readily accessible location in plastic, re-seal bags or in plastic tubs or bins with the users name clearly identified and are not exposed to extremes of temperature or to any contaminant that may inactivate it.
7. Respirators cannot be stored in tool boxes, on nails or in areas where they may become contaminated, distorted or otherwise damaged.
8. Respirators shall be maintained in clean and sanitary condition, inspected before and after use and serviced properly.
9. Respiratory protective equipment that is not used routinely but is kept for emergency use is inspected at least once every calendar month by a competent employee to ensure it is in satisfactory working condition.

25.5 Medical Requirements

25.5.1 General

Vector Projects Group Ltd shall provide a medical evaluation to determine the employee's ability to use a respirator, ***before*** the employee is fit tested or required to use the respirator in the workplace. Vector Projects Group Ltd may discontinue an employee's medical evaluations when the employee is no longer required to use a respirator.

25.5.2 Medical Evaluation Procedures

Vector Projects Group Ltd shall identify a physician or other licensed health care professional (PLHCP) to perform medical evaluations using a medical questionnaire or an initial medical examination that obtains the same information as the medical questionnaire. The medical evaluation shall obtain the information requested by the Medical Questionnaire in Forms section (or equivalent).

25.5.3 Recordkeeping

The medical questionnaire and examinations shall be administered confidentially during the employee's normal working hours or at a time and place convenient to the employee. Records of medical evaluations required by this section must be retained and made available in accordance with regulatory requirements. Records will be treated confidentially and maintained on file in the Vector Projects Group Ltd corporate office by the Safety Manager.

25.5.4 Medical Determination

In determining the employee's ability to use a respirator, Vector Projects Group Ltd shall obtain a written recommendation regarding the employee's ability to use the respirator from the PLHCP. The recommendation shall provide only the following information:

- Any limitations on respirator use related to the medical condition of the employee, or relating to the workplace conditions in which the respirator will be used, including whether or not the employee is medically able to use the respirator;
- The need, if any, for follow-up medical evaluations; and
- A statement that the PLHCP has provided the employee with a copy of the PLHCP's written recommendation.

All recommendations are to be sent to the Vector Projects Group Ltd Safety Manager.

25.5.5 Respirator Fit Testing and Effective Facial Seal of Respiratory Protective Equipment

Users of respiratory protective equipment must be properly fit tested. A respirator which requires an effective seal with the face for proper functioning must not be issued to a worker unless a fit test demonstrates that the face piece forms an effective seal with the wearer's face.

Fit tests must be performed in accordance with procedures in CSA Standard CAN/CSA-Z94.4-02, Selection, Use and Care of Respirators. A fit test must be carried out:

- before initial use of a respirator,
- at least once a year,
- whenever there is a change in respirator face piece, including the brand, model, and size, and
- whenever changes to the user's physical condition could affect the respirator fit.

Other personal protective equipment that is to be worn at the same time as a respirator and which could interfere with the respirator fit must be worn during a fit test.

Vector Projects Group Ltd must maintain a record of fit test results.

25.5.6 Effective Facial Seal of Respiratory Protective Equipment

A worker required to wear a respirator which requires an effective seal with the face for proper functioning must be clean shaven where the respirator seals with the face. Before each use of a respirator which requires an effective seal with the face for proper functioning, a worker must perform a positive or negative pressure user seal check in accordance with CSA Standard CAN/CSA-Z94.4-02, Selection, Use, and Care of Respirators.

25.5.7 Conducting a Positive or Negative Pressure Test (Seal Check)

Before each use of a respirator which requires an effective seal with the face for proper functioning, the employee must perform a positive or negative pressure user seal check in accordance with the latest CSA Standard - CAN/CSA-Z94.4-02, Selection, Use, and Care of Respirators.

If after passing a QLFT or QNFT, the employee subsequently notifies Vector Projects Group Ltd, Program Administrator, supervisor, or PLHCP that the fit of the respirator is unacceptable, the employee shall be given a reasonable opportunity to select a different respirator face piece and to be retested.

The fit test shall be administered using an accepted QLFT or QNFT protocol. The accepted QLFT and QNFT protocols and procedures are contained in this section.

QLFT may only be used to fit test negative pressure air-purifying respirators that must achieve a fit factor of 100 or less. Half face air filtering respirators may be fit tested with irritant smoke while full face air filtering respirators require Portacount fit testing.

If the fit factor, as determined through an QNFT protocol, is equal to or greater than 100 for tight-fitting half face pieces, or equal to or greater than 500 for tight-fitting full face pieces, the QNFT has been passed with that respirator.

Fit testing of tight-fitting atmosphere-supplying respirators and tight-fitting powered air-purifying respirators shall be accomplished by performing quantitative or qualitative fit testing in the negative pressure mode, regardless of the mode of operation (negative or positive pressure) that is used for respiratory protection.

Qualitative fit testing of these respirators shall be accomplished by temporarily converting the respirator user's actual face piece into a negative pressure respirator with appropriate filters, or by using an identical

negative pressure air-purifying respirator face piece with the same sealing surfaces as a surrogate for the atmosphere-supplying or powered air-purifying respirator face piece.

Quantitative fit testing of these respirators shall be accomplished by modifying the face piece to allow sampling inside the face piece in the breathing zone of the user, midway between the nose and mouth. This requirement shall be accomplished by installing a permanent sampling probe onto a surrogate face piece, or by using a sampling adapter designed to temporarily provide a means of sampling air from inside the face piece.

Any modifications to the respirator face piece for fit testing shall be completely removed, and the face piece restored to CSA approved configuration, before that face piece can be used in the workplace.

25.5.8 Fit Test Procedures

The requirements in this section apply to all accepted fit test methods, both QLFT and QNFT.

The test subject shall be allowed to pick the most acceptable respirator from a sufficient number of respirator sizes so that the respirator is acceptable to, and correctly fits, the user.

Prior to the selection process, the test subject shall be shown how to put on a respirator, how it should be positioned on the face, how to set strap tension and how to determine an acceptable fit. A mirror shall be available to assist the subject in evaluating the fit and positioning of the respirator. This instruction may not constitute the subject's formal training on respirator use, because it is only a review.

The test subject shall be informed that he/she is being asked to select the respirator that provides the most acceptable fit. Each respirator represents a different size and shape, and if fitted and used properly, will provide adequate protection.

The test subject shall be instructed to hold each chosen face piece up to the face and eliminate those that obviously do not give an acceptable fit.

The more acceptable face pieces are noted in case the one selected proves unacceptable; the most comfortable mask is donned and worn at least five minutes to assess comfort. Assistance in assessing comfort can be given by discussing the following points -

- If the test subject is not familiar with using a particular respirator, the test subject shall be directed to don the mask several times and to adjust the straps each time to become adept at setting proper tension on the straps.
- Position of the mask on the nose
- Room for eye protection
- Room to talk
- Position of mask on face and cheeks

The following criteria shall be used to help determine the adequacy of the respirator fit:

- Chin properly placed;
- Adequate strap tension, not overly tightened;
- Fit across nose bridge;
- Respirator of proper size to span distance from nose to chin;
- Tendency of respirator to slip;
- Self-observation in mirror to evaluate fit and respirator position.

25.6 Use the Fit Test form.

25.6.1 User Seal Check

Before conducting the negative and positive pressure checks, the subject shall be told to seat the mask on the face by moving the head from side-to-side and up and down slowly while taking in a few slow deep breaths. The test subject shall conduct a user seal check, either the negative or positive pressure seal checks described below -

25.6.2 Positive Pressure Check

Close off the exhalation valve and exhale gently into the face piece. The face fit is considered satisfactory if a slight positive pressure can be built up inside the face piece without any evidence of outward leakage of air at the seal. For most respirators this method of leak testing requires the wearer to first remove the exhalation valve cover before closing off the exhalation valve and then carefully replacing it after the test.

25.6.3 Negative Pressure Check

Close off the inlet opening of the canister or cartridge(s) by covering with the palm of the hand(s) or by replacing the filter seal(s), inhale gently so that the face piece collapses slightly, and hold the breath for ten seconds. The design of the inlet opening of some cartridges cannot be effectively covered with the palm of the hand. The test can be performed by covering the inlet opening of the cartridge with a thin latex or nitrile glove. If the face piece remains in its slightly collapsed condition and no inward leakage of air is detected, the tightness of the respirator is considered satisfactory.
The test shall not be conducted if there is any hair growth between the skin and the face piece sealing surface, such as stubble beard growth, beard, moustache or sideburns which cross the respirator sealing surface. Any type of apparel which interferes with a satisfactory fit shall be altered or removed, including glasses.

If a test subject exhibits difficulty in breathing during the tests, she or he shall be referred to a physician or other licensed health care professional, as appropriate, to determine whether the test subject can wear a respirator while performing her or his duties. If the employee finds the fit of the respirator unacceptable, the test subject shall be given the opportunity to select a different respirator and to be retested.

Prior to the commencement of the fit test, the test subject shall be given a description of the fit test and the test subject's responsibilities during the test procedure. The description of the process shall include a description of the test exercises that the subject will be performing. The respirator to be tested shall be worn for at least 5 minutes before the start of the fit test.

The fit test shall be performed while the test subject is wearing any applicable safety equipment that may be worn during actual respirator use which could interfere with respirator fit.

25.6.4 Test Exercises

Each test exercise shall be performed for one minute except for the grimace exercise which shall be performed for 15 seconds. The test subject shall be questioned by the test conductor regarding the comfort of the respirator upon completion of the protocol. If it has become unacceptable, another model of respirator shall be tried. If due to medical or health conditions the employee cannot perform the test exercises the fit test shall not be performed and the employee not allowed to use a respirator until all elements of the fit test can be achieved.

The respirator shall not be adjusted once the fit test exercises begin. Any adjustment voids the test, and the fit test must be repeated.

The following test exercises are to be performed for all fit testing methods prescribed in this procedure:

1. Normal breathing. In a normal standing position, without talking, the subject shall breathe normally.
2. Deep breathing. In a normal standing position, the subject shall breathe slowly and deeply, taking caution so as not to hyperventilate.
3. Turning head side to side. Standing in place, the subject shall slowly turn his/her head from side to side between the extreme positions on each side. The head shall be held at each extreme momentarily so the subject can inhale at each side.
4. Moving head up and down. Standing in place, the subject shall slowly move his/her head up and down. The subject shall be instructed to inhale in the up position (i.e., when looking toward the ceiling).
5. Talking. The subject shall talk out loud slowly and loud enough so as to be heard clearly by the test conductor. The subject shall read from the Rainbow Passage

25.6.5 Rainbow Passage

"When the sunlight strikes raindrops in the air, they act like a prism and form a rainbow. The rainbow is a division of white light into many beautiful colors. These take the shape of a long round arch, with its path high above, and its two ends apparently beyond the horizon. There is, according to legend, a boiling pot of gold at one end. People look, but no one ever finds it. When a man looks for something beyond reach, his friends say he is looking for the pot of gold at the end of the rainbow." Continue to read for one minute.

Grimace. The test subject shall grimace by smiling or frowning. (This applies only to QNFT testing; it is not performed for QLFT)

Jogging in place. The test subject shall jog in place being careful to be aware of their surroundings.

Normal breathing. Same as exercise (1).

25.7 Qualitative Fit Test (QLFT) Protocols

25.7.1 General

Vector Projects Group Ltd shall ensure that persons administering QLFT are able to prepare test solutions, calibrate equipment and perform tests properly, recognize invalid tests, and ensure that test equipment is in proper working order. Vector Projects Group Ltd shall ensure that QLFT equipment is kept clean and well maintained so as to operate within the parameters for which it was designed.

Irritant Smoke (Stannic Chloride) Protocol.

This qualitative fit test uses a person's response to the irritating chemicals released in the ``smoke'' produced by a stannic chloride ventilation smoke tube to detect leakage into the respirator.

25.7.2 General Requirements and Precautions.

The respirator to be tested shall be equipped with high efficiency particulate air (HEPA) or P100 series filter(s).

Only stannic chloride smoke tubes shall be used for this protocol. No form of test enclosure or hood for the test subject shall be used.

The smoke can be irritating to the eyes, lungs, and nasal passages. The test conductor shall take precautions to minimize the test subject's exposure to irritant smoke. Sensitivity varies, and certain individuals may respond to a greater degree to irritant smoke. Care shall be taken when performing the sensitivity screening checks that determine whether the test subject can detect irritant smoke to use only the minimum amount of smoke necessary to elicit a response from the test subject.

The fit test shall be performed in an area with adequate ventilation to prevent exposure of the person conducting the fit test or the build-up of irritant smoke in the general atmosphere.

Sensitivity Screening Check.

The person to be tested must demonstrate his or her ability to detect a weak concentration of the irritant smoke.

The test operator shall break both ends of a ventilation smoke tube containing stannic chloride, and attach one end of the smoke tube to a low flow air pump set to deliver 200 millilitres per minute, or an aspirator squeeze bulb. The test operator shall cover the other end of the smoke tube with a short piece of tubing to prevent potential injury from the jagged end of the smoke tube.

The test operator shall advise the test subject that the smoke can be irritating to the eyes, lungs, and nasal passages and instruct the subject to keep his/her eyes closed while the test is performed.

The test subject shall be allowed to smell a weak concentration of the irritant smoke before the respirator is donned to become familiar with its irritating properties and to determine if he/she can detect the irritating properties of the smoke. The test operator shall *carefully direct a small amount* of the irritant smoke in the test subject's direction to determine that he/she can detect it.

Irritant Smoke Fit Test Procedure

The person being fit tested shall don the respirator without assistance, and perform the required user seal check(s).

The test subject shall be instructed to keep his/her eyes closed if wearing a half face respirator.

The test operator shall direct the stream of irritant smoke from the smoke tube toward the face seal area of the test subject, using the low flow pump or the squeeze bulb. The test operator shall begin at least 12 inches from the face piece and move the smoke stream around the whole perimeter of the mask. The operator shall gradually make two more passes around the perimeter of the mask, moving to within six inches of the respirator.

If the person being tested has not had an involuntary response and/or detected the irritant smoke, proceed with the test exercises.

The exercises identified in the Test Exercises of this procedure shall be performed by the test subject while the respirator seal is being continually challenged by the smoke, directed around the perimeter of the respirator at a distance of six inches.

If the person being fit tested reports detecting the irritant smoke at any time, the test is failed. The person being retested must repeat the entire sensitivity check and fit test procedure.

Each test subject passing the irritant smoke test without evidence of a response (involuntary cough, irritation) shall be given a second sensitivity screening check, with the smoke from the same smoke tube used during the fit test, once the respirator has been removed, to determine whether he/she still reacts to the smoke. Failure to evoke a response shall void the fit test.

If a response is produced during this second sensitivity check, then the fit test is passed. The glass tube shall be disposed of properly.

25.8 Quantitative Fit Test (QNFT) Protocols

Using controlled negative pressure and appropriate instrumentation to measure the volumetric leak rate of a face piece to quantify the respirator have been demonstrated to be acceptable.

Vector Projects Group Ltd shall ensure that persons administering QNFT are able to calibrate equipment and perform tests properly, recognize invalid tests, calculate fit factors properly and ensure that test equipment is in proper working order.

Vector Projects Group Ltd shall ensure that QNFT equipment is kept clean, and is maintained and calibrated according to the manufacturer's instructions so as to operate at the parameters for which it was designed.

25.8.1 Portacount Fit Test Requirements

Check the respirator to make sure the respirator is fitted with a high-efficiency filter and that the sampling probe and line are properly attached to the face piece.

Instruct the person to be tested to don the respirator for five minutes before the fit test starts. This purges the ambient particles trapped inside the respirator and permits the wearer to make certain the respirator is comfortable. This individual shall already have been trained on how to wear the respirator properly.

Check the following conditions for the adequacy of the respirator fit - Chin properly placed; Adequate strap tension, not overly tightened; Fit across nose bridge; Respirator of proper size to span distance from nose to chin; Tendency of the respirator to slip; Self-observation in a mirror to evaluate fit and respirator position.

Have the person wearing the respirator do a user seal check. If leakage is detected, determine the cause. If leakage is from a poorly fitting face piece, try another size of the same model respirator, or another model of respirator.

Follow the manufacturer's instructions for operating the Portacount and proceed with the test.

The test subject shall be instructed to perform the exercises in Test Exercises section of this procedure.

After the test exercises, the test subject shall be questioned by the test conductor regarding the comfort of the respirator upon completion of the protocol. If it has become unacceptable, another model of respirator shall be tried.

25.8.2 Portacount Test Instrument

The Portacount will automatically stop and calculate the overall fit factor for the entire set of exercises. The overall fit factor is what counts. The Pass or Fail message will indicate whether or not the test was successful. If the test was a Pass, the fit test is over.

Since the pass or fail criterion of the Portacount is user programmable, the test operator shall ensure that the pass or fail criterion meet the requirements for minimum respirator performance.

A record of the test needs to be sent to the safety manager and kept on file, assuming the fit test was successful. The record must contain the test subject's name; overall fit factor; make, model, style, and size of respirator used; and date tested.

25.9 Workplace Monitoring

A program of monitoring potential employee exposures has been implemented through the corporate health and safety department. Project personnel may also be assigned with the task of conducting air monitoring.

Direct-reading instruments will also be used in the characterization of potential exposures. All the data collected is used to determine the appropriateness of the respiratory equipment.

25.10 Emergency Planning

When employees may be exposed to or confined in a noxious, toxic or oxygen-deficient atmosphere, Vector Projects Group Ltd shall ensure that there shall be available during working hours a qualified supplier of emergency response providers trained in rescue procedures who have access to breathing apparatus which will enable them to effectively carry out rescue procedures.

25.11 Records

Vector Projects Group Ltd must maintain a record of fit test results and worker instruction, maintenance for air supplying respirators, powered air purifying respirators, for sorbent cartridges and canisters and maintenance and repairs for each self-contained breathing apparatus and all air cylinders in accordance with the requirements of CSA Standard CAN/CSA-Z94.4-02, Selection, Use and Care of Respirators.

25.12 Program Evaluation

Vector Projects Group Ltd shall conduct annual evaluations of the workplace as necessary to ensure that the provisions of the current written program are being effectively implemented and that it continues to be effective.

Vector Projects Group Ltd shall regularly consult employees required to use respirators to assess the employees' views on this program's effectiveness and to identify any problems. Any problems that are identified during this assessment shall be corrected. Factors to be assessed include, but are not limited to:

- Respirator fit (including the ability to use the respirator without interfering with effective workplace performance);
- Appropriate respirator selection for the hazards to which the employee is exposed;
- Proper respirator use under the workplace conditions the employee encounters; and
- Proper respirator maintenance.

25.13 Training

Workers are trained on the selection, use and care of respiratory protective equipment. Vector Projects Group Ltd shall ensure that a worker who wears respiratory protective equipment is adequately instructed in the correct use, limitations and assigned maintenance duties for the equipment to be used.

Vector Projects Group Ltd must ensure that a worker using the respiratory protective equipment

- Is adequately trained by a competent person in the proper fit, testing, maintenance, use and cleaning of the equipment and in its limitations;
- Is able to test, maintain and clean the equipment;
- Is able to use the equipment safely; and
- Inspects and tests the equipment before each use.
- What the limitations and capabilities of the respirator are.
- How to use the respirator effectively in emergency situations, including situations in which the respirator malfunctions.
- How to recognize medical signs and symptoms that may limit or prevent the effective use of respirators

25.13.1 Retraining

Retraining shall be administered annually, and when the following situations occur

- Changes in the workplace or the type of respirator render previous training obsolete;
- Inadequacies in the employee's knowledge or use of the respirator indicate that the employee has not retained the requisite understanding or skill; or
- Any other situation arises in which retraining appears necessary to ensure safe respirator use.

26.0 TOOLS AND MACHINERY

26.1 Purpose

The purpose of this program is to provide direction to managers, supervisors and employees about safety requirements for machinery and tools for operations. The material in this document does not take precedence over applicable government legislation which all employees must follow.

26.2 Scope

This program applies to all workers, temporary workers and any contractors working for Vector Projects Group Ltd.

When work is performed on a non-owned or operated site, the operator's program shall take precedence, however, this document covers Vector Projects Group Ltd workers and contractors and shall be used on owned premises, or when an operator's program doesn't exist or is less stringent.

26.3 Key Responsibilities

Safety Manager

The designated Safety Manager is responsible for developing and maintaining the program.

Site Manager

Responsible for the implementation and maintenance of the program for their site and ensuring all assets are made available for compliance with the plan and appropriate repairs are conducted promptly.

Employees

- All shall be familiar with this program.
- Immediately report any guards that are missing, need repair or maintenance or present any type of concern to the worker.
- Follow all requirements, report unsafe conditions and follow all posted requirements.

26.4 Machine and Tool Safety

Machinery may only be operated by competent persons. A machine or piece of equipment may only be operated by authorized persons. A person must not be authorized to operate a machine or piece of equipment until the person has been adequately instructed and trained and has demonstrated an ability to safely operate it.

Tools may only be used for the purposes for which they were designed. Hand tools and portable power tools shall be appropriate for the job for which they are intended and be used solely for the purposes for which they were designed.

Machinery is always to be secured against unintentional movement when it is not in use. Vector Projects Group Ltd will not require or permit a worker and no Vector Projects Group Ltd worker shall leave unattended or in a suspended position any machine or any part of a machine unless the machine or part has been immobilized and secured against accidental movement or enclosed by a safeguard to prevent access by any other worker to the machine or part.

A machine must be locked out and tagged out prior to performing maintenance activities. Before undertaking any maintenance, repair, or unjamming work in a machine's danger zone, the following safety precautions shall be taken:

- turn the machine's power supply switch to the off position;
- bring the machine to a complete stop;
- each person exposed to danger locks off all the machine's sources of energy in order to avoid any accidental startup of the machine for the duration of the work.

Compressed air shall not be used to clean clothes, machinery, work benches or floors and if the nature of the work demands that compressed air be used, extreme caution shall be exercised and where practical personal protective equipment shall be used. Compressed air or steam must not be used for blowing dust, chips, or other substances from equipment, materials and structures if any person could be exposed to the jet, or to the material it expels or propels.

If machinery, equipment or a structure is dismantled in whole or in part and subsequently re-assembled, it must be checked by a competent person and determined to be safe before operation or use.

Vector Projects Group Ltd will ensure that any machine or tool in the workplace is capable of safely performing the functions for which it is selected, used, inspected, maintained and operated in accordance with the manufacturer's specifications, Vector Projects Group Ltd safe work procedures for the workplace based on the jurisdiction requirements.

Defective tools and machinery must be removed from service. An unsafe tool, machine or piece of equipment must be removed from service and identified in a manner which will ensure it is not inadvertently returned to service until it has been made safe for use.

Workers must not wear loose fitting clothing and/or jewellery if they could come into contact with moving parts. In areas where there is a danger of contact with moving parts, workers shall comply with the following standards:

- their clothing shall fit well and have no loose flaps;
- necklaces, bracelets or rings shall not be worn, with the exception of medical alert bracelets
- anyone with long hair shall tuck it under a bonnet, a hat or a hairnet.

Maintenance records are kept for tools and machinery. An effective written or other permanent recording system or log must be immediately available to the equipment operator and to any other person involved with inspection and maintenance of the equipment.

A worker must not start machinery if will endanger the worker or another worker. Before starting a machine, an operator shall ensure that neither the operator nor any other worker will be endangered by starting the machine.

26.5 Guarding Requirements

A hazard assessment must be completed by Vector Projects Group Ltd where there is a potential to encounter moving parts of machinery, points of machinery at which material is cut/shaped/bored, surfaces with temperatures that may cause skin to freeze/burn/blister, energized cables, debris, material or objects thrown form equipment, material being fed into or removed from process equipment or machinery or equipment that may be hazardous.

Moving parts must be guarded. Moving parts of machines shall be protected by safety devices. They shall be designed, constructed and used so as to ensure a positive protection and to prevent any access to the danger zone during their operation.

Rotating parts, such as friction drives, shafts, couplings and collars, set screws and bolts, keys and keyways, and projecting shaft ends, exposed to contact by workers must be guarded. Machines or equipment having exposed moving parts that constitute a hazard to workers shall be equipped with guards which shall provide protection against contact with moving parts, or prevent access to the danger zone during operations. Vector Projects Group Ltd shall provide an effective safeguard where a worker may contact:

- a dangerous moving part of a machine;
- a pinch point, cutting edge, or point of a machine at which material is cut, shaped, bored, or formed;
- an open flame;
- a steam pipe or other surface with a temperature that exceeds or may exceed 80° Celsius; or
- a cooled surface that is or may be less than minus 80° Celsius.

The application, design, construction, maintenance and use of safeguards, including an opening in a guard and the reach distance to a hazardous part, must meet the requirements of CSA Standard Z432-94, Safeguarding of Machinery.

Where there is a possibility of machine failure and of injury to a worker resulting from the failure Vector Projects Group Ltd shall install safeguards that are strong enough to withstand the impact of debris from the machine failure and to contain any debris resulting from the failure.

Under no circumstances may workers remove a safeguard from a machine that is operating if the safeguard is not designed to be removed when the machine is operating.

A fixed guard must not be modified to be readily removable without the use of tools.

Tampering with safeguards is prohibited. A person must not intentionally remove, impair, or render ineffective any safeguard provided for the protection of workers, except as permitted by local regulatory requirements. Vector Projects Group Ltd will ensure that safeguards remain in place at all times. Any safeguard that is removed from a machine or made ineffective to permit maintenance, testing, repair or adjustment of a machine is replaced or made effective before a worker is required or permitted to use the machine.

All safeguards required must remain in place at all times and Vector Projects Group Ltd shall place adequate, appropriate and clearly visible warning signs at each point of access to a machine that starts automatically.

Guards are required on all types of grinding machines including portable, bench, pedestal and swing-type grinders.

Vector Projects Group Ltd shall place adequate, appropriate and clearly visible warning signs at each point of access to a machine that starts automatically.

26.6 Training

Workers are trained on inspection, use, and maintenance of tools and machinery and guarding. Every worker shall be instructed and trained by a qualified person appointed by Vector Projects Group Ltd in the safe and proper inspection, maintenance and use of all tools and machinery that he/she is required to use.

All training shall be documented and maintained in the worker training file.

27.0 TRANSPORTATION OF DANGEROUS GOODS

27.1 Purpose

These guidelines and requirements are designed to promote public safety during the transportation of dangerous goods for operations. The material in this document does not take precedence over applicable government legislation which all employees must follow. TDG is governed by the Transportation of Dangerous Goods Act and is designed to protect the public, the environment and property from hazardous goods that are being transported.

27.2 Scope

These guidelines apply to all Vector Projects Group Ltd operations. When work is performed on a non-owned or operated site, the operator's program shall take precedence, however, this document covers Vector Projects Group Ltd employees and contractors and shall be used on owned premises, or when an operator's program doesn't exist or is less stringent.

The scope of the legislation not only applies to anyone transporting these goods but to everyone who is required to handle these materials including; packers, shippers, receivers and warehouse workers.

27.3 Requirements

27.3.1 Prior to Transport and Loading

Vector Projects Group Ltd (the consignor) is responsible for classifying dangerous goods before the carrier takes possession. Before allowing a carrier to take possession of dangerous goods for transport, the consignor (Vector Projects Group Ltd) must determine the classification of the dangerous goods.

The certificate of registration and proof of insurance documentation must be carried in all vehicles.

Vector Projects Group Ltd (the consignor) is responsible for providing shipping documentation to the carrier of dangerous goods. Before allowing a carrier to take possession of dangerous goods for transport, the consignor (Vector Projects Group Ltd) must prepare and give to that carrier a shipping document. If the carrier agrees, an electronic copy of the shipping document.

The driver and passengers will follow all local, provincial, and federal laws, including Department of Transportation regulations and codes (if applicable), while operating or riding in a Vector Projects Group Ltd vehicle.

All requirements of the Transportation of Dangerous Goods Regulations shall be followed by Vector Projects Group Ltd.

Dangerous goods safety marks are affixed to containers of dangerous goods before they are transported. Vector Projects Group Ltd must not offer for transport, transport or import a means of containment that contains dangerous goods unless each dangerous goods safety mark is displayed on it.

Vehicles shall be driven with headlights on at all times.

Dangerous goods are adequately secured within the means of containment to prevent accidental release. Vector Projects Group Ltd must not handle, offer for transport or transport dangerous goods in a means of containment unless the means of containment is designed, constructed, filled, closed, secured and maintained so that under normal conditions of transport, including handling, there will be no accidental release of dangerous goods that could endanger public safety.

Containers of dangerous goods are adequately secured on the means of transport to prevent accidental release. Vector Projects Group Ltd must load and secure dangerous goods in a means of containment and must load and secure the means of containment on a means of transport in such a way as to prevent, under normal conditions of transport, damage to the means of containment or to the means of transport that could lead to an accidental release of the dangerous goods.

27.3.2 Inspection

Prior to operating a company vehicle a "walk around" and visual inspection is mandatory to ensure the vehicle is in safe operating condition and ensure the surrounding area is free of any unseen hazards.

The driver shall inspect the vehicle prior to operating it at the beginning of a work shift and after he ceases to operate it at the end of a work shift. An inspection carried out must include an inspection of the following equipment - lighting devices and reflectors, tires, coupling devices, wheels and rims, service brake, including the trailer brake connections, parking brake, steering mechanism, horn, windshield wipers, rear vision mirrors and all required emergency equipment.

The driver shall inform Vector Projects Group Ltd of any defects or deficiency that would affect the safe operation of the vehicle. When Vector Projects Group Ltd receives a notice of defect in respect to a Vector Projects Group Ltd vehicle it shall be repaired or otherwise modified, or repaired or modified in accordance with instructions provided by the manufacturer. If instructions are not given by the manufacturer the vehicle will be repaired or otherwise modified until safe to operate.

27.3.3 Refuelling Vehicles

Vehicle engines must be off before refueling begins. Smoking is not permitted during the refueling process. Note: Due to concerns surrounding the potential for cellular phones to cause the ignition of gas vapours, cellular phones must not be worn or used during refueling of gas powered vehicles.

27.3.4 Training Requirements

A person who handles, offers for transport or transports dangerous goods shall be adequately trained and hold a training certificate or perform those activities in the presence and under the direct supervision of a person who is adequately trained and who holds a training certificate.

All training shall be documented and certificates of training verified with the trainer by Vector Projects Group Ltd.

Vector Projects Group Ltd must not direct nor allow an employee to handle, offer for transport, or transport dangerous goods unless the employee is adequately trained and holds a training certificate or performs those activities in the presence and under the direct supervision of a person who is adequately trained and who holds a training certificate.

27.3.5 9 Classes of Dangerous Goods

Class 1 – Explosives
Class 2 – Gases
Class 3 – Flammable Liquids
Class 4 – Flammable Solids
Class 5 – Oxidizers Substances and Organic Peroxides
Class 6 – Toxic Substances and Infections Substances
Class 7 – Radioactive Materials
Class 8 – Corrosive
Class 9 – Miscellaneous Products, Substances or Organisms

27.3.6 Transportation of Dangerous Goods Symbols

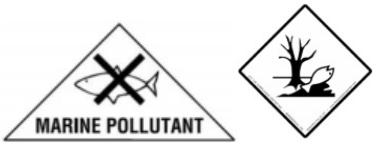
Transportation of Dangerous Goods Symbols	
Class 1 – Explosives	
	1.1 - A substance or article with a mass explosion hazard. 1.2 - A substance or article with a fragment projection hazard, but not a mass explosion hazard. 1.3 - A substance or article which has a fire hazard along with either a minor blast hazard or a minor projection hazard or both, but not a mass explosion hazard.
	1.4 - A substance or article which presents no significant hazard; explosion effects are largely confined to the package and no projection or fragments of appreciable size or range are to be expected.
	1.5 - A very insensitive substance which nevertheless has a mass explosion hazard like those substances in 1.1.
	1.6 - An extremely insensitive substance which does not have a mass explosion hazard. Commonly used in mining and construction operations (example - blasting agents).
Class 2 – Gases	
	2.1 - Flammable Gas. Commonly used as fuel (example - propane).
	2.2 - Non-Flammable, Non-Toxic Gas. Commonly used in food refrigeration (example - nitrogen).
	2.3 - Toxic Gas. Commonly used in pulp bleaching (example - sulphur dioxide).

	2.2 (5.1) - Oxygen and oxidizing gases.
Class 3 – Flammable Liquids	
	A liquid which has a closed-cup flash point not greater than 60.5 C. Commonly used as fuel (example - gasoline, ethanol, fuel oil (diesel).
Class 4 – Flammable Solids	
	Substances liable to spontaneous combustion; Substances that on contact with water emit flammable gases (water-reactive substances). 4.1 - A solid that under normal conditions of transport is readily combustible, or would cause or contribute to fire through friction or from heat retained from manufacturing or processing, or is a self-reactive substance that is liable to undergo a strongly exothermic reaction, or is a desensitized explosive that is liable to explode if they are not diluted sufficiently to suppress their explosive properties. Commonly used in lacquers (example - nitrocellulose).
	4.2 - A substance liable to spontaneous combustion, under normal conditions of transport, or when in contact with air, liable to spontaneous heating to the point where it ignites. Commonly used in rocket fuel (example - diethylzinc).
	4.3 - A substance that, on contact with water, emits dangerous quantities of flammable gases or becomes spontaneously combustible on contact with water or water vapour. Commonly used in heat exchangers (valves) (example - sodium).
Class 5 - Oxidizing Substances and Organic	
	5.1 - A substance which causes or contributes to the combustion of other material by yielding oxygen or other oxidizing substances whether or not the substance itself is combustible. Commonly used in fertilizers (example - ammonium nitrate).
	5.2 -An organic compound that contains the bivalent "-O-O-" structure which is a strong oxidizing agent and may be liable to explosive decomposition, be sensitive to heat, shock or friction, react dangerously with other dangerous goods or may cause damage to the eyes. Commonly used in automobile body shops as body filler (example - dibenzoyl peroxide).
Class 6 -Toxic Substances and Infectious Substances	
	6.1 - A solid or liquid that is toxic through inhalation, by skin contact or by ingestion. Commonly used as a germicide or general disinfectant (example - phenol).
	6.2 - Micro-organisms that are infectious or that are reasonably believed to be infectious to humans or animals. Commonly used in disease research (example - rabies).

	Label Sample
7.0 - Radioactive materials	
	7.0 - Radioactive materials Within the meaning of the Nuclear Safety and Control Act with activity greater than 70 kBq/ kg. Commonly used in nuclear fuel rods (example - radioactive material - LSA (yellow cake)). There are three categories which indicate the surface radiation level for a package with Category I being the lowest level and Category III the highest. SOR/2008-34
	Class 7 - Radioactive I
	Class 7 - Radioactive II
	Class 7 - Radioactive III
Class 8 – Corrosives	
	Class 8 – Corrosives A substance that causes destruction of skin or corrodes steel or non-clad aluminum. Commonly used in batteries and industrial cleaners (example - sulphuric acid and sodium hydroxide).
Class 9 - Miscellaneous Products, Substances or Organisms	
	A substance that does not meet the criteria for inclusion in Classes 1 to 8. Miscellaneous identified dangerous goods Certain specified goods considered dangerous to the environment Dangerous Wastes This includes genetically modified micro-organisms, marine pollutants, elevated temperature materials and environmentally hazardous substances. Commonly used in brake shoes (example - asbestos), in dry cell batteries (example - ammonium chloride).

Fumigation Sign	Elevated Temperature Sign	Mixed Load Shipment

	
Orange Panel	Marine Pollutant Mark
 UN1203 or 	 or 
Small Means of Containment	Large Means of Containment

27.4 Reporting Requirements

Accidental releases or spills of dangerous goods must be reported immediately. In the event of an accidental release of dangerous goods from a means of containment, a person who has possession of the dangerous goods at the time of the accidental release must make an immediate report of the accidental release if the accidental release consists of a quantity of dangerous goods or a reportable emission as described in the table in section 8.1 of the TDG Regulations (below).

CLASS	QUANTITY	EMISSION LEVEL
1	Any quantity that: **(a)** could pose a danger to public safety or is greater than 50 kg; or **(b)** is included in Class 1.1, 1.2, 1.3 or 1.5 and is not subject to special provision 85 or 86 but exceeds 10 kg net explosives quantity, or subject to special provision 85 or 86 and the number of articles exceeds 1 000. ***SOR/2008-34***	
2	Any quantity that could pose a danger to public safety or any sustained release of 10 minutes or more	
3	200 L	
4	25 kg	
5.1	50 kg or 50 L	
5.2	1 kg or 1 L	
6.1	5 kg or 5 L	
6.2	Any quantity ***SOR/2008-34***	
7	Any quantity that could pose a danger to public safety	An emission level greater than the emission level established in section 20 of the "Packaging and Transport of Nuclear Substances Regulations"
8	5 kg or 5 L	
9	25 kg or 25 L	

While each person who has possession of the dangerous goods at the time of an accidental release, a "dangerous goods accident" or a "dangerous goods incident" must make an immediate report, if one person makes the immediate report, the other persons are not required to make additional immediate reports.

The Report Must Be Made To:

TDG PROVINCIAL REPORTING CONTACTS			
PROVINCE	**PROVINCIAL AUTHORITY**	**APPROPRIATE PROVINCIAL AUTHORITY CONTACT #**	
	CANUTEC (Federal)	1 (613) 996-6666.	
Alberta	Provincial Authority	1 (800) 272-9600	and Local Police
British Columbia	Provincial Emergency Program	1 (800) 663-3456	and Local Police
Manitoba	Department of Conservation	1 (204) 945 4888	and Local police or Fire Department
New Brunswick	Provincial Authority	1 (800) 565-1633	and Local Police
Newfoundland	Canadian Coast Guard	1 (709) 772-2083	and Local Police
Northwest Territories	Provincial Authority	1 (867) 920-8130	
Nova Scotia	Provincial Authority	1 (800) 565-1633 or 1 (902) 426 6030	or Local Police
Nunavut Territory	Nunavut Emergency Services	1 (800) 693-1666	and Local Police
Ontario	Local Police		Local Police
Prince Edward Island	Provincial Authority	1 (800) 565-1633	or Local Police
Quebec	Local Police		Local Police
Saskatchewan	Provincial Authority	1 (800) 667-7525	or Local Police
Yukon Territory	Provincial Authority	1 (867) 667-7244	

27.4.1 Immediate Reporting Information

The immediate report must include as much of the following information as is known at the time of the report:

- the shipping name or UN number of the dangerous goods;
- the quantity of dangerous goods that

  - ✓ was in the means of containment before the accidental release, the "dangerous goods accident" or the "dangerous goods incident", and
  - ✓ is known or suspected to have been released;

- a description of the condition of the means of containment from which the dangerous goods were released, including details as to whether the conditions of transport were normal when the means of containment failed;
- for an accidental release from a cylinder that has suffered a catastrophic failure, a description of the failure;
- For example, there was an explosion, a valve sheared off or there was a crack in the cylinder.
- the location of the accidental release, the "dangerous goods accident" or the "dangerous goods incident"
- for a ship, the position of the ship and the next location at which the ship will be at anchor or alongside a fixed facility
- the number of deaths and injuries resulting from the accidental release, the "dangerous goods accident" or the "dangerous goods incident" and
- an estimate of the number of people evacuated from private residences, public areas or public buildings as a result of the accidental release, the "dangerous goods accident" or the "dangerous goods incident"

27.4.2 30-Day Follow-up Report

If Vector Projects Group Ltd was responsible for submitting an immediate report for an accidental release, a "dangerous goods accident" or a "dangerous goods incident", then Vector Projects Group Ltd must also submit a follow-up report if the person who had possession of the dangerous goods at the time of the accidental release, the "dangerous goods accident" or the "dangerous goods incident", if employed by the company.

The follow-up report must be made, in writing, to the Director General within 30 days after the occurrence of the accidental release, the "dangerous goods accident" or the "dangerous goods incident".

The follow-up report must include the following information

- the name and address of the place of business of the person providing the information and the telephone number, including the area code, at which that person may be contacted
- the date, time and location of the accidental release, the "dangerous goods accident" or the "dangerous goods incident"
- the name and address of the place of business of the consignor
- the classification of the dangerous goods
- the estimated quantity of dangerous goods released and the total quantity of dangerous goods in the means of containment before the accidental release, the "dangerous goods accident" or the "dangerous goods incident"
- a description of the means of containment involved based on the identification markings and a description of the failure or damage to the means of containment, including how the failure or damage occurred
- for an accidental release from a cylinder that has suffered a catastrophic failure, the certification safety marks and a description of the failure
- For example, there was an explosion, a valve sheared off or there was a crack in the cylinder.
- the number of deaths and injuries resulting from the accidental release, the "dangerous goods accident" or the "dangerous goods incident"
- an estimate of the number of people evacuated from private residences, public areas or public buildings; and
- if an emergency response assistance plan was activated, the name of the person who responded to the emergency in accordance with the emergency response assistance plan.

27.5 The Selection of a Means of Containment for Dangerous Goods

Several factors influence the selection of a means of containment, such as:

- Class of dangerous goods;
- Type and size of the means of containment;
- Mode of transport; and
- Destination.

27.5.1 Small means of containment

Small means of containment are containers with a water capacity of 450L or less. They may be drums, jerricans, boxes, pails, bags, barrels, cylinders or intermediate bulk containers. The packaging codes listed below are the most common ones used in marking UN standardized small means of containment. The code consists of a designation for the container type and its material of construction, and it's category (where applicable).

Container Type	Material of Construction	Category
1 – drum	A - steel	1 - Non-removable head
2 - wooden barrel	B - aluminum	2 - Removable head

3 – jerrican	C - natural wood	
4 – box	D - plywood	
5 – bag	F - reconstituted wood	
6 - composite packaging	G - fibreboard	
	H - plastic	
	L - textile	
	M - paper	
	N - metal (other than steel or aluminum)	
	P - glass, porcelain or stoneware	

27.5.2 Large means of containment

Large means of containment are containers with a water capacity greater than 450L. They may be highway tanks, tank cars, intermediate bulk containers, portable tanks or tubes. (TP 9554E, Volume 6)

Class(es) of dangerous goods	Means of containment	Mode of Transport	Applicable standard or regulation**
1	any	road/ rail/ marine	CAN/CGSB-43.151 and CAN/CGSB-43.150
		air	CAN/CGSB-43.150 and International Civil Aviation Organization (ICAO) Technical Instructions
2 2.1 and 2.2	Cylinder, spheres and tube aerosol containers	road/ rail/ marine/ air road/ rail/ marine air	CAN/CSA-B339 and CAN/CSA-B340 CAN/CGSB-43.123 CAN/CGSB-43.123 and International Civil Aviation Organization (ICAO) Technical Instructions
2	highway tank	road/ marine	CAN/CSA-B620 and CAN/CSA-B622
	tank car	rail/ marine	CAN/CGSB-43.147
2	portable tank	road	International Maritime Dangerous Goods (IMDG) Code or CAN/CSA-B620 and CAN/CSA-B622
		rail	International Maritime Dangerous Goods (IMDG) Code or CAN/CGSB-43.147
		marine	International Maritime Dangerous Goods (IMDG) Code, or CAN/CGSB-43.147 or CAN/CSA-B620 and CAN/CSA-B622
3, 4, 5, 6.1, 8 and 9	small means of containment*	road/ rail/ marine	CAN/CGSB-43.150 or CAN/CGSB-43.146
		air	CAN/CGSB-43.150 or CAN/CGSB-43.146 and International Civil Aviation Organization (ICAO) Technical Instructions
3, 4, 5, 6.1, 8 and 9	highway tank tank car	road rail/ marine	CAN/CSA-B620 and CAN/CSA-B621 CAN/CGSB-43.147
3, 4, 5, 6.1, 8 and 9	portable tank	road	International Maritime Dangerous Goods (IMDG) Code, or 49 CFR (Code of Federal Regulations, title 49) or CAN/CSA-B620 and CAN/CSA-B621
		rail	International Maritime Dangerous Goods (IMDG) Code, or 49 CFR (Code of Federal Regulations, title 49) or CAN/CGSB-43.147
		marine	International Maritime Dangerous Goods (IMDG) Code, or 49 CFR (Code of Federal Regulations, title 49) or CAN/CSA-B620 and CAN/CSA-B621, or CAN/CGSB-43.147
		air	Part 12 -TDGR
3, 4, 5, 6.1, 8 and 9	Intermediate Bulk Container (IBC)	road/ rail/ marine air	CAN/CGSB-43.146 Part 12 -TDGR
6.2	any	road/ rail/ marine	CAN/CGSB-43.125
		air	CAN/CGSB-43.125 and International Civil Aviation Organization (ICAO) Technical Instructions
7	any	road/ rail/ marine	Packaging and Transport of Nuclear Substances Regulations
		air	Packaging and Transport of Nuclear Substances Regulations and International Civil Aviation Organization (ICAO) Technical Instructions

28.0 VEHICLE SAFETY POLICY

Employees operate company owned, leased, rental or personal vehicles as part of their jobs. Employees are expected to operate vehicles according to traffic legislation requirements as well as safely to prevent accidents which may result in injuries and property loss.

It is the policy of Vector Projects Group Ltd to provide and maintain a safe working environment to protect our employees and the citizens of the communities where we conduct business from injury and property loss. The company considers the use of automobiles part of the working environment.

The company is committed to promoting a heightened level of safety awareness and responsible driving behavior in its employees. Our efforts and the commitment of employees will prevent vehicle accidents and reduce personal injury and property loss claims. This program requires the full cooperation of each driver to operate their vehicle safely and to adhere to the responsibilities outlined in the Motor Vehicle Safety Program. The material in this document does not take precedence over applicable government legislation which all employees must follow.

Elements of this program include:

1. Assigning responsibilities at all levels of employment.
2. Vehicle use and insurance requirements.
3. Employee driver's license checks and identification of high risk drivers.
4. Accident reporting and investigation.
5. Company Accident Review Committee.
6. Vehicle selection and maintenance.
7. Training standards.
8. Safety legislation.

28.1 Scope

This policy applies to employees who operate vehicles on company business and will be reviewed by managers to ensure full implementation and compliance.

28.2 Responsibilities

President

- The company president is responsible for directing an aggressive vehicle safety program.

Management

- Implement the Motor Vehicle Safety Program in their areas of responsibility.
- Establish measurement objectives to ensure compliance with the program.
- Provide assistance and the resources necessary to implement and maintain the program.

Supervisors

- Investigate and report all accidents involving a motor vehicle used in performing company business.
- Forward all accident reports to the Vehicle Safety Coordinator.
- Be responsible for taking appropriate action to manage high risk drivers as defined by this program
- Provide driver training either internally or through external means for high risk drivers.

Vehicle Safety Coordinator

- Issue periodic reports of losses for the president's review.
- Review motor vehicle accident reports as part of the Company Accident Review Board.

- Revise and distribute changes to the Motor Vehicle Safety Program to managers, supervisors and drivers as necessary.
- Maintain appropriate records.
- Check licenses /abstracts regularly for validation and keep copies of licenses in driver files.

Drivers

- Always operate a motor vehicle in a safe manner
- Follow all traffic legislation including, local, provincial & federal
- Possess a valid driver's license appropriate to the type of vehicle being driven
- Employees are responsible for possessing a valid driver's license for the type of motor vehicle they operate.
- Maintain a valid driver's license and minimum insurance requirements on personal vehicles used in company business.
- Maintain assigned vehicles according to established maintenance standards.

28.3 Vehicle Use

28.3.1 Company Owned Vehicles

28.3.1.1 Passenger Cars

Employees authorized by their supervisors will be permitted to operate a passenger car. When the vehicle is driven for personal use, only the employee will be permitted to operate the vehicle. No one under the age of 21 will be permitted to operate the vehicle.

28.3.1.2 Commercial Vans and Trucks

Employees with appropriate driver's license for the vehicle they are operating, authorization from their supervisor and qualified by provincial standards will be permitted to operate the vehicle. Employees must address loads shall be secured and shall not exceed the manufacturer's and legal limits for the vehicle.

28.3.2 Personal Vehicles on Company Business

Employees who drive their personal vehicles on company business are subject to the requirements of this program including:
1. Maintaining auto liability insurance with minimum limits of $_____ for bodily injury and $_____ for property damage with combined single limit of $_____.
2. Maintain current state vehicle inspections when required.
3. Maintain their own vehicle in a safe operating condition when driven on company business.
4. Proof of insurance (copy of declaration page) will be sent to _____.
5. Acceptable Motor Vehicle Report (MVR).
6. No 'business use' exclusion on personal insurance policy.

28.3.3 Rental Vehicles

1. Rental vehicles will be leased from (*INDICATE VENDORS SUCH AS HERTZ, AVIS, ETC.*).
2. Collision damage waiver will be refused.

28.3.4 Unauthorized Use of Vehicles

Assigned drivers and other authorized employees will not allow an unauthorized individual to operate a company vehicle. No exceptions! Disciplinary action may be taken.

Additionally, if unauthorized use results in an accident, the responsible employee will be required to make restitution for the damages.

28.3.5 Contractors and Temporary Hire Employees

Contractors and temporary employees will be treated as company employees and will comply with the requirements of this program. Failure to meet all requirements will result in the immediate loss of driving privileges.

28.3.6 Vehicle use and insurance requirements.

- Employee driver's license checks and identification of high risk drivers.
- Drivers abstracts submittal (within 30 days of hiring and then annually)
- Accident reporting and investigation.
- Company Accident Review Board.
- Vehicle selection and maintenance.
- Training standards.
- Safety regulations.

28.4 Driver Selection

28.4.1 Driver Evaluation

Employees will be evaluated and selected based on their driving ability. To evaluate employees as drivers, management will:

1. Review past driving performance and work experience through previous employer's reference checks. All new employees and current employees recently assigned to driving duties will be required to complete the "Application Addendum For Employment Requiring Driving"
2. Driver abstracts are obtained and reviewed annually for all drivers of company owned vehicles (more frequently if reasons warrant). A driver abstract contains information on the operator's license, conviction information, demerit points, and suspensions.
3. Ensure the employee has valid driver's license.
4. Ensure the employee is qualified to operate the type of vehicle he/she will drive.

The following criteria establish the identity of high risk drivers. A driver is unacceptable if the driver's accident/violation history in the past year includes one or more of the following moving violation convictions:

a. Driving under the influence of alcohol or drugs (DWI).
b. Hit and run.
c. Failure to report an accident.
d. Negligent homicide arising out of the use of a motor vehicle.
e. Operating during a period of suspension or revocation.
f. Using a motor vehicle for the commission of a felony.
g. Operating a motor vehicle without the owner's authority.
h. Permitting an unlicensed person to drive.
i. Reckless driving.
j. Speeding (3 or more in a 3 year period).
k. Two preventable accidents in a 12 month period.

28.5 Accident Record Keeping, Reporting and Analysis

This company considers elimination of motor vehicle accidents as a major goal. To meet this objective, all accidents will be reported to management, investigated, documented and reviewed by the Company Accident Review Board.

The investigation identifies the need for:

a. A more intensive driver training and/or remedial training.
b. Improved driver selection procedures.
c. Improve vehicle inspection and/or maintenance activities.
d. Changes in traffic routes.

Motor vehicle accident recordkeeping procedures consist of the following components:

a. Documentation of causes and corrective action.
b. Management review to expedite corrective action.
c. Analysis of accidents to determine trends, recurring problems and the need for further control measures.

28.5.1 Responsibility

Implementation of these procedures remains the responsibility of both the driver and manager.

Driver

Since the driver is the first person at the accident scene, he/she will initiate the information-gathering process as quickly and thoroughly as is feasible.

Management

Management will obtain accident data from the driver through the Transportation Accident Report form and/or by verbal communication. It is important for management to determine the extent of the accident, especially if it involves injury or death to the driver, passengers, or other parties.

Management will immediately proceed with a formal investigation to determine the underlying causes as well as what can be done to prevent similar occurrences. The accident report will be forwarded to the insurance claims office along with any additional support data (e.g., witness statements, photographs, police reports, etc.).

28.5.2 Driver Participation in Repair Costs

If a vehicle is involved in an accident which is determined preventable, driver reimbursement to the company should be as follows:

1. The first 50% of the repair cost, up to a maximum reimbursement of $250 per accident, if the vehicle is repairable, will be charged back to the driver.
2. If the vehicle is a total loss, the driver will be charged $250.

28.6 Preventable/Non-Preventable Accidents

The following definitions relate to motor vehicle accidents:

A motor vehicle accident is defined as “any occurrence involving a motor vehicle which results in death, injury or property damage, unless such vehicle is properly parked. Who was injured, what property was damaged and to what extent, where the accident occurred, or who was responsible, are not relative factors”.

A preventable accident is defined as “any accident involving the vehicle, unless properly parked, which results in property damage or personal injury and in which the driver failed to do everything he/she reasonably could have done to prevent or avoid the accident”.

NOTE A properly parked motor vehicle is one that is completely stopped and parked where it is legal and prudent to park such a vehicle or to stop to load/unload property. A vehicle stopped to load/unload passengers is not considered parked.

NOTE Parking on private property will be governed by the same regulations that apply on public streets and highways. A vehicle stopped in traffic in response to a sign, traffic signal or the police is not considered parked.

The determination of preventability of an accident is the function of the Company Accident Review Board.

28.7 Procedures to follow in the Event of an Incident/Accident

Employees will take the following actions when there are injuries to persons and/or damage to other vehicles or property:

1. If possible, move the vehicle to a safe location out of the way of traffic. Call for medical attention if anyone is hurt.
2. Secure the names and addresses of drivers and occupants of any vehicles involved, their operator's license numbers, insurance company names and policy numbers, as well as the names and addresses of injured persons and witnesses. Record this information on the Accident Report form (in the reporting packet). Do not discuss fault with, or sign anything for anyone except an authorized representative of Vector Projects Group Ltd, a police officer, or a representative of the Vector Projects Group Ltd insurance company.
3. Get names and phone numbers of witnesses to the accident. (witness cards are in the reporting package)
4. Immediately notify the Vehicle Safety Coordinator. If any injuries were involved and the Vehicle Safety Coordinator is not available, contact your supervisor immediately.
5. You will be contacted by the Vehicle Safety Coordinator to advise you how to arrange for repairs to the vehicle. Do not have the vehicle repaired until you receive authorization from the Vehicle Safety Coordinator.

When there is theft of or damage to your vehicle only:

1. If you did not witness the damage to the vehicle, you must notify the local police department immediately.
2. Immediately notify Vehicle Safety Coordinator.
3. You will be contacted by the Vehicle Safety Coordinator to advise you how to arrange for repairs or replacement of the vehicle. Do not have the vehicle repaired until you receive authorization from the Vehicle Safety Coordinator.
4. Send a copy of the police report along with a memo outlining any additional information to the Vehicle Safety Coordinator.

NOTE: Accident reporting kits: every company vehicle should have an accident reporting kit in the glove box. This should include an accident report form, pen or pencil, and an inexpensive or disposable camera. The committee will report to the Vehicle Safety Coordinator within 3 working days the results of their review. The Vehicle Safety Coordinator will take the appropriate steps and communicate the results to the affected driver and supervisor.

28.8 General Requirements

Proper selection and maintenance of equipment are important aspects of this program.

Reduced operational costs and accidents from vehicle defects are the direct result of a well implemented maintenance policy.

28.8.1 Vehicle Selection

Selection of vehicles begins with understanding the wrong equipment can result in excessive breakdowns, create hazards to personnel, incur costly delays and contribute to poor service and customer complaints. The company will purchase vehicles designed for their intended use.

28.8.2 Vehicle Inspection

Drivers are responsible for ensuring the vehicle is maintained in safe driving condition. Pre-use, on duty and post-use inspections will be conducted on components at a minimum every 24 hours when vehicle is in use. Inspections will be recorded, signed by the operator, and the document provided to an administrator and retained in company files. This is to include operational and safety equipment inspections on the process/equipment, load securement, etc. This consists of a walk-around the vehicle to check for any defects to the vehicle and ensure there are no barriers blocking the path. Company-owned vehicles shall have a maintenance program in place meeting the minimum manufacturer's recommendation.

In the event that you are driving personal vehicles for company business the above requirements must still be completed. The records of inspections and maintenance of vehicle must be made available to a Vector Projects Group Ltd representative upon request.

28.8.3 Vehicle Maintenance

Vehicle maintenance can take the form of three distinct programs: preventive maintenance, demand maintenance, and crisis maintenance. While all three types have their role in the Motor Vehicle Safety Program, the most cost effective control is preventive maintenance.

The groundwork for a good preventive maintenance program starts with management. A review of manufacturer's specifications and recommendations for periodic preventive maintenance should be integrated with the actual experience of the vehicles.

Preventive maintenance (PM) is performed on a mileage or time basis. Typical PM includes oil/filter changes, lubrication, tightening belts and components, engine tune-ups, brake work, tire rotation, hose inspection/replacement and radiator maintenance.

Demand maintenance is performed only when the need arises. Some vehicle parts are replaced only when they actually fail. These include light bulbs, window glass, gauges, wiring, air lines, etc. Other “demand maintenance” items involve vehicle components that are worn based on information from the vehicle condition report. These include tires, engines, transmissions, universal joints, bushings, batteries, etc. Since these situations are identified through periodic vehicle inspection, they can actually be classified within the PM program.

Crisis maintenance involves a vehicle breakdown while on the road. While situations of this type may happen regardless of the quality of the PM program, it is an expensive alternative to not having an effective preventive maintenance program at all. Crisis maintenance situations should be minimized through proper PM procedures.

28.8.4 Record Keeping

This company's vehicle selection, inspection and maintenance program is only as good as its recordkeeping procedures. Employees will forward all vehicle inspections records of maintenance and repairs performed each month to the Vehicle Safety Coordinator.

28.9 Driver Training

Drivers hired by this company to operate a motor vehicle will have the basic skills and credentials necessary to perform this function as confirmed through the driver selection process.

New employees, contractor, and temporary hires will receive a copy of this program as part of their initial orientation. A formal orientation program is established to help assure all drivers are presented with the company policy, understand their responsibilities and are familiarized with their vehicle. Areas that must be addressed, with the driver, include:

1. Understand, review and given a copy of the Safety Program.
2. Understand and sign the Vehicle Assignment Agreement
3. Review individual driver's abstract.
4. Understand permitted uses
5. Understand accident reporting & emergency procedures.
6. Understand responsibilities for Traffic Act violations
7. Review operation and controls of vehicle being assigned.
8. Inspect vehicle using Vehicle Inspection Form.'

A copy of this program will be kept in the vehicle.

28.9.1 Remedial Training

Drivers may be required to attend a safe driving school (Defensive Driving course or equivalent) or an alcohol/drug abuse program on their own time and at their own expense if a review of the driver's abstract indicates:

1. One or more violation convictions within any one-year period, or
2. A conviction for driving while under the influence of alcohol or drugs.

Also, depending on the severity of the conviction, the employee's driving privileges may be revoked and/or may result in employment termination.

28.9.2 License Suspension

Drivers must notify the Vehicle Safety Coordinator if their license is suspended or revoked.

28.10 Driver Safety Rules & Regulations

28.10.1 Safety Belts

Seatbelt use is mandatory for the driver and passengers while operating a motor vehicle on company business. The driver is responsible for ensuring passengers wear their safety belts. Children under four years of age or under 40 pounds in weight must be secured in a government approved child safety seat.

28.10.2 Impaired Driving

Operators of motor vehicles must not drive while under the influence of drugs or alcohol. Employees are strictly prohibited from operating a motor vehicle while under the influence of drugs or alcohol. This includes: a) blood alcohol level at or above the local legal limit; b) illegal drugs; and c) prescription medications that cause drowsiness or other conditions that may cause impairment

28.10.3 Cargo Securement

Any cargo on or in motor vehicles is adequately stored and secured to prevent unintentional movement of the equipment which could cause spillage, damage to the vehicle, or injury to the operator.

28.10.4 Traffic Laws

Employees are expected to follow all traffic laws and rules of the road while on company business.

28.10.5 Reporting Requirements

Motor vehicle incidents must be reported to the supervisor.

28.10.6 Parking

Drivers must perform pull-through parking (pulling through a space, so the vehicle is facing outwards in the next space) when available, or backing into a parking space if necessary. This provides the operator an easier exit from the parking area as well as a quick exit in case of an emergency. When backing, it is recommended that a spotter be stationed outside the vehicle to ensure the driver backs safely, whenever practicable

28.10.7 Cellular Telephones

Handheld use of cell phones and/or texting devices while driving is prohibited. All cell phone use, including hands-free, is prohibited while driving on customer/client property.

Police can charge drivers with careless driving or even dangerous driving (a criminal offence) if they do not pay full attention to the driving task.
Workers must abide by the **"Distracted Driving Laws"** that are in effect across Canada. Including but not limited to:

a. No handheld electronic device (2-way radios can be used in limited situations – emergency vehicles, pilot vehicles while escorting oversized loads)
b. No eating
c. No viewing display screens unrelated to driving, such as laptop computers and portable DVD players, is also prohibited while driving.
d. No using devices such as GPS systems, stereos, CD and DVD players, radios, cell phones, laptops, PDAs, walkmans and MP3 players
e. No reading maps, directions or other material
f. No grooming (combing hair, putting on make-up or shaving)
g. No eating or drinking
h. No taking notes
i. No tending to children or pets

The following procedures apply to employees driving on company business who wish to use cellular telephones in the vehicle:

1. Handheld cell phones are strictly forbidden while driving. **It's the Law!**
2. External speaker and microphone must be included to allow hands-free operation.
3. Phone number memory and programming capabilities are to be included.
4. Drivers are to refrain from placing outgoing calls or responding to pagers while the vehicle is in motion.
5. Incoming calls should be limited.
6. For any vehicle equipped with cellular telephone that does not meet the above equipment specifications, use of the telephone/pager is authorized when the vehicle is safely parked.

28.11 Motorcycles

Employees are prohibited from using motorcycles when traveling on company business.

28.12 General Safety Rules

Employees are not permitted to:

1. Pick up hitchhikers.
2. Accept payment for carrying passengers or materials.
3. Use any radar detector, laser detector or similar devices.
4. Push or pull another vehicle or tow a trailer.
5. Transport flammable liquids or gases unless a DOT or Underwriters' Laboratories approved container is used, and only then in limited quantities.
6. Use of burning flares will be discouraged. The preferred method is the use of reflective triangles.
7. Assist disabled motorists or accident victims beyond their level of medical expertise. If a driver is unable to provide the proper medical care, he/she must restrict his/her assistance to calling the proper authorities. Your safety and well-being is to be protected at all times.

28.13 Company and Personal Property

Employees are responsible for company property such as computers, work papers and equipment under their control. The company will not reimburse the employee for stolen personal property.

29.0 WORK AREA GUARDS

29.1 Purpose

The purpose of this program is to provide direction about guards and guardrails while working. The material in this document does not take precedence over applicable government legislation which all employees must follow.

29.2 Scope

This program applies to all operations involving machines, equipment and tools that require guarding for worker protection.

29.3 Key Responsibilities

Safety Manager

- The designated Safety Manager is responsible for developing and maintaining the program.

Site Manager

- Responsible for the implementation and maintenance of the program for their site and ensuring all assets are made available for compliance with the plan and appropriate repairs are conducted promptly.

Employees

- All shall be familiar with this program.
- Immediately report any guards that are missing, need repair or maintenance or present any type of concern to the worker.
- Follow all requirements, report unsafe conditions and follow all posted requirements.

29.4 Guardrail Requirements

29.4.1 Hazard Assessment

A hazard assessment must be completed by Vector Projects Group Ltd where there is a potential to have injuries that can be addressed by proper guardrail use and installation.

29.4.2 Guardrail Locations

An area accessible to workers must have guards or guardrails installed in any of the following circumstances:

- if a raised floor, open-sided floor, mezzanine, gallery, balcony, work platform, ramp, walkway, or runway is 122 cm (4 ft.) or more above the adjacent floor or grade level; or
- on both sides of any walkway over or adjacent to any substance which is a hazard if a worker fell in, or on it, or which is over machinery or work areas; or
- around the perimeter of any open container or containment area such as an open vat, bin, tank or pit which is 122 cm (4 ft.) or more in depth and which has sides that do not extend at least as high as required for a guardrail above the adjacent grade or work surface; or
- if a stairway ends in direct proximity to dangerous traffic or other hazard to prevent inadvertent entry into the dangerous area.

29.4.3 Specifications for Guards and Guardrails

Guards in a building must be appropriate for the use and occupancy of the area.

Guards in areas not part of a building must meet the applicable criteria of subsections (3) to (5), or other standard acceptable to the Board.

Unless otherwise permitted by subsection (4), guardrails must be installed to withstand a load applied horizontally and normal to the span of the rail, of 550 N (125 lbs.) applied at any point along the rail, and a vertical, downward load of 1.5 kN per m (100 lbs. per ft.) along the top rail, but the horizontal and vertical loads need not be considered to act simultaneously.

Guardrails temporarily installed during the construction, demolition or renovation of a work area must:

- be able to withstand a load of 550 N (125 lbs.) applied perpendicular to the span in a horizontal or vertically downward direction at any point on the top rail, or be built to the criteria of subsection (5), and
- not be made of fibre or wire rope without the prior approval of the Board.

Unless designed by a professional engineer, temporary wooden guardrails on floors and platforms must meet the following criteria"

- posts must be spaced not more than 2.4 m (8 ft.) apart, except a scaffold may have posts spaced not more than 3 m (10 ft.) apart;
- wooden top rails must be at least 38 mm x 89 mm (2 in x 4 in nominal) lumber for a span of up to 2.4 m between supports, and at least 38 mm x 140 mm (2 in x 6 in nominal) lumber for a span of 2.4 m to 3 m between supports;
- wooden mid-rails must be 19 mm x 140 mm (1 in x 6 in nominal) or 38 mm x 89 mm (2 in x 4 in nominal) lumber;
- wooden rails must be secured to the tops or inner sides of their vertical supports;
- wooden guardrail posts must be at least 38 mm x 89 mm (2 in x 4 in nominal) lumber, and must be installed with the narrow dimension facing the open edge;
- plastic or wire mesh fencing of adequate strength may be used in place of the mid-rail, but posts and top rails must comply with the requirements of this section and such fencing must be secured in place.

29.4.4 Temporary Removal of Guardrails

If a guardrail must be removed to accommodate work, only that portion of the guardrail necessary to allow the work to be done may be removed and workers exposed to a fall hazard must be protected by another fall protection system when the guardrail is absent. The guardrail must be replaced when the unguarded area is left unattended, and after the work is completed if the circumstances still require guardrails.

29.4.5 Floor and Roof Openings

A pit or other opening in a floor, walkway, roof or other area accessible to workers, which is a danger to workers, must be securely covered with a cover of adequate size and strength or guarded by fixed or movable guardrails, which must be identified as such and kept in place except when necessarily removed to work in the opening or pit.

29.4.6 Toe Boards

Floor openings, elevated walkways and platforms must have toe boards if there is a danger from tools, materials, equipment and debris falling off the edge of the work surface or there is a danger of slipping off the work surface due to the environment.

30.0 WORKING ALONE

30.1 Purpose

This plan is intended to establish site specific procedures for checking the well-being of a worker assigned to work alone. The material in this document does not take precedence over applicable government legislation which all employees must follow.

30.2 Scope

This program applies to all workers of Vector Projects Group Ltd, temporary workers and any contractors working for Vector Projects Group Ltd.

When work is performed on a non-owned or operated site, the operator's program shall take precedence, however, this document covers Vector Projects Group Ltd workers and contractors and shall be used on owned premises, or when an operator's program doesn't exist or is less stringent.

30.3 Objectives

To minimize risk to employees who may work alone and assistance is not readily available Vector Projects Group Ltd will:

1. Conduct written hazard assessments to identify existing or potential working alone hazards.
2. Take measures to eliminate or control the hazards of working alone at Vector Projects Group Ltd worksites.
3. Ensure that affected employees are informed of the hazards and methods used to control or eliminate them.
4. Provide an effective system for communication between any employee who work alone and persons capable of assisting the employee.
5. Ensure all incidents (working related or otherwise) are reported, investigated and documented.
6. Review the Working Alone Plan at least annually or more frequently if there is a change in work arrangements which could adversely affect an employee's well-being or a report that the system is not working effectively.

30.4 Key Responsibilities

Safety Manager

- Conducts a hazard assessment to identify existing or potential hazards related to the nature of the work or the work environment given the circumstances of the work when working alone
- Responsible for the review, implementation and maintenance of the local worksite Working Alone Plan.
- Communicate this policy and its procedures to employees who work alone
- Annually review the effectiveness of the hazard controls and procedures and make improvements as required

Worksite Project Manager

- Responsible for the implementation and maintenance of the Working Alone Plan for their facility and ensuring all assets are made available for compliance with the procedure.
- Take all reasonable and practical steps to minimize or eliminate identified working alone risks.

Employees

- Report all incidents of work site incidents immediately to their supervisor as required by local regulatory requirements.

- Participate in work site hazard assessments and the implementing of procedures to eliminate or control hazards of working alone.
- Take every reasonable precaution when working alone.
- Shall follow the requirements of the Working Alone Plan

30.5 Safe Work Procedures

30.5.1 Hazard Assessment

A hazard assessment must be conducted to evaluate the risk of working alone and identify appropriate control measures. Before a worker is assigned to work alone or in isolation Vector Projects Group Ltd must identify any hazards to that worker. Before a worker starts a work assignment the employer must take measures to eliminate the hazard, and if it is not practicable to eliminate the hazard to minimize the risk from the hazard.

30.5.2 The hazard assessment shall involve:

1. A review of records, past incidents and identify measures or actions needed to correct any hazards.
2. Participation by the committee at the workplace, the representative at the workplace, or when there is no committee or representative, the workers at the workplace.
3. Participation by employees through methods such as one-on-one interviews, focus groups, employee surveys and work site inspections.
4. The assessment will also collect and document information from employees about their experiences working alone, their current concerns, and their suggestions for improvement.
5. Consideration for the time interval between checks and the procedure to follow in case the employee cannot be contacted, including provisions for emergency rescue.

30.6 Plan

Vector Projects Group Ltd must develop and implement a site specific written procedure for checking the well-being of a worker assigned to work alone or in isolation under conditions which present a risk of disabling injury, if the worker might not be able to secure assistance in the event of injury or other misfortune.

Vector Projects Group Ltd will post a copy of the safe work procedures in a conspicuous place at the workplace.
How Often a Worker Working Alone Must Be Contacted
The procedure for checking a worker's well-being must include the time interval between checks. In addition to checks at regular intervals, a check at the end of the work shift must be done.

30.6.1 Communication and Regular Contact Person System

Each worksite's Working Alone Plan shall require workers must carry a cellular phone or electronic monitoring device at all times while working alone. A means of communication must be established for the person working alone and should include regular contact at designated time intervals. This should be accomplished by the use of a cellular phone or other electronic monitoring device when possible.

30.6.2 Who is Responsible for Checking on Workers Working Alone

A person must be designated to establish contact with the worker at predetermined intervals and the results must be recorded by the person.

30.6.3 Procedures to be followed if Electronic Communication is Not Practicable

If electronic communication is not possible, another means of communication must be established. This may include visits to the worker by a designated employee or having the worker contact that designated employee by other means (physically reporting to the designated employee, etc.).

Example requirements include:

Vector Projects Group Ltd must ensure that a representative of Vector Projects Group Ltd or another competent employee visits the employee or the employee contacts Vector Projects Group Ltd or another competent employee. These visits or contacts shall be at intervals of time appropriate to the nature of the hazards associated with the employee's work. As a minimum, contact shall occur no less than every four hours. In addition to checks at regular intervals, a check at the end of the work shift must also be done.

30.6.4 Limitations on or Prohibitions of Specified Activities:

- No heavy equipment will be operated if a worker is alone.
- No hot work will occur if a worker is alone.
- No working at heights will occur if a work is alone and requiring a personal fall arrest system.
- No working alone outside if temperatures are low enough to pose an imminent risk to the worker.
- Other limitations will be placed based on the site specific hazard assessment

30.6.5 Provisions of PPE

- Cold weather clothing shall be worn when appropriate if a worker is alone.
- Additional PPE for workers working alone will be identified in the site specific hazard and PPE assessment process.

30.7 Safe Work Practices

Controls implemented at Vector Projects Group Ltd worksites shall, as a minimum:

1. Restricted building access to buildings - card keys or regular keys after regular working hours.
2. Office doors are to be locked when working alone after hours.
3. Have employees check road reports and weather forecast before traveling and NOT allow travel if road conditions are dangerous.
4. Develop a travel plan that includes rest breaks, a procedure for tracking overdue employees and emergency contact information.
5. Ensure all Vector Projects Group Ltd vehicles are to be equipped with cell phones or radios and first aid kits.
6. Advise employees to travel with another employee when possible.
7. Advise employees to park close to the building in the evening.
8. Post signage, emergency contact information, and develop a communication system.
9. Report suspicious activity to security or a supervisor.

Procedures to be followed in the Event that a Worker Working Alone Does Not Respond

The procedure for checking a worker's well-being must include the procedure to follow in case the worker cannot be contacted, including provisions for emergency rescue. Minimum requirements include:

1. Attempt every available method of contacting the worker who is not responding.
2. Dispatch at least two workers together (for safety purposes) with effective communication equipment to the last known location of the worker who is not responding.
3. If the worker remains missing, contact local authorities after the Human Resources department has contacted the missing worker's designated personal point of contact from employment records.
4. If the missing worker is located, immediately notify local authorities.

30.8 Provision of Emergency Supplies

- All vehicles shall contain the appropriate emergency supplies including flares, marking devices, food, water, warm clothing during winter and other supplies as determined by the hazard assessment.
- Workers working alone shall have spare batteries for communication devices in case of power failure, a radio for local weather conditions and other equipment as determined by the hazard assessment.

30.9 Review and Updating Working Alone Plan

- The hazard assessment and Working Alone Plan at each Vector Projects Group Ltd worksite must be reviewed at least on an annual basis or more frequently if there is a change in work processes or arrangements which could adversely affect an employee's well-being are introduced or changed.
- The local Working Alone Plan shall also be revised if there is any indication or report that the plan is not working effectively or needs changing.

30.10 Training

Workers are provided training on working alone procedures. A worker required to work alone and any person assigned to check on the worker must be trained in the written procedure for checking the worker's well-being.

Training will include:

- Any revision to the written local Working Alone Plan and safe work practices.
- Being informed of working alone hazards at the Vector Projects Group Ltd worksite and the methods used to control or eliminate them.
- The methods for identification, hazard reduction and prevention when working alone and dealing with situations or individuals that presents a potential risk.
- A worker required to work alone and any person assigned to check on the worker must be trained in the written procedure for checking the worker's well-being.
- All training shall be documented.

30.10.1 Working Alone Assessment and Guidelines