Keno Hill District Operations

Management Health and Safety Program

Effective:

January 17, 2018

Revision No.	Date	Originator (Name/Initials)	Reviewed/Checked By (Name/Initials)	Pages
1.0	30 June 2012	Safety Manager	Don Ethelston	9
1.1	May 1,2017	Mine Manager	Ken Fedak	8
1.2	Jan 15, 2018	Mine Manager	Ken Fedak	

- This document will be regularly updated to reflect revisions.
- Updated Management Health and Safety Program (MHSP) documents will be distributed to all authorized personnel.

Authorized Distribution/Location List:

- General Site Manager Office;
- Mine Manager Office;
- Mill Manager Office;
- Site Services Manager Office;
- Health and Safety Manager/Coordinator(s) Office; and
- Exploration Office.

TABLE OF CONTENTS

LIST OF APPENDICES

1. INTRODUCTION

The purpose and intent of this document is to communicate the framework of Alexco's Management Health and Safety Program (MHSP). The MHSP provides an effective health and safety management plan and guides the successful exploration, development and operations at Keno Hill. The MHSP is updated during critical milestones and changes to operational status and conditions as Alexco continues its development and operations activities at the Keno Hill District.

1.1 MHSP OBJECTIVES

We the members of the mining industry, have a responsibility to protect all workers engaged in its activities from personal injury and health hazards. The operating company, in cooperation with service companies within the industry, will promote methods and practices that have potential for improving safety performance.

With the alignment of the MHSP to Alexco's corporate Health and Safety Policy, all Alexco personnel including contractors will be positioned to support and deliver on safety performance, while meeting the MHSP objectives as listed below:

- Manage safety accountability with all stakeholders across the project;
- Reduce the number of reportable injuries and accidents;
- Strive to maintain a Lost Time and Serious Injury free workplace;
- Continue to improve Alexco's Safety Culture through behavior change.

To meet our responsibility, we will operate under the following guiding principles:

RESPONSIBILITY

The operating company, when acting as prime contractor, is responsible for coordination and general supervision of all activities at the work site, including activities carried out by contractors, sub-contractors, service companies and suppliers. While all parties have a responsibility to promote worker safety, the operating company recognizes its leadership role in promoting worker health and safety on the basis that it has the greatest power to influence work site situations. It is the responsibility of workers and employers to refuse to perform unsafe work practices.

PRIORITY

Activities will be conducted on the basis that safety of all personnel is of vital importance, whether those personnel are employed by an operating company, a contractor, a sub-contractor, a service company or a supplier.

RECOGNITION

The process of selecting contractors, sub-contractors, service companies and suppliers, and the administration of contracts, will include recognition and support of good safety performance. Support and recognition based on good safety performance will also be provided by all employers to their employees.

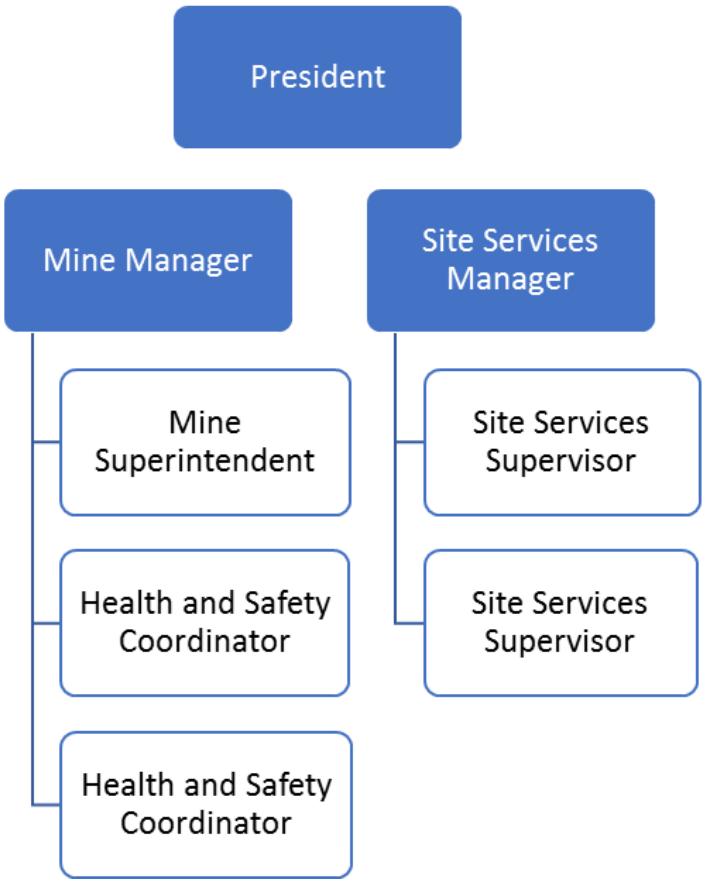
COMMUNICATION

Alexco Resource Corp. management is constantly looking for ways to improve our Safety Program. We appreciate and request any suggestions that will improve our programs.

We provide direction to our employees through our safety policies and meetings. Our Managers make job-site visits to observe operations and ensure Standard Work Procedures are being followed. Workers are encouraged to present any concerns or questions they may have regarding the Safety Program to Management. Suggestions can also be directed to the Safety Coordinator and the Mine Manager.

1.2 ORGANIZATIONAL STRUCTURE

The structure of the Keno Hill Mine Operations corporate and site management and safety department is shown in the figure below. As operations change in the district, the organizational structure will also change based on management and supervisory requirements and positions.



1.3 SAFETY DEPARTMENT WORK ROSTER

The majority of Keno Hill Mine Operations personnel rotate on a 2 weeks on and 2 weeks off work schedule. By adopting this rotation, the department is capable of supporting and delivering consistent coverage across the project. When personnel are on rotational time off, their functional groups are shadowed by those on site and supported through Alexco's site management personnel. The Mine Manager's work schedule is split between the Health and Safety Coordinator shift schedules to ensure continuity during cross shifts, allowing important face-to-face exposure to both shifts and operations management.

2. RESPONSIBILITY AND ACCOUNTABILITY FOR SAFETY

2.1 MANAGER'S RESPONSIBILITIES

Managers protect employees and the company by:

1. Providing information, instructions and assistance to all supervisory staff in order to protect the health and safety of all employees, contractors and subcontractors.
2. Encouraging employee involvement in safety by demonstrating management's commitment to safety.
3. Providing all supervisory staff with an understanding of the accident prevention program and ensuring compliance with Yukon Occupational Health and Safety legislation.
4. Providing all supervisory staff with proper, well-maintained tools and equipment, as well as any other special personal protective devices that may be required.
5. Ensuring that all workers are adequately qualified to perform their work.
6. Providing ongoing safety education programs and ensuring that training needs are identified and met.
7. Monitoring departments and projects and hold them accountable for their individual safety performance.
8. Ensuring that accidents and incidents are reported and investigated and corrective actions are taken.
9. Setting a good example.

2.2 SUPERVISOR'S RESPONSIBILITIES

Supervisors maintain a safe worksite by ensuring:

1. Knowledge and appliance of the company's safety policy and relevant Yukon Occupational Health and Safety legislation.
2. That all employees are educated to work in a safe manner and that they use all protective devices and procedures required by this company and by legislation to protect their health and safety.
3. That only safe work practices are used.
4. That unsafe conditions and behavior are corrected immediately.
5. That all employees know what is expected of them.
6. That training needs are identified and met.
7. To arrange for medical treatment when required, in the case of injury or illness, including transportation to a doctor or hospital when necessary.
8. To report all accidents immediately, to investigate all accidents fully and to advise management on how to prevent similar accidents in the future.
9. That all equipment is appropriate and well maintained.
10. To carry out regular inspections to identify hazards and remove them where possible.
11. That all employees know and are prepared to deal with the hazards of their work and any specific hazards on the worksite.
12. That personal protective equipment is available, properly used, stored, maintained and replaced when necessary.
13. That a good example is set.

2.3 WORKER'S RESPONSIBILITIES

Workers protect themselves, fellow workers, the public, and the environment by:

1. Reading and becoming thoroughly familiar with the company's safety policy, safe work practices, procedures and rules.
2. Actively participating in safety program development and maintenance.
3. Following safety standards and safe work procedures set out by the employer, employees and regulatory requirements.
4. Refusing to perform work when unsafe conditions exist (as defined in Yukon Legislation) and to refuse to perform work they are not competent to perform.
5. Reporting all potential hazards to supervisors.
6. Immediately report all accidents and injuries to their supervisor(s).
7. Participating in all training offered by the employer, either on or off the worksite (e.g. First Aid, WHMIS training).
8. Using the required personal protective and safety equipment.
9. Checking tools and equipment, including personal protective and safety equipment for hazards before using them.
10. Knowing the location, method of contact for first aid and emergency equipment.
11. Setting a good example.

2.4 CONTRACTORS, SUBCONTRACTORS, AND CONSULTANTS' RESPONSIBILITIES

Contractors, subcontractors and consultants' responsibilities are to:

1. Ensure that their programs and operations comply with contractual and regulatory requirements.
2. Insist on safe performance throughout their operations by ensuring contractors and employees are competent to do their work properly.
3. ensure subcontractors and employees meet safety expectations.
4. Provide the time and resources required to enable subcontractors and employees to do their work properly.
5. Remedy any workplace conditions that are hazardous to the health or safety of the employer's workers.
6. Ensure that the workers are aware of known or reasonably foreseeable health and safety hazards to which they are likely to be exposed and are aware of their rights and duties under regulations.
7. Provide and maintain protective equipment in good condition, safety equipment, devices, and clothing as required and ensure that these are used by their employees.
8. Provide their workers the information, instruction, training, and supervision necessary to ensure the health and safety of other workers in the workplace.
9. Consult and cooperate with the joint Health and Safety Committee and worker health and safety representatives for workplaces of the employer.

3. TRAINING

3.1 PURPOSE

The purpose of this policy is to provide for general and specialized safety and related training throughout all levels of the organization.

3.2 POLICY

Alexco Resource Corp. will provide, and employees will participate in all safety and related training that is necessary to minimize losses of human and physical resources of the company.

This training includes but is not limited to:

- Safety orientations for newly hired personal
- Job specific training;
- Safety training for supervisor's and management;
- Task and trade specific training and certification;
- Specialized safety and related training; and
- Refresher and update training.

The following 11 discipline-specific standards shall be utilized to provide an overview of technical and operational requirements:

1. Surface Fire Prevention and Response;
2. Underground Ground Control;
3. Underground Fire Prevention and Response;
4. Energy Isolation;
5. Mobile Equipment;
6. Electrical Safety;
7. Work Permit System;
8. Cranes and Lifting Equipment;
9. Occupational Health and Hygiene;
10. Job Hazard Analysis (JHA); and
11. Confined Space Entry

3.3 SAFETY MANAGEMENT SYSTEM

Alexco utilizes a formal online Environmental Health and Safety Management System (EHS) through SafetySync to deliver the training modules and courses and document training records and compliance. All training delivery and records necessary for implementation of the MHSP are stored in SafetySync. New employees are given a login identity and a password. The safety department identifies the required courses for each employee, depending on their specific job responsibilities. Courses can be completed individually or in a classroom setting.

4. JOINT OCCUPATIONAL HEALTH AND SAFETY COMMITTEE

4.1 PURPOSE

The joint worksite health and safety committee unites workers and management in discussions of worksite procedures and safety. The committee helps foster a positive attitude toward safety among all members of the worksite.

4.2 COMMITTEE RESPONSIBILITIES

The Committee responsibilities are to:

- Become familiar with regulations and guidelines for worksite health and safety committees
- Hold meetings once per month
- Review reports of unsafe acts or conditions and recommend corrective measures
- Identify unhealthy or unsafe conditions at the worksite
- Review reports from investigations of first aid incidents, accidents and near misses
- Look into safety concerns pointed out by any employee on the work/camp site
- Review written safe operating procedures and codes of practice before they are distributed
- Review safety communications before they are distributed
- Recommend to the employer new safety practices and changes to safety practices and general policy
- Identify and recommend recipients for safety rewards
- To promote safety awareness and activities within the work force.

4.3 RECORDS OF MEETINGS

Minutes of the committee meetings will be kept with a copy posted on the message board located in the camp kitchen common area. The original copy held on file with the safety coordinator and a copy to the mine manager. Copies will also be distributed to all committee members prior to the next meeting for follow up for discussion on follow up on recommendations.

4.4 MEMBERSHIP

The committee will be comprised of equal numbers of representatives from employees and management. A representative from each section will be on the board. These sections include but are not limited to: exploration, mining, milling, maintenance, site services and safety.

4.5 EXECUTIVE

The committee will have two co-chairpersons, one employee representative and one management representative as selected by the committee. The co-chairs will alternate chairing the monthly meetings. A secretary will also be appointed to record minutes of each meeting.

4.6 INSPECTIONS

Through regular formal and informal inspections work site conditions and work procedures are monitored. Inspections ensure that company safety standards and regulatory requirements are being followed, as well as meeting inspection requirements recommended by equipment manufacturers. Inspections also enable the identification of hazards before they become a problem by revealing where improvements to equipment, work procedures worker training, and worksite conditions are needed. Both committee members, and employees are expected to participate in worksite inspections with the safety officer. It is recognized that all employees have extensive experience in their respective fields.

4.7 GOVERNMENT INSPECTIONS

Government inspectors will from time to time inspect the mine site. The inspectors may assess records, plans, policies, and equipment or work procedures. They may interview anyone on the worksite and they the right to remove any item they need to inspect further. Anyone on the site at the time of the inspection must cooperate with government inspections.

5. HAZARD ASSESSMENT AND CONTROL

Successful recognition of potential safety hazards and the ability to eliminate these hazards plays a major role in Alexco's MHSP. This requires the participation of everyone involved including workers, supervisors and managers who must take responsibility to eliminate potential hazards within their own work place. Hazard control will be accomplished by regular inspections of worksite conditions, equipment, employee actions and job procedures conducted by supervisors, safety coordinator and employees. These inspections are to be documented and reported to Alexco management on the appropriate report form. Corrective action taken will also be reported and documented.

5.1 HAZARD IDENTIFICATION

We endeavor to eliminate all site-specific hazards prior to the commencement of work. The Hazard Identification Checklist is completed during the initial inspection. A sample of the checklist is attached. Since worksite conditions are constantly changing as projects progress, the

Hazard Identification Checklist must be updated accordingly and any changes are communicated to workers immediately. Workers are required to identify any potentially hazardous situations to their Supervisor or Safety Coordinator. The Supervisor and/or Safety Coordinator is responsible for documenting the hazards as well as any corrective action required to remedy it. Any new hazards may be communicated at the tailgate meetings.

5.2 EQUIPMENT MAINTENANCE PROGRAM

Alexco operates a fleet of equipment, hand and electrical tools. Each piece of equipment has an Equipment Log Book. When each unit has been serviced or any work performed there will be an entry place in the logbook. All equipment is checked and maintained prior to moving to any work site. All equipment is subject to regularly scheduled servicing as determined by the manufacturer. It is the responsibility of the Supervisor or equipment operator to ensure that regular servicing and preventative maintenance has been performed and recorded in the equipment logbook. Necessary maintenance on rented equipment must also be completed. The operator of each piece of equipment is responsible for bringing any mechanical deficiencies to the attention of his supervisor and/or mechanic so that the required maintenance can be performed. If you are unsure of the required maintenance schedule of a piece of equipment ask your supervisor or the mechanic to find out the set schedule.

5.3 PURCHASING/ENGINEERING CONTROLS

In order to eliminate any jobsite hazard that may develop due to substandard materials, those responsible for purchasing ensures that adequate equipment and materials are purchased.

All materials purchased must be properly tagged and identified with appropriate WHMIS symbols. Should material be distributed without proper WHMIS tags inform your supervisor or safety coordinator.

5.4 INSPECTIONS

The safety coordinator along with representation from area supervisor and workers will conduct regular inspections of all worksites. These inspections will focus on work site conditions, tools, equipment and use of proper safe work procedures. All job sites will be inspected for safety deficiencies. An inspection is the result of a site tour by the safety coordinator and/or site supervisor. Should deficiencies be found the personnel performing the tour will address the safety issue directly and ensure the safety issue is addressed. (i.e.: the site supervisor walks through the job site and notices that the workers are not wearing their safety glasses in the required work areas.) The supervisor will inform each worker of their responsibilities and if required hold an impromptu tailgate safety meeting to ensure all personnel are aware of the required regulations.

5.4.1 HOUSEKEEPING

General housekeeping in the workplace is considered a high priority during inspections. Good housekeeping, demonstrated by orderliness and cleanliness of the job site, usually suggests a safe, well-managed job and pride in the work is being done. Poor housekeeping can ultimately lead to injuries and damage.

5.4.2 ONGOING (INFORMAL) INSPECTIONS

Ongoing inspections will be conducted by supervisory personnel who do most of their work on the job site, watching for unsafe acts and unsafe conditions. In many cases discussing the unsafe act with workers and/or issuing instructions to correct the unsafe condition can correct the problem. Situations that require additional corrective action need to be recorded by the supervisor for follow-up.

5.4.3 PLANNED (FORMAL) INSPECTIONS

These planned inspections are conducted by the supervisor, safety coordinator and workers and/or by an inspection team (JHSC members). These inspections are conducted on a regularly scheduled basis.

6. ACCIDENT INVESTIGATION POLICY

Occupational Health and Safety Regulations

Report and Investigations Section 30 (1)

In this section, are the following definitions:

"Serious Accident"

A. an uncontrolled explosion
B. failure of a safety device on a hoist, hoist mechanism, or hoist rope
C. collapse or upset of a crane
D. collapse or failure of load-bearing component of a building or structure regardless of whether the building or structure is complete or under construction
E. collapse or failure of a temporary support structure,
F. an inrush of water in an underground working
G. fire or explosion in an underground working
H. collapse or cave-in, of a trench, excavation wall, underground working or stockpile
I. accidental release of a controlled product
J. brake failure on mobile equipment that causes a runaway,
K. any accident that likely would have caused serious injury but for safety precautions, rescue measures, or chance

"Serious Injury"

A. an injury that results in death
B. fracture of a major bone, including the skull, the spine, the pelvis, or the thighbone,
C. an amputation other than of a finger or toe,
D. loss of sight of an eye,
E. internal bleeding,
F. third degree burns,
G. dysfunction that results from concussion, electrical contact, lack of oxygen, or poisoning,
H. an injury that results in paralysis (permanent loss of function)

6.1 ACCIDENT AND NEAR MISS PROTOCOL AND INVESTIGATION

6.1.1 WORKERS COMPENSATION BOARD REPORTING

All accident/incidents resulting in injury must be reported to immediate supervisor. If an injury is severe enough to require medical attention this report must be forwarded to Workers Compensation Board within three days of the accident as per legislation.

6.1.2 ACCIDENT/INCIDENTS

Any type of loss that could include: any and all injuries equipment damage, work interruptions, spills, unexpected releases, theft, damage, fires, explosions and natural disaster.

6.1.3 NEAR MISS

Near Miss or "close calls" don't result in injury but may cause property damage. If an employee had been in a slightly different place or position certain injury could have occurred. Often described as "sheer luck" that nothing happened. Reporting, investigating and discussing the matter the employees will likely have helpful suggestions to prevent a similar incident from reoccurring.

6.1.4 ACCIDENT/INCIDENT RESPONSE PROCEDURE

1. Stop. Call your supervisor or safety coordinator and if needed first aid.
2. Supervisor or safety officer to notify mine manager.
3. Ensure that equipment involved is not moved and incident/accident scene is not disturbed.
4. In case of emergency allow personnel trained in first aid to take care of casualty victim as soon as possible until outside medical aid arrives.
5. Ensure that the casualty victim is not moved unless a greater and imminent danger will arise by leaving them in the original position and location.
6. If the site is remote and hard to locate, have someone go out to the roadway or access point to watch for the ambulance. Upon ambulance arrival, inform and assist medical personnel as required.
7. After assessment and statements have been taken, follow instructions from your supervisor, safety officer and/or manager.
8. All dangerous occurrences even those that do not involve injury or property damage must be reported to Occupational Health &Safety.

6.1.5 INVESTIGATION PROTOCOL

Once the victim/s and medical team has dispersed the safety coordinator and supervisor will continue to conduct an investigation. Determination regarding police intervention has been determined.

1. Photograph the scene, including all equipment and surrounding area.
2. Sketches should also be made with appropriate/accurate measurements.
3. Further interviews and statements taken if needed.
4. Accurate records are documented.
5. Written recommendations to prevent recurrence must be made and forwarded to mine manager and supervisors.
6. Immediate follow up on recommendations and implementation.
7. Review outcome of investigation with all participants.

7. SAFETY ENFORCEMENT POLICY

The management of Alexco Resource Corp. is committed to the safety excellence of our employees by providing an injury and accident free workplace. All employees are to abide by the regulations, safety rules, and the use of safe work practices and safe job procedures.

Safety violations will be handled in an objective but firm manner. The enforcement progression follows the following documentation at each stage

7.1 VERBAL WARNING

This includes discussion of the violation and a warning of more severe action, should the offence be repeated.

7.2 WRITTEN WARNING

This involves a discussion about the violation and a written record of the violation and reprimand. A copy is given to the employee and another is put on the employee's personal file. Warning of more severe action should the offence be repeated is given.

7.3 SUSPENSION WITHOUT PAY

This includes release from all job responsibilities without pay for a period of time determined by the severity of the substandard act. Suspensions will be documented in a letter to the employee and a copy of the letter will be placed in the employee's personal file. The employee is informed at this point that discharge will result if the substandard behavior is repeated.

7.4 TERMINATION

This will only be used when all other attempts to correct the substandard behavior have failed. Formal discharges will be documented in a letter to the employee. This will only be taken as a final step when sound judgment indicates no other alternative.

8. OCCUPATIONAL HEALTH AND HYGIENE

The Health and Safety Coordinator(s) are responsible for the occupational health and hygiene (OH&H) monitoring program and requirements. The OH&H program includes the following:

- A process to monitor and measure key operational characteristics like noise, dust, etc.;
- A process to monitor the controls implemented to manage risks;
- A process to develop targets and standards; and
- A means of maintaining the data collected.

Health screening will be conducted as per the medical Matrix below, the Health and Safety Coordinator(s) with assistance from Human Resources shall coordinate and determine specific responsibility breakdown to ensure the program is streamlined and implemented successfully.

PRE-EMPLOYMENT, PRE-PLACEMENT and EXIT OCCUPATIONAL EXAM MEDICAL REQUIREMENTS								
	D&A	Spirometry	Audiometry	Hepatitis B &	Hepatitis A Ab	ECG	Lead Blood	ERT Medical
New hires or contractors of more than 2 weeks	X	X	X				X	
Reasonable cause	X							
Existing Employees			X				X	
Food handlers	X			X	X			
Sanitation and cleaning staff	X	X	X	X	X			
ERT employees	X	X	X	X	X	X		X

The minesite respirable dust monitoring program is presented in Appendix A, while Appendix B outlines the Respiratory Equipment Fit test.

9. EMERGENCY RESPONSE

The Alexco Emergency Response Plan (ERP) (Appendix C) has been developed to ensure that clear, precise and effective guidelines are established for the personnel responsible for the management of emergency events, and to ensure that those persons are kept well informed and capable of performing those requirements. The plan shall provide an organizational and procedural framework for the management of emergency events and the subsequent recovery activities that might be required either at Flat Creek camp or within its surrounding environment. The Flame and Moth ERP for underground emergency procedure is included as Appendix D.

9.1 EMERGENCY RESPONSE TEAM

The Emergency Response Team (ERT) structure at Alexco shall be managed by the Mine Manager, with assistance and support from the on-site personnel to provide expertise, training, and leadership to a 2x2 shift roster that provides 24/7 emergency coverage for the site.

The Site ERT & Medical Response Team (MRT) will be a cross-trained function in order to combine resources, skill sets, and efficiency by providing multi-coverage capability in the event of an emergency. The goal is to have a fully functional underground ERT by the end of the third quarter of 2017, and a fully functional cross-trained surface and underground emergency response team by the end of first quarter of 2018.

The primary objective of the ERP is to:

- Prevent subsequent injury or loss of life;
- Minimize property loss, damage to equipment, and the environment;
- Provide a chain of command to ensure that there is a prompt and coordinated approach to emergency situations;
- Ensure all personnel are aware of their responsibilities in the event of an emergency;
- Establish an effective communications network that provides timely information to both internal site and external site stakeholders;
- Ensure the safety of personnel and equipment during an emergency, and to initiate search and rescue operations for missing personnel;
- Provide a methodology to facilitate improved decision making through the capture of relevant facts and information; and
- Facilitate the appropriate application of in-house technical expertise, personnel power and equipment to effectively deal with an emergency.

APPENDIX A.

Minesite Respirable Dust Monitoring Program

ALEXCO	SAFETY STANDARD	Document Number:	AKHM-0050
		Version Date:	Nov 2012
		Version:	1.0
		Approved by:	Tim Hall

MINESITE RESPIRABLE DUST MONITORING PROGRAM

ALEXCO RESOURCE CORP.
Effective Date: Nov 2012
Implementation Date: Nov 2102
Revision No.: 1.0
Review Date: As Required
Prepared By: Paula Shemley
References:

Objectives

1. To ensure worker safety from exposure to work place respirable dust, total respirable dust and respirable combustible dust.

2. In accordance with Yukon Occupational Health and Safety Regulations the following areas will be monitored on a three times per annual basis for dust:

    - Active Underground Work Areas
    - Crusher Plant
    - Assay / Bucking Room
    - Surface Ore Handling
    - Mill Building
    - DSTF

Definition

Underground Work Areas:

1. On a three times per annual basis underground workings will be sampled for respirable dust, total respirable dust and respirable combustible dust.

2. Scoop operators, truck operators, stope miners and shot-crete applicators will be prime candidates for the monitoring devices.

3. Miners will receive instruction as to the required procedure[s] and will wear the sampling device for a complete shift.[11 hours]

Crusher Plant:

1. On a three times per annual basis the crusher plant will be monitored for respirable dust and total dust.

2. The crusher operator will receive instruction as to the required procedure[s] and wear the sampling device for a complete shift. [12 hours]

Assay / Bucking Room:

1. On a three times per annual basis the bucking room will be monitored for respirable dust and total dust.

2. The sample bucker will receive instruction as to the required procedure and wear the sampling device for a complete shift. [12 hours]

Mill Building/Surface Ore Handling:

1. On a three times per annual basis the Mill Building and ore handling areas will be monitored for respirable dust and total dust.

Operators will receive instruction as to the required procedure and wear the sampling device for a complete 12 hr. shift.

Procedure:

Sample Procedure:

1. Pumps and cyclone arrangements will be set up in accordance to recommended procedure from ASL.

2. Sample pumps will be programmed to start in accordance of the shift hours worked.

3. Pumps c/w cyclone attachment will carried by personnel in areas to be tested throughout the testing period.

4. Pumps c/w cyclone attachment may be located in stationary and/or worn by a worker in the area being sampled.

Analysis:

1. A Gravi-meteric dust sampling method utilizing Gilian Pumps and dust collecting cyclones will be employed.
2. Analysis of samples will be conducted by Maaxam Services Laboratories in Vancouver.
3. Pre weighted filters and cassettes will be supplied by and used from Sennsidyne.
4. Results will be distributed to District Inspector of Mines, Mine-site Departments, and the OHSC and posted.
5. A record of the report will be filed in the Safety Office for future reference.

Permissible Concentrations:

Permissible concentrations of respirable dust and respirable combustible dust are:

Agent	TLV/EL 8 Hour	Adjustment Category	11 hr TLV 3x3 or 2x2 wk shift
DPM	400 µg/m^3 (1)	III	236 µg/m^3
Lead	0.05 mg/m^3	III	0.03 mg/m^3
Particulate, respirable	3 mg/m^3	I	1.77 mg/m^3
Silica, crystalline, respirable	0.025 mg/m^3	III	0.015 mg/m^3

Additional Monitoring:

1. If any results exceed permissible concentrations the area[s] affected will be investigated to ascertain the cause[s] of the contamination.
2. The cause[s] will be immediately rectified and a sampling retest will be conducted.

3. Sampling will be conducted immediately on a reported and/or recognized potential problem area not with standing the quarterly testing schedule.

4. Sampling will be conducted as a result of revisions to procedures and/or equipment not with standing the quarterly testing schedule.

Alexco Sampling Plan
Personal Sample Data Collection Form

Work Area:

Contaminant Sampled _____

Job Title: _____

Employee Name: _____

Date: _____

Work Shift: _____ Hours of Operation: _____

Work Location: ☐ Underground ☐ Above Ground - Outdoors ☐ Mill ☐ Other: _____

Sample Data:

Filter Cassette No. _____ Sample No. _____

Sample Type ☐ Personal ☐ Field Blank ☐ Lab Blank

Pump No. _____ Calibrator No: _____

Start Time (24 hr.): _____ Pre-Flow Rate: ___ / ___ L/min

Stop Time (24 hr.): _____ Post-Flow Rate: ___ / ___ L/min

Average Set Up Area Temperature: _____ °C Set Up Area Pressure: _____ kPa

Average Work Area Temperature: _____ °C Work Area Pressure: _____ kPa

Total Time: _____ min Average Flow Rate _____ L/min

Corrected Flow Rate: _____ L/min

Total Volume: _____ L Total Volume: _____ m^3

Comments: _____

Environmental Conditions:

Please specify the outdoor environmental conditions during the sample period.

☐ Cloudy ☐ Raining ☐ Snowing ☐ Sunny

Outside Ground Condition: _____

Relative Humidity (%): _____

Temperature (°C): _____

Wind Speed (km/h): _____

Wind Direction: ☐ N ☐ E ☐ S ☐ W ☐ Variable

Alexco Sampling Plan
Personal Sample Data Collection Form

Determinants of Exposure:

Area Worked:

Please indicate the main areas where the employee worked, if they wore respirator protection, and if so what type of respirator and cartridges were used.

Area Description	Time (Hrs.)	Respirator Usage	Respirator Information
		☐ Yes ☐ No	
		☐ Yes ☐ No	
		☐ Yes ☐ No	
		☐ Yes ☐ No	

Activities Performed:

Please indicate the main activities conducted by the worker during the sampling period, if they wore respiratory protection, and if so what type of respirator and cartridges were used.

Activity Description	Time (Hrs.)	Respirator Usage	Respirator Information
		☐ Yes ☐ No	
		☐ Yes ☐ No	
		☐ Yes ☐ No	
		☐ Yes ☐ No	

Other Sources of Contamination:

Please specify other contaminants to which the worker may have been exposed:

☐ Environmental Specify: _____

☐ Work Activity Specify: _____

Engineering Controls:

Please specify what engineering controls the worker used / were in place in the areas where they worked.

Control		Effectiveness		
		Good	Fair	Poor
☐	Local Ventilation	☐	☐	☐
☐	Enclosure	☐	☐	☐
☐	Sprayer (water)	☐	☐	☐
☐	Other (specify):	☐	☐	☐

Alexco Sampling Plan
Personal Sample Data Collection Form

House Keeping:

Please comment on the housekeeping in the areas where the employee worked with respect to dust levels.

☐ Good ☐ Fair ☐ Poor

Comment: _____

Operating Condition:

Please describe the operating conditions during the period the sample was collected:

☐ Routine
☐ Non-Routine

Comment: _____

Analyses:

☐ NIOSH Sampling Method No. 7300, Issue 3, entitled "Metals by ICP"
☐ NIOSH Sampling Method No. 0600, Issue 3, entitled "Particulates Not Otherwise Regulated, Respirable"
☐ NIOSH Sampling Method No. 7500, Issue 4, entitled "Silica, Crystalline, by XRD"
☐ NIOSH Sampling Method No 5040, Issue 3 (Interim), entitled "Elemental Carbon (Diesel Particulate)"

Sample Results:

Analyte:	Concentration	Units
NIOSH Method 7300 (Lead by ICP)		Mg/m^3
NIOSH Method 0600 (Respirable Particulate, gravimetric)		Mg/m^3
NIOSH Method 7500 (Crystalline Silica by XRD)		Mg/m^3
NIOSH Method 5040 (Diesel Particulate by EC)		Ug/m^3

Comments: _____

APPENDIX B.

Respiratory Equipment Fit Test

RESPIRATORY EQUIPMENT FIT TEST

ALEXCO RESOURCE CORP
Effective Date: Mar 1, 2013
Implementation Date: Mar 1, 2013
Revision No.: 1.0
Review Date: As Required
Prepared By: Paula Shemley
References:

Objectives:

1. To ensure that all employees requiring respiratory equipment are knowledgeable in the appropriate use of the equipment.
2. To ensure that employees are knowledgeable in the appropriate cartridge application[s].
3. To ensure that employees are properly sized and fit tested prior to use of the equipment.
4. To ensure that employees are knowledgeable in the hygienic requirements after use and storage of the equipment

Access to Equipment:

1. Employees will sign out the equipment from the warehouse.
2. Employees will then bring the equipment to the Safety Office.

Instructions:

Safety Representative:

1. Will ensure that the appropriate cartridges[s] have been issued.
2. Will ensure that proper size of mask has been issued.
3. Will conducted fit test as per 'Fit Test Procedure'.
4. Will instruct employee on the hygienic procedure of after use and storage care.
5. Will provide necessary appliances for hygienic care and storage of equipment

APPENDIX C.

Emergency Response Plan Jan 2018

EMERGENCY MANAGEMENT RESPONSE PLAN

KENO HILL DISTRICT OPERATIONS

January 2018

ALEXCO KENO HILL MINING CORP.

This controlled document will be regularly updated to reflect revisions.

- Updated Emergency Management Response Plan (EMRP) documents will be bound and distributed to all authorized personnel.
- All Keno Hill Project personnel must have EMRP training and know where to gain access to the document in the event of an emergency.

Authorized Distribution / Location List:

Alexco Resource Corp. - Keno Hill Property:

- Elsa Exploration Office
- Bellekeno East Shifters Office
- Flame and Moth Shifters Office
- Bermingham Shifters Office
- Maintenance Shop
- First Aid Room(s)
- General/Site/Department Managers Workspace
- Kitchen Medical Station
- Mine Rescue Trailer – Bellekeno East
- Safety Manager/Coordinators Office
- Keno District Mill Office
- Keno District Mine Office

Alexco Resource Corp. :

- Alexco Environmental Group Whitehorse Office
- Alexco Resource Corp. Vancouver Office
- Alexco Resource Corp. Whitehorse Office

Community:

- Mayo Nursing Station
- Mayo RCMP Detachment
- Mayo Fire Department

Government:

- Occupational Health & Safety - YWCHSB

Primary Partners On-site Contractors:

- First Nation of Na-Cho Nyak Dun – Mayo
- NND Summit Camps - Catering Contractor
- Boart Longyear – Surface Exploration Contractor

TABLE OF CONTENTS

1 PURPOSE

This guide sets out the response protocol in the event of a "Serious Incident" as defined in the following section.

It is intended for use as a quick reference handbook for managers and supervisors. Incident reporting and investigating is also outlined.

In an emergency situation it is imperative that due diligence is exercised as well as discretion. The priorities are the protection of LIFE, LIMB and PROPERTY – in that order.

2 DEFINITIONS

2.1 "SERIOUS INCIDENT"

A "Serious Incident" is defined as any occurrence meeting one or more of the following criteria:

1. Any "serious injury" or "serious accident" as defined in OH&S 33(1) (see Section 2.2),
2. Any incident requiring first aid or rescue response to the scene,
3. Any fire requiring discharge of a fire extinguisher,
4. Any release of a hazardous product where there is potential for that product to enter a waterway,
5. Any hazardous product spill of reportable volume, as defined in Section 11.0.

2.2 "SERIOUS INJURY" AND "SERIOUS ACCIDENT" UNDER OH&S ACT

(Excerpt from Occupational Health & Safety Act)

33. (1) In this section,

"Serious Injury" means:

- *a. an injury that results in death,*
- *b. fracture of a major bone, including the skull, the spine, the pelvis, or the thighbone,*
- *c. amputation other than of a finger or toe,*
- *d. loss of sight of an eye,*
- *e. internal bleeding,*
- *f. full thickness (third degree) burns,*
- *g. dysfunction that results from concussion, electrical contact, lack of oxygen, or poisoning, or*
- *h. an injury that results in paralysis (permanent loss of function).*

"Serious Accident" means:

- *a. an uncontrolled explosion,*
- *b. failure of a safety device on a hoist, hoist mechanism, or hoist rope,*
- *c. collapse or upset of a crane*

d. collapse or failure of a load-bearing component of a building or structure regardless of whether the building or structure is complete or under construction,

e. collapse or failure of a temporary support structure,

f. an inrush of water in an underground working,

g. fire or explosion in an underground working,

h. collapse or cave-in, of a trench, excavation wall, underground working, or stockpile,

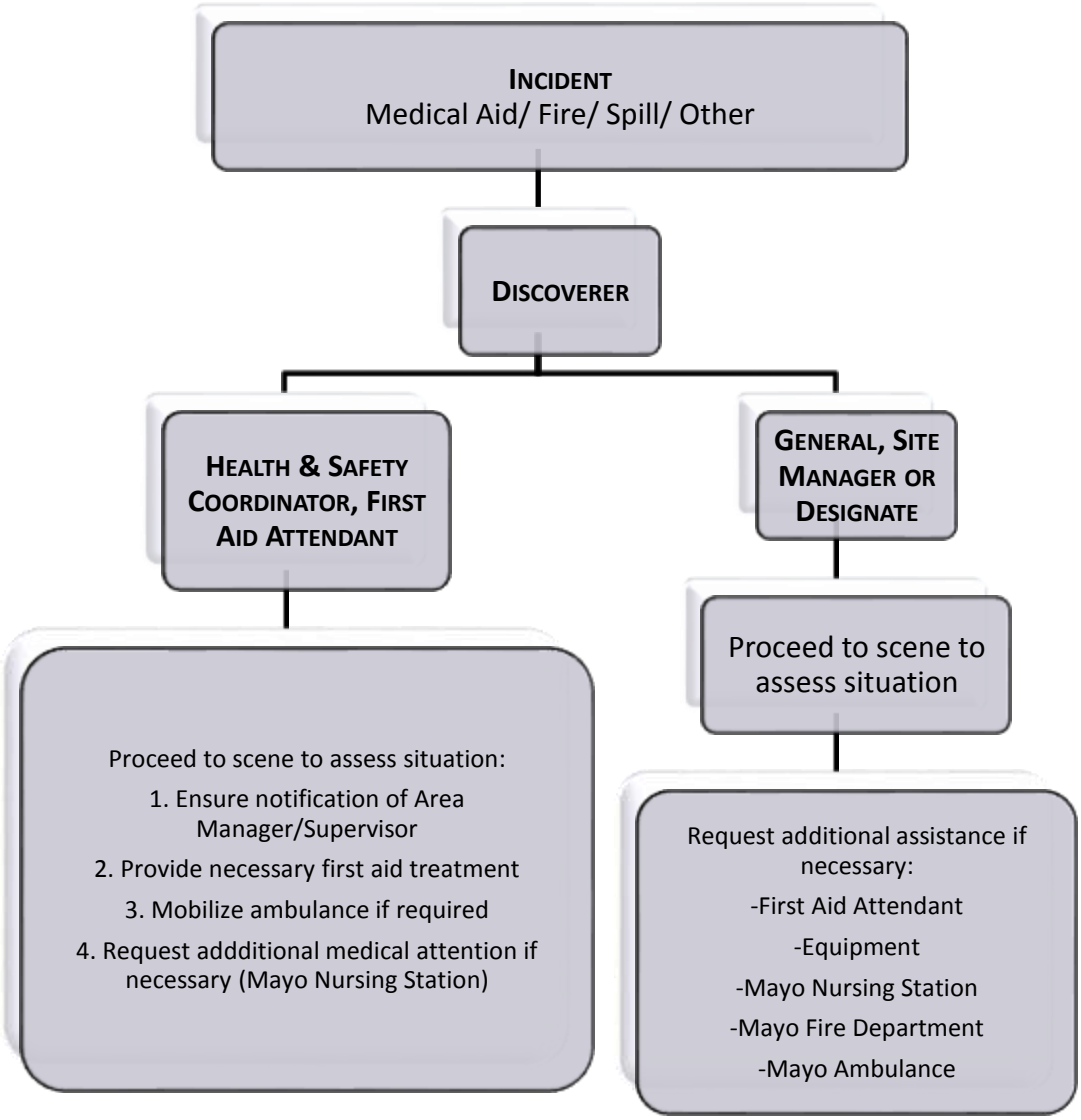
i. accidental release of a controlled product,

j. brake failure on mobile equipment that causes a runaway,

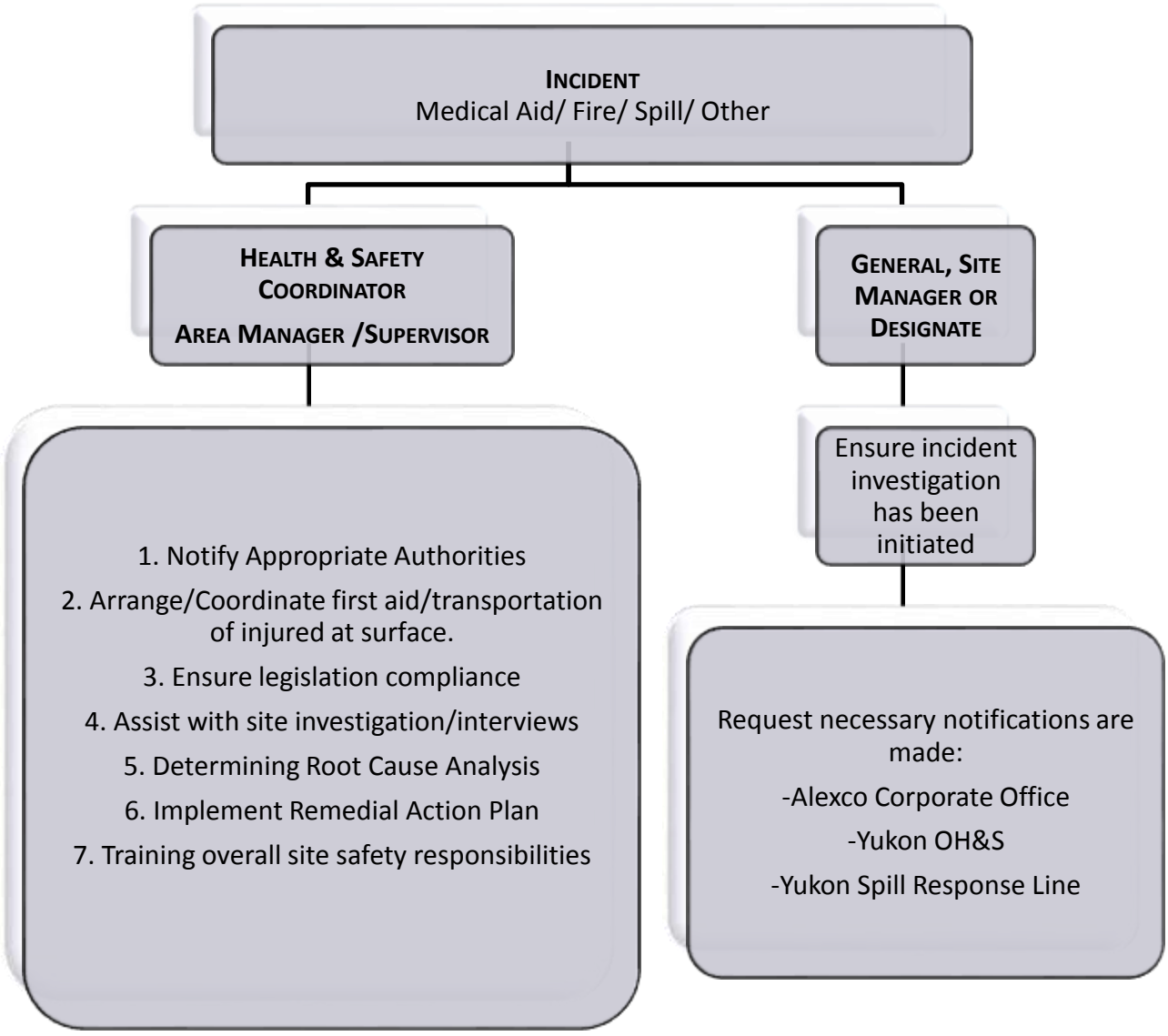
k. any accident that likely would have caused serious injury but for safety precautions, rescue measures, or chance. (As amended by SY 1988, c.22, s. 5; SY 1989, c. 19, s.6)

Reprinted from "Occupational Health and Safety with Mine Safety Regulations."
Yukon Workers' Compensation Health and Safety Board. Department of Justice, Government of the Yukon. 199

3 INITIAL RESPONSE TO SERIOUS INCIDENT – KENO HILL SILVER DISTRICT



4 FOLLOW UP TO SERIOUS INCIDENT – KENO HILL SILVER DISTRICT



5 SERIOUS INCIDENT RESPONSIBILITY MATRIX

See ERP 006 Medical Emergencies On-site

Position	Responsibilities
Area Manager/Supervisor	• Coordinate initial response • E.R.T. and specialized resources mobilization & consultation • Attend and coordinate response for all incidents involving “serious injury” and “serious accident”, as defined in Sec. 33, OHS Act • Initial scene control • Responsible for investigation – determine contributing causes and take immediate proactive action • Request additional external resources as necessary • Coordinate recovery and investigative activity • Notify Site Manager • Ensure all government reporting has been completed • Organize and conduct post-incident debriefings • Prepare Incident Report and make recommendations
First Aid Attendant	• Ensure area supervisor has been notified of incident • Provide first aid treatment if necessary • Mobilize ambulance to scene, if required • Stand by to assist as required by scene coordinator
General, Site Manager	• Designate on-call senior personnel during weekends • Receive briefings on incident details • Provide direction as required • Notify regulatory agencies, government and Alexco corporate office of incident • Review Incident Reports • Attend at all incidents involving “serious injury” and “serious accident”, as defined in Sec. 33, OHS Act • Verify compliance with standards and government regulatory requirements • Forward necessary reports to regulatory agencies • Fire Chief – assume responsibility for fire investigation
Health & Safety Coordinator	• Notify appropriate authorities • Arrange/Coordinate first aid/transportation of injured at surface • Ensure legislation compliance • Assist with site investigation/interviews • Determining Root Cause Analysis • Implement Remedial Action Plan • Training overall site safety responsibilities

6 SERIOUS INCIDENT CONTACTS FOR SITE PERSONNEL

KEY POSITIONS –KENO HILL DISTRICT OPERATIONS - CONTACT LIST			
Release information only as instructed by the Incident Controller.			
Alexco Resource Corp - Keno Hill Project PO BOX #7, Elsa, YT.,Y0B 1J0 Lat 63.54 N Long 135.29 W (Elsa)		Phone: LANDLINE 867 995-3113	
Alexco Site Position			**Work Phone**
General Manager		867-995-3113 ext. 5901	
Mine Manager		867-995-3113 ext. 7002	
Mine Superintendent		867-995-3113 ext. 7002	
Mill Manager		867-995-3113 ext. 7000	
Site Services Manager		867-995-3113 ext. 5919	
Environmental Manager		867-668-6463 ext. 233	
Health & Safety Manager		867-995-3113 ext. 5913	
Health and Safety Coordinator		867-995-3113 ext. 5911	
Care and Maintenance Supervisor		867-995-3113 ext. 5910	
SITE AREA – KENO HILL DISTRICT OPERATIONS – CONTACT LIST			
Site numbers and extensions 867-995-3113			
Bunk A 5925	House #1 5915	Exploration Office 5900	Mine Office 5900
Bunk B 5920	House #2 5902	Kitchen 5927	Mill Office 5900
Bunk C 5923	House #3 5916	Mechanics 5914	
Bunk D 6000	House #4 5917	First Aid 5921	

RADIO FREQUENCIES – KENO HILL DISTRICT OPERATIONS				
Alexco Channel	**Channel Name**	**Receive TX**	**Transmit RX**	**Tone**
Channel 1	First Aid Emergency First Aid Channel	160.73	165.73	RX & TX = C131.8
Channel 3	Repeater Routine On-site Radio Traffic	157.61	151.97	No Tone
Channel 4	Ladd 1 Routine On-site Radio Traffic	154.1	154.1	No Tone
Channel 5	Ladd 2	158.94	151.94	No Tone

7 EXTERNAL RESOURCE CONTACTS

With the exception of medical aid incidents, external resources will be authorized only by the Site Manager on site or his designate, or those with higher level of responsibility.

Key Persons – External Agency – Contact List			
Release information only as instructed by the Incident Controller.			
Alexco Whitehorse Office	867-633-4881	Roads Highways & Bridges	867-996-2232
Canutec	867-996-6666	Superior Propane	877-873-7467
Environment Spills	867-667-7224	Trans North Helicopter	867-668-2177
Fireweed Helicopter	867-668-5888	Whitehorse Hospital	867-393-8700
Forest Fire	888-798-3473	Wildlife Management	867-996-2162
Marine & Air Search & Rescue	800-567-5111	YEMS	867-667-3333
Mayo Fire Department	867-996-2222	Yukon Energy – Regular Hours	867-393-5355
Mayo Health Centre & Ambulance	867-996-4444	Yukon Energy – Emergency	800-676-2843
Minto Mine	604-759-0860	YK Chief Mines Safety Officer	867-667-8739
Poison Control	888-393-8700		
RCMP	867-996-5555		

8 REPORTABLE SPILL QUANTITIES

Should a spill of reportable quantity occur, under federal and territorial regulations, we are required to immediately notify the 24-hour Yukon Spill Report line: telephone number 867-667-7244.

For the purposes of the Water Use License:

1. Any quantity of spill is reportable.
2. The Site Manager, Environmental Manager, Care and Maintenance Supervisor or Manager On-Call are responsible for reporting spills.
3. Reportable spills require an Incident Investigation Report to be completed.

This guide will assist in determining what volume of product requires reporting to regulatory agencies.

If a spill is deemed to be of reportable quantity, the area supervisor will immediately notify the Site Manager or Environmental Manager who will in turn ensure that spill reporting is completed by designated personnel.

A log book will be maintained of all spills, including spills of less than reportable quantities. The log book will be available at the request of an inspector. The log book will include:

a) date and time of the spill;
b) substance spilt or discharged;
c) approximate amount spilt or discharged;
d) location of the spill;
e) distance between the spill or discharge and the nearest Watercourse; and
f) remedial measures taken to contain and clean-up the spill area or to cease the unauthorized discharge.

A summary of all spills will be reported as a part of the annual report.

Reportable Spill Quantities			
TDG Class	**Substance for 24-Hour Spill Line**	**Typical Products on Site**	**Immediately Reportable Quantities**
1	Explosives	ANFO	Any amount spilled outside of blast pattern
2.3 2.3 2.4 6.2 7.0 None	Toxic gas (compressed/non-compressed) Poisonous Gases Corrosive gas (compressed/non-compressed) Infectious substances Radioactive Unknown substance		Any amount
2.3	Non-poisonous Gases		>100 Litres

Reportable Spill Quantities			
TDG Class	**Substance for 24-Hour Spill Line**	**Typical Products on Site**	**Immediately Reportable Quantities**
2.1 2.2	Compressed gas (flammable) Compressed gas (non-corrosive, non-flammable)	Propane Acetylene	Any amount of gas from containers with a capacity from a container > 100L
3.1 3.2 3.3	Flammable liquids	Diesel Gasoline Glycol Hydraulic &/ Engine Oil	>200 Litres From a container larger than 100L
4.1 4.2 4.3	Flammable Solids Spontaneously combustible solids Water reactant (dangerous when wet)		>25 kg
5.1 9.1	Oxidizing substances Miscellaneous products or substances excluding PCB mixtures	Sodium Hydroxide Lime Solution Sodium Nitrate Calcium Hypochlorite Ammonium Nitrate	>50 kg or 50 Litres
5.2 9.2	Organic Peroxides Environmentally hazardous		>1 Litre or 1 kg
6.1 6.2 8.0 9.3	Poisonous substances Infectious substances Corrosive substances Dangerous wastes (waste oil)	 Hydrochloric / Muriatic Waste Oil	>5 Litres or 5 kg Any Amount
9.1	PCB Mixtures of 5 or more ppm	Transformer oil	>0.5 Litre or 0.5 kg
9.1	Miscellaneous dangerous goods		>50 kg
None	Other contaminants (eg crude oil, drilling fluid, produced water, waste or spent chemicals, used or waste oil, vehicle fluids, waste water, etc.)		>100 Litres or 100 kg
None	Sour natural gas (eg contains H2S) Sweet natural gas		Uncontrolled release or sustained flow of >10 min

8.1 SPILL RESPONSE EQUIPMENT RESOURCES LIST

	Location	Contact
Spill Response Kit	• Elsa Fuel Station • Bellekeno East Fuel Tank • Bellekeno East Shop • Bellekeno 625 Adit • Bermingham Portal • Bermingham fuel tank • Keno District Mill	Area Manager/Supervisor

	Location	Contact
	• Lucky Queen Portal Pad Shop • Onek 990 Portal Pad • Bellekeno Haul Road Mine Support Facilities Bench	
Oil – Absorbent Pads	• In Spill Kits	Area Manager/Supervisor
Oil – Absorbent Booms	• In Spill Kits	Area Manager/Supervisor

Any contaminated soils will be removed to the land treatment facility in Mayo or a suitable permitted facility within the Keno Project area.

All vehicles carrying hazardous materials will be equipped with a spill kit and personnel will be trained in spill response measures.

See ERP 014 AKHM Spill Report Form

9 MISSING PERSONS ACTION PLAN

Potential exists where persons may become lost on the property. Such incidents can occur under the following circumstance:

- Alexco or Contractor personnel engaged in surface exploration or any other activities (i.e. care and maintenance) are overdue and cannot be located or contacted.

Upon notification that Alexco personnel, or Contractors are unaccounted for on the property you should:

1. Immediately advise the Area Manager/Supervisor and Site Manager who will:
    - Assess and determine the level of response required.
    - Gather all available information about the missing persons including last known location.
    - Advise the RCMP of the circumstances and request further assistance
    - Designate Keno Hill Silver District project employees to stand-by and assist the RCMP in search efforts as directed
2. Stand-by to provide further information and assistance as required.

10 EMERGENCY EQUIPMENT AND EQUIPMENT LOCATIONS

Emergency Equipment	Location	Use is Authorized by:
(MMTU) Mobile Medical Treatment Unit 4 x 4 Truck with Stretchers	Flat Creek Camp Mill/Mine Office	General Site Manager Area Manager/Supervisor Health & Safety Coordinator First Aid Attendant
AED Automatic External Defibrillator Use when CPR is required	Flat Creek Camp Kitchen MMTU Black and Neon ZOLL – AED Bellekeno E. First Aid Room Bermingham First Aid Room Keno District Mill First Aid Room	General Site Manager Area Manager/Supervisor Health & Safety Coordinator First Aid Attendant
Oxygen **Airway Adjuncts (OPA)**	MMTU First Aid Jump Kit Exploration First Aid Room Bellekeno E. First Aid Room Bermingham First Aid Room Keno District Mill First Aid Room	General Site Manager Area Manager/Supervisor Health & Safety Coordinator First Aid Attendant
Spinal Precautions Spine Boards & Head Blocks Stiff Collars Spyder Straps KED – Vehicle extrication device	MMTU Exploration First Aid Room Bellekeno E. First Aid Room Bermingham First Aid Room Keno District Mill First Aid Room	General Site Manager Area Manager/Supervisor Health & Safety Coordinator First Aid Attendant
Splints Vacuum Splints – Extremity breaks	Exploration First Aid Room Bellekeno E. First Aid Room Bermingham First Aid Room Keno District Mill First Aid Room	General Site Manager Area Manager/Supervisor Health & Safety Coordinator First Aid Attendant
Wound Management **Burn Dressings** Sterile Water Bandages & Dressings	MMTU Exploration First Aid Room First Aid Jump Kit Bellekeno E. First Aid Room Bermingham First Aid Room Keno District Mill First Aid Room	General Site Manager Area Manager/Supervisor Health & Safety Coordinator First Aid Attendant
EPI Pens Anaphylactic Shock / allergies	MMTU Exploration First Aid Room First Aid Jump Kit Bellekeno E. First Aid Room Bermingham First Aid Room Keno District Mill First Aid Room	General Site Manager Area Manager/Supervisor Health & Safety Coordinator First Aid Attendant

11 EMERGENCY FIRST AID PATIENT ASSESSMENT MODEL

See ERP 006 Medical Emergencies on Site

THE ROLE OF THE FIRST PERSON AT THE SCENE

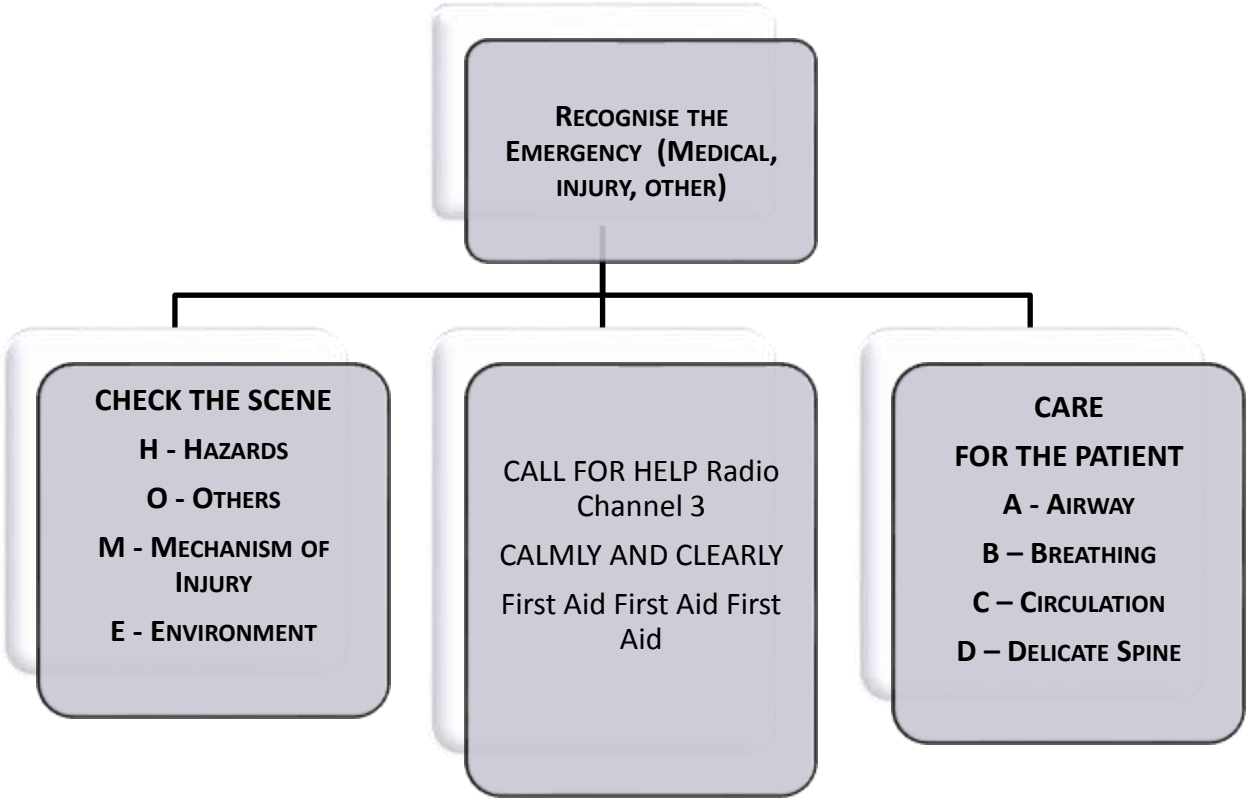
1. CHECK - Recognize the emergency
2. CALL – Activate medical services / first aid to attend the scene
3. CARE - Act according to your skills, knowledge and comfort level

A "medical emergency" is an illness or condition that needs immediate medical attention. For example:

- Anaphylactic shock
- Diabetic emergency
- Heart attack
- Others

An "injury" is damage to the body caused by external force. For example this damage can cause

- Broken bones
- Burns
- Wounds
- Others


RECOGNISE THE EMERGENCY (MEDICAL, INJURY, OTHER)
CHECK THE SCENE
H - HAZARDS
O - OTHERS
M - MECHANISM OF INJURY
E - ENVIRONMENT
CALL FOR HELP Radio Channel 3
CALMLY AND CLEARLY
First Aid First Aid First Aid
CARE
FOR THE PATIENT
A - AIRWAY
B – BREATHING
C – CIRCULATION
D – DELICATE SPINE

12 EMERGENCY CONTACT INFORMATION

As this EMRP document is updated, only revised pages will be replaced.

In the event of a "SERIOUS" Incident, injury or accident you must notify:

1. Keno Hill District Operations Department Manager or Alternate
2. Member of the Health and Safety Department

12.1 KENO HILL DISTRICT OPERATIONS – EMERGENCY CONTACT NUMBERS

KEY POSITIONS –KENO HILL DISTRICT OPERATIONS - CONTACT LIST			
Release information only as instructed by the Incident Controller.			
Alexco Resource Corp - Keno Hill Project PO BOX #7, Elsa, YT.,Y0B 1J0 Lat 63.54 N Long 135.29 W (Elsa)		Phone: LANDLINE 867 995-3113	
Alexco Site Position			**Work Phone**
General Manager			867-995-3113 ext. 5901
Mine Manager			867-995-3113 ext. 7002
Mine Superintendent			867-995-3113 ext. 7002
Mill Manager			867-995-3113 ext. 7000
Site Services Manager			867-995-3113 ext. 5919
Environmental Manager			867-668-6463 ext. 233
Health & Safety Manager			867-995-3113 ext. 5913
Health and Safety Coordinator			867-995-3113 ext. 5911
Care and Maintenance Supervisor			867-995-3113 ext. 5910
SITE AREA – KENO HILL DISTRICT OPERATIONS – CONTACT LIST			
Site numbers and extensions 867-995-3113			
Bunk A 5925	House #1 5915	Exploration Office 5900	Mine Office 5900
Bunk B 5920	House #2 5902	Kitchen 5927	Mill Office 5900
Bunk C 5923	House #3 5916	Mechanics 5914	
Bunk D 6000	House #4 5917	First Aid 5921	

RADIO FREQUENCIES – KENO HILL DISTRICT OPERATIONS				
Alexco Channel	**Channel Name**	**Receive TX**	**Transmit RX**	**Tone**
Channel 1	First Aid Emergency First Aid Channel	160.73	165.73	RX & TX = C131.8
Channel 3	Repeater Routine On-site Radio Traffic	157.61	151.97	No Tone
Channel 4	Ladd 1 Routine On-site Radio Traffic	154.1	154.1	No Tone
Channel 5	Ladd 2	158.94	151.94	No Tone

12.2 CO-OPERATIVE MINE RESCUE (CMR) ASSISTANCE

Agency	Name	Home (other)	Other
YT OH&S Mine Inspector	1-800-661-0443		
Minto Mine	David Crottey	604-759-4641	davidc@mintomine.com

12.3 TERRITORIAL AND FEDERAL CONTACT NUMBERS

Name	Office	
Mayo Ambulance	867-996-4444	Mayo (Volunteer Responders)
Mayo Fire & Rescue	867-996-2222	Mayo (Volunteer Responders)
RCMP	867-996-5555	Mayo
Whitehorse Regional Hospital	867-393-8700	Emergency
Whitehorse Regional Hospital	867-393-8700	Admissions
Yukon Coroner	867-667-5317	Whitehorse
Yukon Dept. of Conservation	867-667-5317	Whitehorse
Yukon Dept. of Fish & Game	867-393-6722	Whitehorse
Yukon Energy	867-996-2387	Mayo
Yukon Energy	1-800-676-2843	After hours Whitehorse
Yukon Occupational Health & Safety	1-800-661-0443	Mine Inspector

APPENDIX D.

ERP Flame and Moth QML UG Emergency Procedure

ALEXCO RESOURCE CORP.
Revision No.: 01
Revision Date: 05/Sep/17
References: Yukon Occupational Health and Safety Regulations

PURPOSE

To ensure a safe evacuation and accounting of all personnel working underground in the event of an underground emergency.

SCOPE

These procedures apply to all Alexco underground employees and contractors working at the Bellekeno, Flame and Moth and Bermingham mines. This safety standard is to be updated as necessary when underground conditions and status change.

RESPONSIBILITY

Mine Manager or designate is responsible for:

- Ensuring this procedure is implemented and maintained.
- Ensuring personnel receive appropriate training.
- Reporting to the Mine Rescue Coordination Centre (MRCC)
- Serving as a member of the Emergency Management Team (EMT) to manage the underground (U/G) emergency in conjunction with the Mine Rescue Team Coordinator (MRTC).
- Contacting off-site Alexco personnel and regulatory agencies of the situation.

Mine Superintendent or designate is responsible for:

- Monitoring the implementation of this procedure.
- Keeping a detailed minute-by-minute log of the events and activities.
- Reporting to the MRCC to serve as a member of the Emergency Management Team
- Reporting as a member of the Emergency Management team at the MRCC.

Alexco Health and Safety Coordinator or designate is responsible for:

- Serving as the Mine Rescue Team Coordinator (MRTC)
- Managing the fire emergency in conjunction with the Emergency Management Team in a

safe manner and in accordance with mine rescue best management practices.

Alexco Personnel located on Surface are responsible for:

- Reporting to the nearest muster area where the senior person will perform a roll call of all Alexco personnel present.
- Staying at the mine office/dry lunchroom muster area until advised otherwise by the Mine Manager or designate.

Area First Aid Attendant is responsible for:

- Being readily available to assist and treat any medical emergencies.

Administrative Assistant is responsible for:

- Remaining on standby by the phones and radio.

All Underground and Technical Services personnel are responsible for:

- Knowing and understanding this procedure.

EMERGENCY PREPAREDNESS AND RESPONSE PROCEDURE (EPRP)

General Information

Make sure that you fully understand this procedure and your role in it. A fire or other life threatening condition in the mine calls for immediate initiation of the entire underground emergency procedure. If there is any doubt as to the details of the situation, we must err on the side of safety. Serious risks to personnel may result from indecision or hesitation.

This procedure is intended to provide a guide in the event of a fire or other emergency reported in the underground workings. The areas of responsibility and duties of the various people who will be directly involved are outlined to eliminate doubt as to what each person should be doing at the time of an emergency. It should be noted that not all conditions can be foreseen, thus this procedure can only serve as a guide in establishing a proper organization at the time of an emergency situation. The detailed response to any situation must be considered by the Emergency Management Team based on the information available at the time of the emergency.

All Underground Supervisors on site will review this emergency procedure with their respective crews every three months.

Emergency

An emergency is an unforeseen or sudden occurrence of a danger demanding immediate remedy or action. This may involve management and trained first aid, fire and rescue personnel.

Emergencies may include but are not limited to:

- Injury to people or people requiring rescue
- Loss of life
- Fire in the Surface Shop, Office/Dry complex or Fire underground
- Fire on a piece of underground equipment
- Major inflow of water
- Occurrence of flammable, noxious or toxic gas in the underground workings
- Major uncontrolled fall of ground

GENERAL UNDERGROUND EMERGENCY PREPAREDNESS AND RESPONSE PROCEDURE

Initial Notification:

The person or persons discovering the emergency shall:

- **If you have a radio** announce the Emergency on radio U/G Channel 3 and stay on this channel until you receive confirmation that your notification was received by the U/G Supervisor or surface personnel. Make sure you pass on all details of the Emergency:
    - Your name and location of the emergency
    - Requirements for handling the emergency (i.e. first aid, rescue team, ambulance)
    - Number of injuries
    - Using your radio announce the emergency on all underground channels to advise other workers of the emergency if required
- **If you do not have a radio** go to the nearest phone and call your supervisor or the surface shops / offices and pass on all details (see above) of the emergency and have them relay the Emergency on the radio channel (to be announced).
- Warn all personnel in the area and warn the underground employees by requesting that the Stench Gas be injected into the airline and ventilation systems **if required.**

Stench is normally injected for emergencies requiring mine evacuation or refuge such as fires.

All Persons Shall:

- Evacuate to a safe area where communication can be maintained unless immediately requested to assist
- Evacuate to a designated assembly area for a head count or further instruction
- Not leave the assembly areas or go back into the area until authorized
- Not make any off-site phone calls with details of the emergency
- If underground, proceed to surface immediately

ACCIDENT INVOLVING SERIOUS INJURY

- **If you have a radio** announce the Emergency on radio U/G Channel 3 and stay on that channel until you receive confirmation that your notification was received by the Supervisor or surface personnel. Make sure you pass on all details of the Emergency
    - Nature of Accident (i.e. struck by loose, caught between, fell from a height, etc.)
    - Number of people injured and description of the injuries
    - Equipment or additional personnel required such as:
    - Oxygen therapy kit
    - Stretcher
    - Any special tools such as lifting tools
    - First Aid Kit
    - Transport Vehicle
    - Additional rescue personnel
- Render First Aid – remember to use C-Spine Control if there is a suspected back or neck injury and do not move him/her unless in danger of additional injury
- The EMT will proceed to the portal area, be prepared to go underground if required and have the Emergency Transport Vehicle (EVT) ready to receive the injured person
- Underground workers will normally bring the injured person to surface.
- Stretcher and First Aid Kits are located at the Mine Dry, the ETV, Mobile Treatment Centre and at all active areas throughout the site.
- **If you do not have a radio** go to the nearest phone and call your supervisor or the surface shops / offices and pass on all details (see above) of the emergency and have them relay the Emergency on U/G Channel 3.

MAJOR INRUSH OF WATER REQUIRING MINE EVACUATION

The person or persons discovering the emergency shall:

- **If you have a radio** announce the Emergency on radio U/G Channel 3 and stay on that channel until you receive confirmation that your notification was received by the supervisor or surface personnel. Make sure you pass on all details of the Emergency and request that the stench gas be injected.
    - Your name and location of the emergency
    - Requirements for handling the emergency (i.e. first aid, rescue team, ambulance)
    - Number of injuries
    - Using your radio announce the emergency on all underground channels to advise other workers of the emergency
    - Immediately evacuate the mine by the closest route
    - Warn all other people you encounter while leaving the mine.
    - When on surface report immediately to the shifters wicket to tag out
    - Those people who learn of the emergency because they smell the stench will report to the refuge station where they will be instructed by the Emergency Management Team to evacuate the mine
- **If you do not have a radio** go to the nearest phone and call your supervisor or the surface shops / offices and pass on all details (see above) of the emergency and have them relay the Emergency on U/G Channel 3 and request that the stench gas be injected.
    - Immediately evacuate the mine by the closest route
    - Warn all other people you encounter while leaving the mine.
    - When on surface report immediately to the shifters wicket to tag out

UNDERGROUND FIRE

Person Discovering a Fire:

In the event you discover a fire in the underground mine workings:

- Assess the size of the fire and yell to your partner(s) for help
- Attempt to extinguish the fire with whatever is available (i.e. fire extinguishers or water if it is not an electrical fire). NEVER USE WATER ON BURNING ELECTRICAL EQUIPMENT
- Do not endanger yourself while attempting to fight the fire
- If successful in extinguishing the fire, report it at once
- **If the fire is too large or difficult to extinguish immediately and you have a radio** announce the Emergency on radio U/G Channel 3 and stay on that channel until you receive confirmation that your notification was received by the supervisor or surface personnel. Make sure you pass on all details of the Emergency and ask for the stench to be injected
    - Your name and location of the emergency
    - The precise location, nature of the fire and what is burning
    - The size of the fire
    - Your planned destination after the call
    - Using your radio announce the emergency on all underground channels to advise other workers of the emergency
    - Put on your self-rescuer and proceed to the nearest refuge station or place of safety and await further instructions
- **If the fire is too large or difficult to extinguish immediately and you do not have a radio** go to the nearest phone and call your supervisor or the surface shops / offices and pass on all details (see above) of the emergency and have them relay the Emergency on U/G Channel 3
    - Put on your self-rescuer and proceed to the nearest refuge station or place of safety and await further instructions

Person Encountering Smoke:

If you encounter smoke anywhere in the underground mine workings:

- Assess the type of smoke you have encountered. Is this blasting smoke, diesel smoke or possible smoke from a fire? You will have to use your sense of smell and judgement to distinguish between the different types of smoke.
- **If you suspect the smoke is from a fire, and you have a radio** announce the

Emergency on radio channel U/G Channel 3 and stay on that channel until you receive confirmation that your notification was received by the Supervisor or Surface personnel. Make sure you pass on all details of the Emergency and ask for the stench gas to be injected.

- Your name and location of the emergency
- The precise location, nature of the fire and what is burning
- The size of the fire
- Your planned destination after the call
- Using your radio announce the emergency on all underground channels to advise other workers of the emergency
- Put on your self-rescuer and proceed to surface.
- If your passage to surface or place of safety is blocked proceed to the nearest dead end drift that has air and water available and seal yourself in using any available materials. Use your jacket, oiler jacket or shirt to make a tent over your head and the air header and crack open the airline and wait for help
- Do not panic and enter smoke – trained rescue personnel will get you out
- Occasionally beat on a pipe in a series of three taps to indicate your location

FIRE ON A PIECE OF EQUIPMENT

If there is a fire on a piece of equipment in the underground mine workings:

- Stop the piece of equipment and shut down the engine
- Turn off the master switch
- Extinguish the fire using the hand held fire extinguisher from the piece of equipment first. If you are unsuccessful activate the fire suppression system from one of the two activation points located on most pieces of underground equipment
- Do not expose yourself to smoke or gases
- Even if you succeed in extinguishing the fire do not delay in announcing an emergency – **if you have a radio** announce the Emergency on radio U/G Channel 3 and stay on that channel until you receive confirmation that the emergency was received by the Supervisor or Surface personnel. Make sure you pass on all details of the Emergency and ask for the stench to be injected
    - Your name and location of the emergency
    - The precise location of the burning piece of equipment
    - The size of the fire
    - Your planned destination after the call
    - Using your radio announce the emergency on all underground channels to advise other workers of the emergency
    - Put on yourself rescuer and proceed to surface

PROCEDURE FOR STENCH GAS INJECTION

The stench gas injection locations are at the main airline inside the surface compressor and at the main surface fan. All surface maintenance personnel and Alexco technical staff are trained to inject the stench gas.

The Underground Supervisor, the Mine Manager or the Mine Superintendent will authorize the injection of stench gas into the underground workings. If these people are all underground, the most senior person on surface may authorize the injection of the stench.

Person Encountering Stench Gas:

If you smell stench gas (propane smell) anywhere in the mine:

- Stop working immediately and make sure others in the area are aware of the emergency
- Shut down and secure any equipment you have been using. Turn off the master switch and make sure it is not parked blocking the roadway or access to emergency or electrical equipment
- Proceed to surface immediately. Travel quickly but calmly and do not run. Take any available tools with you. If there is any indication of the smell of smoke put on yourself rescuer
- Always stay on the fresh air side; never travel in air containing smoke
- Warn anyone you meet along the way of the emergency