Emergency Preparedness Guideline – Caution to Users

The Emergency Preparedness Guideline was originally prepared for the Ontario mining industry by one of WSN's precursor organizations, with extensive input from industry committees. While much of the information and many of the forms are still valuable, users should recognize that examples, contact information and data such as legislative references may be out of date. The guideline is offered as a free tool for companies to use in developing their own emergency plan, but users should ensure they refer to the most recent legislation, modern equipment and current practices.

Technical Report

Emergency Preparedness Guidelines

Mines and Aggregates
Safety and Health
Association

Technical Report

Emergency Preparedness Guidelines

690 McKeown Avenue P.O. Box 2050 Station Main North Bay, Ontario P1B 9P1
Ph. (705) 474-7233 Fax (705) 472-5800
www.masha.on.ca

EMERGENCY PREPAREDNESS

FOREWORD

The information contained in this manual is intended to be a reference guide to assist Ontario mining companies in preparing for emergency situations.

This outline will provide the ingredients for identifying potential hazards and developing an effective contingency plan to respond to abnormal situations.

The information presented herein is not a definitive guide for the prevention or protection from all emergency situations. It is anticipated that these guidelines will be used to develop site-specific procedures.

The Mines Accident Prevention Association of Ontario and members of the Sub-committees cannot guarantee the accuracy of, nor assume liability for, information contained herein.

EMERGENCY PREPAREDNESS

ACKNOWLEDGEMENTS

In preparation of this guideline, the Mines Accident Prevention Association of Ontario wishes to acknowledge the information and support provided by the following companies:

Algoma Steel Corporation, Limited
Algoma Ore Division
Wawa, Ontario

American Barrick Resources Corporation
Holt-McDermott Mine
Kirkland Lake, Ontario

Canadian Gypsum Company
Hagarsville Mine
Hagarsville, Ontario

Canamex Resources Inc.
Bell Creek Mine
Porcupine, Ontario

Denison Mine Ltd.
Elliot Lake, Ontario

Dickenson Mines Ltd.
A. W. White Mine
Balmertown, Ontario

Domtar Construction Materials Ltd.
Caledonia Gypsum Mine
Caledonia, Ontario

Dynatec Mining Limited
Richmond Hill, Ontario

Falconbridge Ltd.
Kidd Creek Mine Division
Timmins, Ontario

Inco Limited
Ontario Division
Copper Cliff, Ontario

Acknowledgements cont'd

Lac Minerals Ltd.
Macassa Division
Kirkland Lake, Ontario

Mattabi Mines Ltd.
Ignace, Ontario

Placer Dome Inc.
Campbell Red Lake Mine
Balmertown, Ontario

Placer Dome Inc.
Dome Mine
South Porcupine, Ontario

Placer Dome Inc.
Dona Lake Mine
Pickle Lake, Ontario

Sifto Canada Inc.
Goderich, Ontario

Timminco Metals
A Division of Timminco Limited
Haley, Ontario

Westroc Industries Ltd.
Drumbo Mine
Drumbo, Ontario

EMERGENCY PREPAREDNESS

SUB-COMMITTEE REPORT

Upon direction from the Mines Accident Prevention Association Ontario's Safety and Loss Control Committee, a sub-committee was developed to address the preparation of an emergency preparedness guideline for the mining industry:

Members of the sub-committee include:

Dick Kemshall	Chairman	Heath and Sherwood Drilling (1986) Ltd.
Baxter Leduc		Lac Minerals
Tom Gunn		Inco
Don Gillis		MAPAO
Ed Sheppard	Secretary	MAPAO

MANDATE OF THE SUB-COMMITTEE

Provide a list of critical elements to assist with identifying potential emergencies.

Provide an evaluation component in the form of checklists to measure capabilities of hazard control.

Propose and describe essential components of an emergency plan.

Develop a catalog of emergency preparedness resource information for the mining industry.

BACKGROUND AND INTRODUCTION

OVERVIEW

PLANNING FOR EMERGENCIES

THE EMERGENCY PLAN

TRAINING DRILLS

MEDIA COMMUNICATIONS

SUMMATION

APPENDIX

RESOURCE CATALOGUE

AUDIT

EMERGENCY PREPAREDNESS

BACKGROUND AND INTRODUCTION

No industry or individual is immune from emergency situations: they can arise anywhere, anytime, and from a multitude of causes. Fortunately something can be done to counter this seemingly pessimistic prediction. Emergency preparedness can and does make a difference.

These concerns and related issues associated with emergency preparedness were highlighted during a recent undertaking initiated by the Mines Accident Prevention Association of Ontario.

Appropriately named, the Needs Assessment program was designed to address basic programs and legislative compliance related to ventilation, ground control, industrial hygiene and general safety. The objective of the program was to identify both strengths and weaknesses within these four areas and then provide services to initiate improvements. As far as selection criteria, most companies chosen to participate in the program had been in production for less than three years and were considered small to mid-sized operations. Upon completion of eight Needs Assessments, each averaging three hundred manhours, there appeared to be a common thread addressed in our final report time after time. These issues were related to emergency preparedness.

After relaying some of our general findings to the MAPAO's Safety and Loss Control Committee a decision was made and a sub-committee was struck and given the task of preparing basic emergency preparedness guidelines for the mining industry.

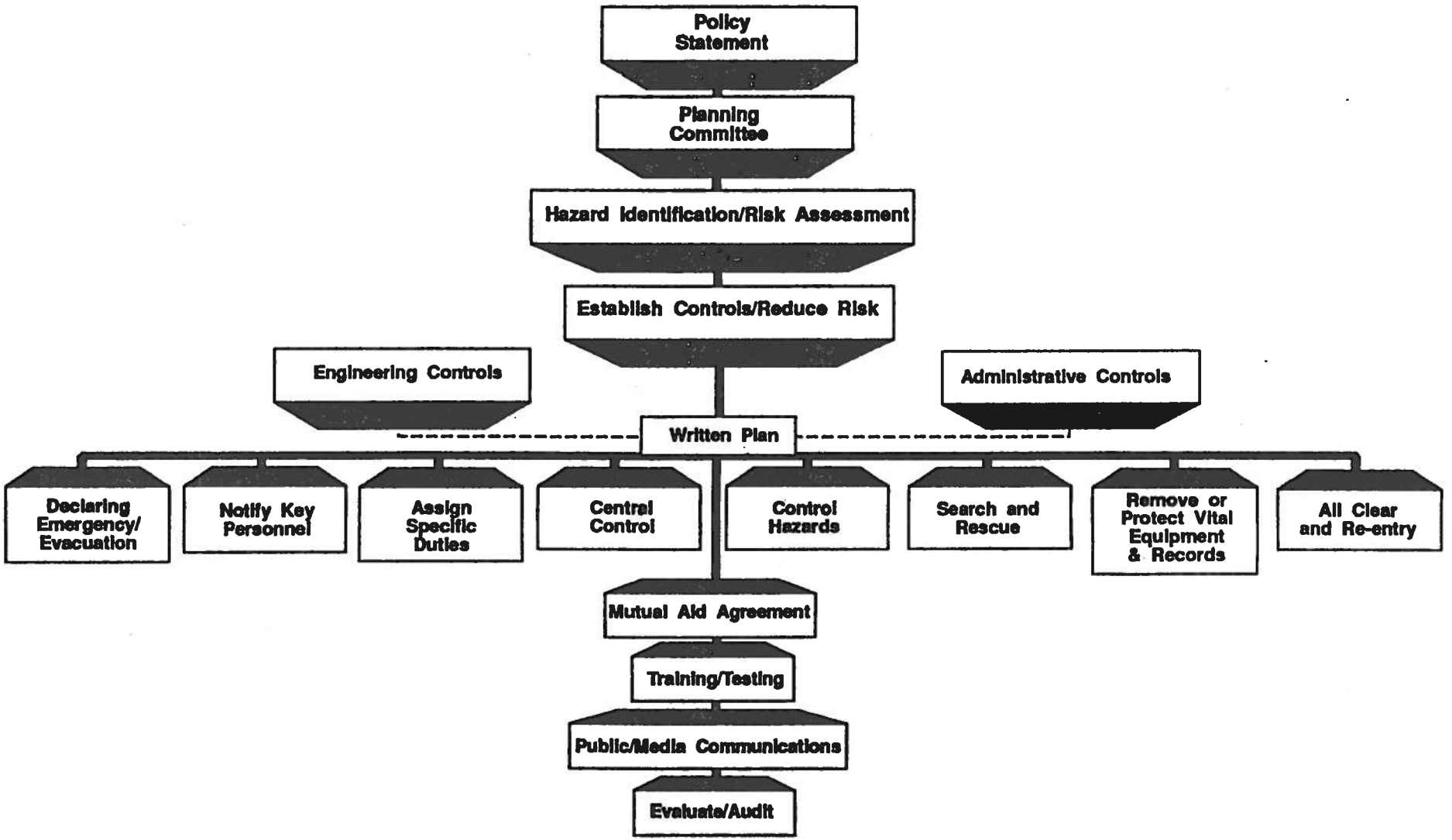
Emergency has been defined as an unforseen happening or state of affairs requiring prompt action. If not acted upon in an effective, well organized manner these circumstances may quickly evolve to a sudden misfortune commonly known as a disaster.

Few people will be convinced that emergency planning is worthwhile unless there is potential danger. The danger in turn must be seen as directly threatening, highly possible if not probable, and likely to occur in a relatively short time span. This need can be emphasized by noting what the future holds in store for us. There will be more chemicals used in the workplace, more dangerous goods will be transported by rail, air, water, and road, not to mention the concerns for the many forms of environmental pollution.

Most will agree there is a moral responsibility and legal obligation to prepare for emergency situations. The following general guidelines will address this need.

EMERGENCY PREPAREDNESS

OVERVIEW



EMERGENCY PREPAREDNESS

PLANNING FOR EMERGENCIES

EMERGENCY PREPAREDNESS

PLANNING FOR EMERGENCIES

"BE PREPARED!" As youngsters many of us grew up understanding these two words as the motto or basic philosophy of scouting. For scouts, and for everyone else, being prepared is nothing more or less than knowing what to do and how to react to the unexpected. A similar philosophy applies in the field of emergency preparedness.

Good planning can prevent an emergency from escalating into a disaster, and, on occasion, can even prevent an incident from progressing into an emergency.

Developing an effective plan requires the same good organization and administration as any business undertaking. There is not enough time during an emergency to decide who is in charge, what resources are available, what is to be done to control the situation and whether or not trained individuals are readily available on site.

Planning for emergencies can be addressed in five stages.

(1) Prepare an emergency preparedness policy statement
(2) Organize an emergency planning team
(3) Identify and prioritize potential hazards to your organization
(4) Establish controls for identified hazards
(5) Prepare an emergency plan

Emergency Preparedness Policy Statement

Management's commitment and support at all stages of the plan, ie: inception, development and implementation, is imperative. This commitment in accepting the responsibility of administering the emergency preparedness plan is best illustrated in a policy statement. Figure 1 illustrates a typical emergency preparedness policy statement.

Organize an Emergency Planning Team

The development of a contingency plan is not something that can be achieved by one individual in isolation. A knowledgeable group representing all major segments of the operation is required to ensure the integrity of the plan.

As with all committees the success or failure will often hinge on the chairperson or, in this case, the planning coordinator. For this reason the selection or appointment of the planning committee coordinator is critical to the success of the committee. The coordinator will ensure that adequate attention is given to all essential aspects of the plan and will address the needs of all departments involved in the plan.

It may also prove beneficial to utilize expertise outside the company to provide input to the committee eg: Police, Fire, Ambulance, Hospital Services, Utilities and Media. The municipal planning committee and other industries, particularly similar industries in the immediate area can be important sources of information and support.

EMERGENCY PREPAREDNESS

POLICY

(Figure 1)

The management of (name of company) recognizes the importance of and accepts the responsibility of providing contingency plans for situations of actual or imminent danger which, if not prevented or corrected could lead to disaster.

Management is committed to providing the active leadership and support necessary to develop and maintain the required activities and programs.

The company shall:

Operate within the framework of all applicable mining, environmental, safety and health legislation.

Develop necessary plans through consultation with the health and safety committee for the protection of life, environment and company property.

Provide adequate training, equipment, facilities and resources to combat and control identified risks.

Take necessary and prudent steps to assume continuity of operations and restoration of production activities as quickly as possible following the emergency or disaster.

The safety and health of employees is the first priority in any emergency situation.

Participation and cooperation in the above policy is expected of all employees.

_____

Signed by Manager or Chief Operations Officer

The planning committee must keep in mind they will have to inform, if not educate other individuals and groups concerning the roles they are expected to play under emergency situations. Knowing what one's self or a few key officials of the organization will do is not enough. A well written plan is no indication of your operation's abilities to deal with an emergency. It is just the beginning.

Identify and Prioritize Hazards

Although emergencies by definition are unforeseen happenings, these occurrences can sometimes be predicted with a frightening degree of accuracy. Before a plan to contain and control emergencies can be devised we must first identify the nature and type of emergency we are likely to encounter. By taking a long hard look at a particular department, conducting a thorough assessment and identifying areas of vulnerability the Planning Committee can make an educated guess as to the most likely emergencies facing the organization. Good sources of information when conducting a hazard identification assessment include:

- Health and safety committees
- Accident statistics
- Fire department inspections
- Insurance company surveys
- Measuring compliance to legislative requirements
- MAPAO check lists (see appendix of this guideline)

Figure 2 illustrates a list of Critical Elements/Sub Elements which historically have been contributing causes to emergency situations. This list has been provided to assist with your internal assessment of hazard identification.

Although the process of searching out, identifying and prioritizing to reduce potential hazards can be tedious work, it is by far the most effective activity related to prevention and must be given top priority. While the knee-jerk reaction type of activity such as emergency teams responding to repeat occurrences, or training without recognized objectives is sometimes tempting and more exciting, it does not meet the intent of overall emergency planning.

It's important to keep in mind emergency planning should be based on what is likely to happen and not events that are vaguely possible. Caution must be exercised to not become oriented towards situations that are imagined rather than realistic probabilities. To assist with prioritizing and perhaps identifying what situations pose the greater hazards, Figure 3, General Assessment Rating of Probable Emergencies, may be of assistance. In the event a more detailed assessment is desired, the Mines Accident Prevention Association provides a System Safety course which explores areas of risk, concerning hazards probability and hazard severity.

Establish Controls for Identified Hazards

The nature of the hazard will dictate the prevention required. Controls such as administrative, engineered, work practices, and personal protective equipment may be considered possible solutions. Once corrections have been made and control measures

EMERGENCY PREPAREDNESS

CRITICAL ELEMENTS / SUB ELEMENTS

(Figure 2)

FIRES	- Underground - Plant & Surface - Forest - Community - Vehicle (L.H.D.)	**EXPLOSIONS/ IMPLOSIONS**	- Dust - Chemicals - Blasting Agents - Petroleum - Propane - Gas line explosion	**EXPOSURES**	- Heat - Cold - Noise - Vibration - Radiation - Chemical - Biological
CHEMICAL SPILLS/LEAKS	- Oil Spills - Ruptured Gas Main - Containment of Spill - Off-site - On-site - Storage capabilities	**CIVIL DISTURBANCE**	- Strike - Protest - Bomb Threat - Kidnap/Extortion - Sabotage - Other Threat	**ENVIRONMENTAL**	- Air Pollution - Water Pollution - Soil Pollution - Waste Material (Disposal Problem)
INJURIES	- On site - Multiple - Fatality - Critical	**POWER FAILURE**	- Long Term electrical blackout - Short Term electrical blackout - Gas shortage - Water shortage	**CAVE IN**	- Underground - Surface Subsidence - Structural (Building)
NATURAL DISASTERS	- Flood - Hurricane - Earthquake - Storm - Dam Rupture - Mud or Land Slide	**WATER INRUSH**	- Diamond Drill Holes - Bulkheads - Crown Pillar - Tailings - Fractured Ground - Water Main Rupture	**TRANSPORTATION**	- Automobile Accident - Train Accident - Boat Accident - Airplane Accident - Hazardous Materials in Transit Accident
COMMUNITY EVACUATION	- Planned - Unplanned			**EXTRICATION**	- System / Resources

EMERGENCY PREPAREDNESS
GENERAL ASSESSMENT
RATING OF PROBABLE EMERGENCIES

(Figure 3)

How would you rate the probability of the following events occurring at your operation? Rate them in terms of the following six point scale by circling the appropriate number. Upon completing the assessment you will have a guideline for establishing priority items in the emergency plan.

0 - Not applicable to our operation
1 - Not probable
2 - Low probability
3 - Moderate probability
4 - High probability
5 - Nearly certain

FIRES

Plant and surface	0	1	2	3	4	5
Underground	0	1	2	3	4	5
Forest	0	1	2	3	4	5
Community	0	1	2	3	4	5
Vehicle	0	1	2	3	4	5

CHEMICAL SPILLS AND LEAKS

Oil Spill	0	1	2	3	4	5
Ruptured Gas Main	0	1	2	3	4	5
Containment of Spill	0	1	2	3	4	5
Off-Site	0	1	2	3	4	5
On-Site	0	1	2	3	4	5
Storage Capabilities	0	1	2	3	4	5

INJURIES

Fatal	0	1	2	3	4	5
Critical	0	1	2	3	4	5
Multiple	0	1	2	3	4	5
On-Site	0	1	2	3	4	5
Off-Site	0	1	2	3	4	5

NATURAL DISASTERS

Flood	0	1	2	3	4	5
Hurricane	0	1	2	3	4	5
Earthquake	0	1	2	3	4	5
Storm	0	1	2	3	4	5
Dam Rupture	0	1	2	3	4	5
Mud or Land Slide	0	1	2	3	4	5

TRANSPORTATION

Automobile	0	1	2	3	4	5
Train Accident	0	1	2	3	4	5
Boat Accident	0	1	2	3	4	5
Airplane Accident	0	1	2	3	4	5
Hazardous Materials in Transport Accidents	0	1	2	3	4	5

EXPLOSIONS / IMPLOSIONS

Dust	0	1	2	3	4	5
Blasting Agents	0	1	2	3	4	5
Propane	0	1	2	3	4	5
Chemicals	0	1	2	3	4	5
Pipeline Explosion	0	1	2	3	4	5

CIVIL DISTURBANCE

Strike	0	1	2	3	4	5
Protest	0	1	2	3	4	5
Bomb Threat	0	1	2	3	4	5
Kidnap / Extortion	0	1	2	3	4	5
Sabotage	0	1	2	3	4	5
Other Threat	0	1	2	3	4	5

POWER FAILURE

Long Term Electrical Blackout	0	1	2	3	4	5
Short Term Electrical Blackout	0	1	2	3	4	5
Gas Shortage	0	1	2	3	4	5
Water Shortage	0	1	2	3	4	5

WATER INRUSH

Diamond Drill Holes	0	1	2	3	4	5
Bulkheads	0	1	2	3	4	5
Crown Pillar	0	1	2	3	4	5
Tailings	0	1	2	3	4	5
Fractures	0	1	2	3	4	5
Water Main Rupture	0	1	2	3	4	5

COMMUNITY EVACUATION

Planned	0	1	2	3	4	5
Unplanned	0	1	2	3	4	5

EXPOSURES

Heat	0	1	2	3	4	5
Cold	0	1	2	3	4	5
Noise	0	1	2	3	4	5

Chemicals	0	1	2	3	4	5
Radiation	0	1	2	3	4	5
Biological	0	1	2	3	4	5
Human Disease	0	1	2	3	4	5

ENVIRONMENTAL

Air Pollution	0	1	2	3	4	5
Water Pollution	0	1	2	3	4	5
Soil Pollution	0	1	2	3	4	5
Waste Material (disposal problem)	0	1	2	3	4	5

CAVE IN

Underground	0	1	2	3	4	5
Surface Subsidence	0	1	2	3	4	5
Structural (buildings)	0	1	2	3	4	5

EXTRICATION

Systems	0	1	2	3	4	5
Resources	0	1	2	3	4	5

OTHER

_____	0	1	2	3	4	5
_____	0	1	2	3	4	5
_____	0	1	2	3	4	5
_____	0	1	2	3	4	5
_____	0	1	2	3	4	5
_____	0	1	2	3	4	5
_____	0	1	2	3	4	5

adopted many of the hazards identified in the initial assessment may no longer constitute a probable threat or emergency situation. However, for those items that may continue to pose a serious threat consideration must be given to developing contingency plans for their control. General methods of control include:

Engineering Controls (such as)

- Eliminating the hazard altogether
- Substituting a less hazardous process or equipment
- Isolation or enclosure
- Local exhaust
- Shielding
- Machinery or workplace redesign
- Shock or vibration mounting

Work Practices (such as)

- Worker education
- Training
- Housekeeping
- Proper storage
- Behavioural reinforcement
- Rules compliance
- Labelling

Administrative Controls (such as)

- Shielding of workers from hazardous exposures
- Installation of warning and alarm systems

Personal Protective Equipment

- Personal protective equipment should be used as a last resort

Emergency Plan

If the accident prevention program fails there must be a contingency plan to provide protection.

The primary function of an emergency plan is to ensure a prompt well organized response which will effectively protect the health and safety of immediate workers, the public and the environment. An appropriate plan will help accomplish the following:

- Provide leadership
- Reduce the potential for injury, property and environmental loss
- Assist response personnel to quickly determine and perform the proper remedial actions
- Reduce recovery times and losses
- Provide reassurance to employees, industry and the public

Although there is no one plan that will do all things for all operations there are generic components common to most emergency plans. They include:

- Control of hazards
- Declaring emergency / evacuation
- Notification of key personnel
- Assigning specific duties
- Emergency operations central control
- Search and rescue
- Removal or protection of vital equipment and records
- All clear and re-entry

Mutual Aid Agreement

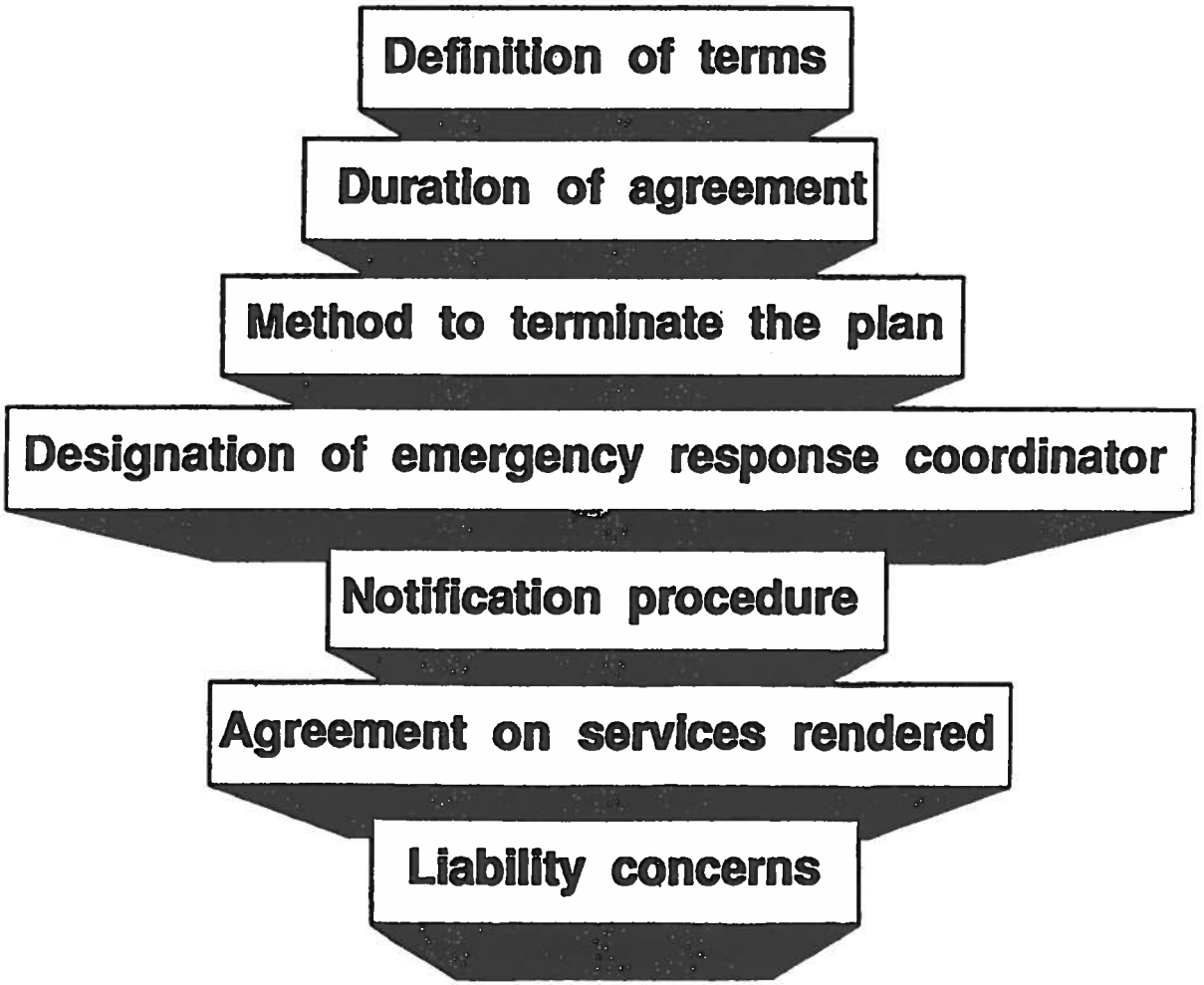
Early in the development stage it will likely become apparent to the planning committee that your company does not have all the resources to cope with all probable emergencies, nor will it be economically feasible to attain all equipment and resources. A mutual aid agreement is the logical solution. Items to be considered when preparing a mutual aid agreement include:

- Definition of terms
- Duration of agreement
- Method of terminating plan
- Designation of emergency response coordinator
- Procedure for the notification of the parties involved
- Agreement on the equipment and services that will be rendered
- Liability concerns

Figure 4 illustrates an example of a Reciprocal Mutual Aid Agreement. It applies primarily to Mine Rescue and may require adaptation to other services.

EMERGENCY PREPAREDNESS

MUTUAL AID AGREEMENT



EMERGENCY PREPAREDNESS

RECIPROCAL MUTUAL AID ASSISTANCE AGREEMENT

(Figure 4)

BETWEEN: (Name of Your Company)

AND: (Name of Other Company / Organization)

This agreement shall be effective as of the first day of (enter date) and shall continue in full force and effect until terminated in accordance with the provisions hereof.

The term "Provider" refers to the party supplying mutual aid assistance hereunder to the other party.

The term "Receiver" refers to the party requesting mutual aid assistance hereunder from the other party.

(Name of Your Company) and Name of Other Company / Organization agree to provide upon request, mutual aid assistance one to the other as needed in the event of an emergency, subject to the following conditions:

Mobilization and Operation

1. At least one (1) security person or other designated person employed by the Provider will be notified be a designated employee of the Receiver of the need for assistance.

   a) Annually, on the first day of (enter date), (Name of Your Company) and (Name of other Company / Organization will provide one another with a list of names and work/home phone numbers of designated employees who are authorized to request assistance or receive calls requesting assistance.

2. The Provider, upon receiving a request from a designated employee of the Receiver, will call out its rescue team and/or other services and equipment requested and arrange transportation of personnel and equipment to the Receiver's mine site.

3. A briefing officer appointed by the Provider will be in direct control of, and will be the only individual to issue instructions to, the Provider's rescue personnel.

4. The Provider's briefing officer will be briefed at the Receiver's mine site by the Receiver's supervisor in charge.

5. Any action or plans of action undertaken by the Provider's rescue personnel will be at the request of and approved by the Receiver's supervisor in charge.

6. The Provider's briefing officer may refuse to engage any of the Provider's personnel or services in any activity that the briefing officer considers unduly hazardous.

7. For remuneration purposes, the Provider's briefing officer is considered an active rescue team member supplied by the Provider.

8. Rescue teams shall normally consist of no less than five fully trained members.

   a) To be classified as fully trained, a team member must possess certificates or other current acknowledgements of training (List training requirements).

9. If requested, the Receiver will provide a guide as a fully trained member to be part of and accompany a Provider's team underground and on surface.

Remuneration and Benefits

10. The Provider's mine personnel's wages and benefits are to be paid by the Receiver from the time the first telephone call is made to request assistance until they have returned to the Provider's mine site and properly stored the equipment used in providing such assistance.

11. The Receiver will reimburse the Provider for all costs involving the transportation of personnel and material.

12. Remuneration of the Provider's rescue personnel will be according to the hourly wage in effect at the time of request for assistance. The rate at the time of request for assistance shall be supplied by the Provider.

13. For the purposes of remuneration and Workers' Compensation, the Provider's rescue personnel involved are considered employees of the Receiver and will be under the Receiver's W.C.B. coverage during the time period specified for wages and benefits in Item 10. Any accidents or injuries to the Provider's personnel while on the Receiver's premises are to be registered against the Receiver's Workers' Compensation Board firm number. In addition, the Receiver agrees to assume full responsibility and liability for any loss or damage to its property or the property of others resulting from or in any way connected with any rescue assistance or services provided to it hereunder, including any such loss or damage due directly or indirectly to the negligence of the Provider's personnel, and the Receiver agrees to indemnify and hold the Provider and such personnel harmless from and against all claims, demands, damages and actions arising out of or in any way related to such loss or damage.

14. The benefits and insurance coverages provided by the Receiver to the Provider's employees involved shall be equal to the benefits and coverages that are normally provided by the Provider to such employees.

15. Any expenses for which the Receiver is required to reimburse the Provider will be at cost only.

The Provider shall not be liable for any failure to perform its duties or obligations under this agreement if such failure is caused by an act or occurrence beyond its control.

This agreement may be terminated by either party at any time by giving to the other party, thirty days notice in writing of its intention to terminate this agreement.

Signed:

(Name of Your Company)

_____

Manager

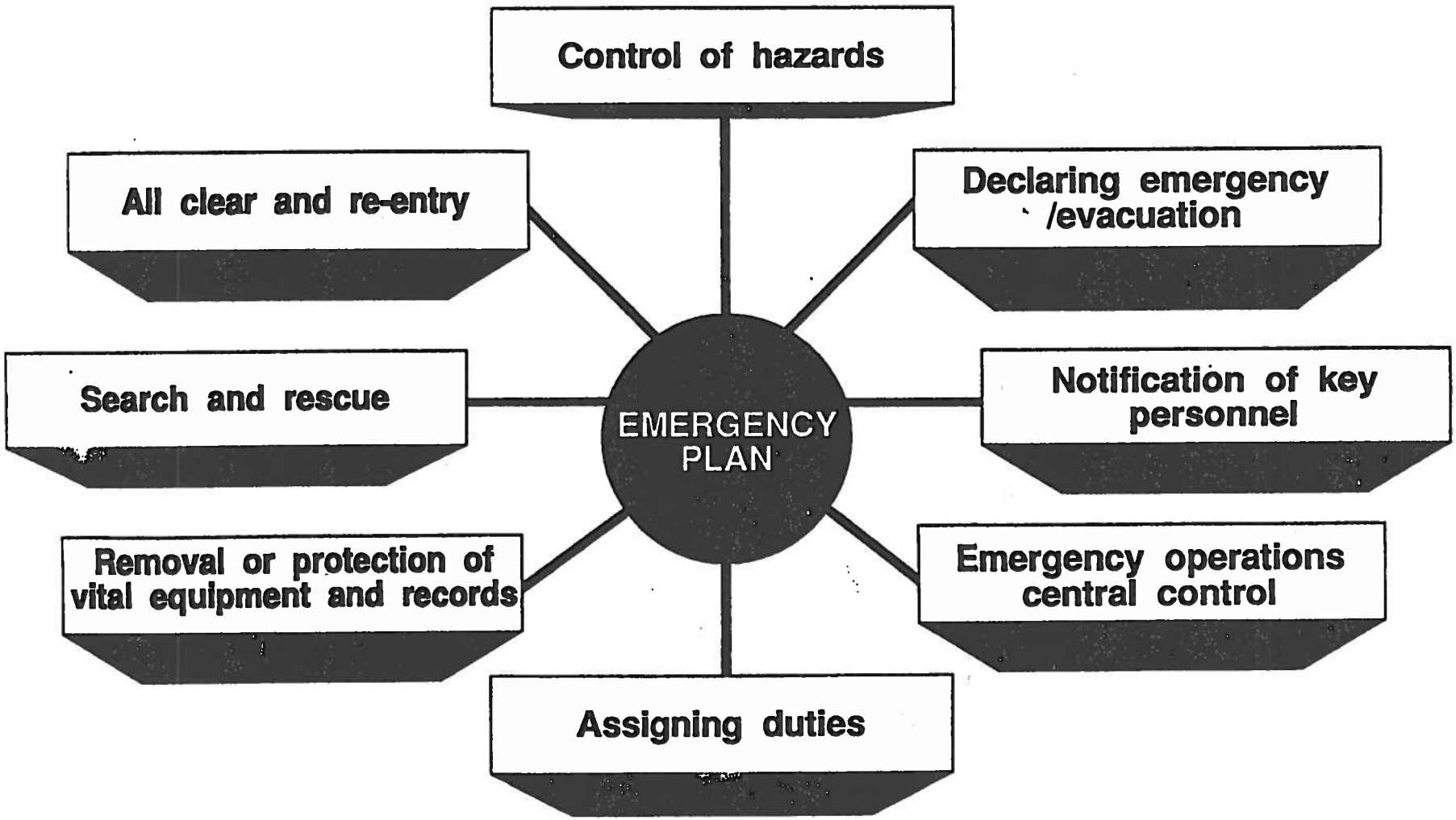
(Name of Other Company/Organization)

_____

Manager

EMERGENCY PREPAREDNESS

COMPONENTS OF AN EMERGENCY PLAN



EMERGENCY PREPAREDNESS

DECLARING THE EMERGENCY/EVACUATION

Declaring the Emergency

The decision to activate the warning system is normally made by the first person recognizing the hazard. In many situations valuable time would be lost by tracking down and notifying the supervisor in charge. Gas sensors may be effective in some areas to automatically activate the warning. The device used will vary with the circumstances.

No matter what system is used it is imperative all employees are aware of the various signals they may be subject to. The nature of the emergency may dictate the actions to be taken. For example the warning system for a toxic release should be different from a fire emergency - one may call for the evacuation of a building where the other may direct employees to stay indoors.

The warning system, be it detected through noise or odour, should be loud or pungent enough to be detected in all areas threatened by the emergency. In some noisy areas it may also be necessary to supplement the audible alarm with lights. Once the alert is given workers must evacuate to a designated safe area without delay.

How to Receive an Emergency Call

Emergency calls may be received for a variety of reasons, including:

- Reporting an accident and requesting assistance
- Threats of extortion, kidnapping, vandalism, etc...
- Messages or warnings that may turn out to be "crank calls"

All reports must be taken seriously. The surprise and confusion that may prevail when a call of this nature is received can be countered by adopting a few basic guidelines.

When receiving the emergency call you can expect the caller to be influenced by varying degrees of stress. Emotions can also interfere with the thought process which may result in the caller speaking in an excited manner that is difficult to understand. Try to calm him down so you can get the details of his report. Have prepared log books or information sheets with a menu of questions readily available. Whenever possible emergency calls should be routed to an individual or department which has been trained to receive the calls and can initiate the proper action.

- Listen carefully
- Be calm and courteous
- Log messages; don't rely on your memory
- Repeat the caller's message to ensure your understanding
- Keep caller on the line until you're satisfied you have the necessary details

Figure 5 illustrates additional guidelines to be considered when receiving an emergency call. Contained in the appendix are guidelines for receiving bomb, extortion and kidnap threats.

Evacuation

The evacuation is the most important part of the emergency plan since it addresses the safety of people. The plan must be carefully prepared and thoroughly understood by all employees. An annual review including a practice evacuation is necessary to ensure comprehension by all employees. The minimum frequency of exercising the evacuation plan is once per year for each operating shift.

The written evacuation plan should be posted on employee bulletin boards and include:

- Conditions when employees would evacuate
- A description of the evacuation signal that the employees will hear, see or smell
- A map indicating evacuation routes
- Gathering points or refuge stations where employees report. These predetermined locations may be outside or inside, as long as they are in an area isolated from smoke or toxic vapours. (A sub-committee report on refuge stations is available from the MAPAO, describing essential features of a designated safe area. Many of these guidelines will provide assistance in preparing office, building or other sites as designated safe areas.)
- An alternate plan of action in the event he/she becomes trapped and is unable to evacuate.
- A means of communication with central control
- A head count to ensure all employees are accounted for

When an emergency has involved the release of toxic substances it may be necessary for people in certain circumstances to pass through an affected area to reach the refuge station or safe area. Where this may occur there should be available a sufficient supply of suitable respirators or self contained breathing apparatus capable of providing protection for the time needed to get to a safe area.

Evacuation Routes

In some cases exit and escape from the emergency scene may be a fairly easy process; under slightly different circumstances it will be extremely difficult or impossible. All evacuation plans should be based on the premise that visitors and new employees will be on the property for the first time. These employees must be protected by ample and special direction signs, even though locations of exits might be a well established and known fact to regular employees.

Signs maps and emergency lighting should be located in strategic locations. Exits must be frequently checked to ensure ladderways, stairways and passageways are unobstructed and well illuminated. Exit doors, if locked, must not require the use of a key for operation from inside the building or escape raise. Glass doors or large windows near exits are a frequent source of accidents. Safety glass should be installed rather than plate glass. A public address system manned by a qualified person can be used to direct the evacuation and issue life saving instructions.

EMERGENCY PREPAREDNESS

HOW TO RECEIVE AN EMERGENCY CALL

(Figure 5)

- Listen carefully

- Be calm and courteous

- Log message; don't rely on your memory

- Repeat the caller's message to ensure your understanding

The Following Questions May Assist in Acquiring Necessary Information:

1. The caller's name?

2. What is the nature of the emergency? (Injury, Chemical Spill, Explosion, etc...)

3. Location of the emergency?

4. Any injuries?

5. Any property damage?

6. What are the immediate needs?

7. What resources or equipment is required?

8. Chemical Spill? Name of chemical?

Figure 6 illustrates a comprehensive checklist that may provide assistance in ensuring safe evacuation from the work place.

General Rules of Conduct

An orderly evacuation process can only be achieved through training and practice. General rules of conduct include:

- Keep your head - avoid panic and confusion
- Know the location of the exits - be sure you know the safest way out of the workplace, no matter where you are
- Know the location of nearby fire extinguishers - learn the proper way to use all types of extinguishers
- Know how to report an emergency - send in the alarm without delay
- Follow exit instructions - stay at your work place until signalled or instructed to leave; complete all emergency duties assigned to you and be ready to walk out rapidly according to plan
- Walk to your assigned exit or refuge station - maintain order and quiet; take each drill seriously - it may be the "real thing"

Accounting for All Personnel

The names, employment numbers and work places of all employees, contractors and visitors reporting to the refuge stations or designated gathering locations will be recorded by the supervisor or other person in charge. Figure 7 - Emergency Preparedness Head Count may assist with locating and accounting for all personnel on site.

The on-site Emergency Coordinator is normally responsible for coordinating the efforts of accounting for personnel by carrying out the following duties.

- Develop a list of employees, contractors and visitors on site from the check- in boards and the exit/egress check list at the main gate.
- Assign someone to man the telephones (normally Central Control or security), through which contact will be made with all refuge stations or assembly areas
- Note missing personnel and the area from which they are missing
- All search and rescue activities will be directed from Central Control according to the procedures described in the emergency plan.

Figure 8 illustrates a form that may be used for identifying the names of missing employees.

EMERGENCY PREPAREDNESS

EVACUATION CHECK LIST
(Figure 6)

Floor Plans/Mine Plans

- Are building floor plans indicating emergency exits posted on each floor?
- Are U/G mine layouts indicating emergency exits posted in refuge stations?
- Is the person looking at the plan properly oriented by an "X" (that is, "you are here now")?
- Are there provisions for directing occupants to refuge areas once they have reached the ground floor in a building?

Exit Doors/Escapeways

- Are all emergency exits properly identified?
- Do exit doors open easily and swing in the proper direction (open out)?
- Exit doors must not be blocked, chained or locked
- Are proper instructions posted at changes of direction en route to an emergency exit?
- Are stairwells equipped with proper handrails?
- Are stair treads and ladders in good condition?
- Are second escapement exits from an u/g mine located more than 30 meters from the main hoisting shaft or ramp; of sufficient size for easy passageway; provided with ladders from the deepest workings marked on all levels by signs and arrows; and made known to all u/g workers who may use the escapement route?
- Are they inspected monthly?
- Is the structure covering the u/g escapement at least one hour fire resistant?
- Are all exterior stairways (escapeways) from buildings constructed of metal or non-combustible material; provided with a landing at each storey; and connected directly with the interior of the building?
- Are these connecting doorways constructed of materials that provide a fire resistant rating of at least one hour?

Fire Doors

- Where practical, have fire doors been installed u/g to close off the shaft or main entrance to the mine from other workings?
- Have fire doors been installed u/g at all service garages?
- Have fire doors been installed u/g at oil storages where more than 500 litres of oil, grease or flammable liquid is stored?
- Do fire doors have at least one hour fire-resistant rating?

Emergency Lighting

- In the event of an electrical power failure in a building, is emergency lighting available? Is emergency lighting tested at least monthly?
- Are exit door signs in buildings adequately and reliably illuminated?

EMERGENCY PREPAREDNESS

HEAD COUNT

(Figure 7)

(Record of Persons in Refuge Stations or Other Designated Gathering Locations)

NAME	PAYROLL NO.	WORKPLACE	TIME OF ARRIVAL	SPECIALIZED TRAINING		
				MINE RESCUE	FIRST AID	OTHER

EMERGENCY PREPAREDNESS

MISSING EMPLOYEES

(Figure 8)

Date: _____ Roll Caller: _____

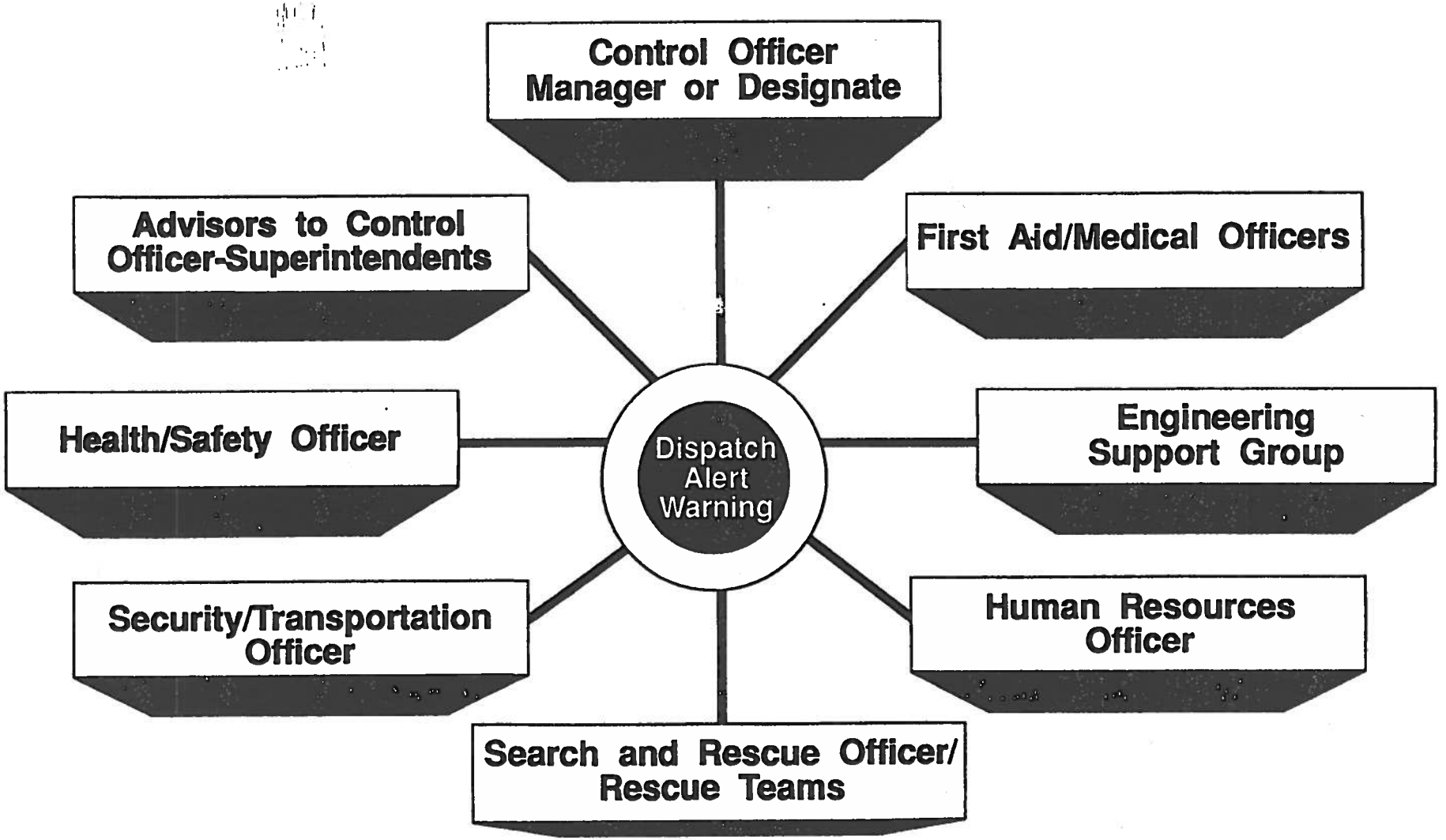
CHECK
Tag in Board
Exit/Egress Log Main Gate
Visitors Book
Work Permits

NAME	P.R. #	WORKPLACE	LAST SEEN AT

Signature: _____

EMERGENCY PREPAREDNESS

NOTIFICATION OF KEY PERSONNEL



EMERGENCY PREPAREDNESS

NOTIFICATION OF KEY PERSONNEL

In an emergency the faster a well organized response can be initiated, the faster order and control can be restored. It should be clearly defined in writing exactly who is to be notified and under what conditions the emergency alert process is started. This can be accomplished using flow charts and check lists indicating who should be involved, who has responsibility to notify these individuals and how the process can be accomplished (eg. telephones, paging systems, etc...).

In most cases, the initial notification of an emergency is to a pre-arranged telephone number (some companies provide stick-on decals to be placed inside employees hard hats indicating a first response number). In many instances security is the first to be notified. A decision will be made from information gathered as to the degree of response required. The key to fast effective response is a telephone-alert list indicating the numbers of all company personnel who may be involved in the Emergency Operations Control Group, including: management, rescue teams, municipal assistance, mutual aid groups and government agencies. The alert list should cite both home and office numbers and should be updated regularly (see figure 9-Alert List).

Some types of incidents can be handled readily by existing staff with available resources and will not require involvement of the Emergency Operations Control Group or specialized response teams. Other types of incidents beyond the capabilities of those at the scene will likely be considered more threatening and may require additional resources and expertise.

Phase 1 of the notification plan would normally be alerting personnel in the immediate area of the danger by way of an alarm such as a siren or stench gas. Evacuation and other pre-arranged response precautions would immediately be activated. First responders who arrive prior to trained teams must not attempt hazard control beyond their capabilities, but size up the emergency and report it accurately.

Phase 2 of the plan will include notification of internal resources including segments of the Emergency Operations Control Group or the entire group (see section of this manual concerning Assignment of Duties for more information on the Emergency Operations Control Group). This phase may also require back-up groups to be on stand-by if necessary.

Phase 3 - If the size, potential hazard or the seriousness of the emergency appears to be beyond the capabilities or responsibilities of the available in-house personnel (Emergency Operations Control Group), phase 3 of the notification plan will be engaged. External sources would be called in to offer advice, give support and provide resources to control and extinguish the emergency situation.

EMERGENCY PREPAREDNESS

ALERT LIST

(Figure 9)

Department	Name	Office Phone	Home Phone	Date/Time
EMERGENCY OPERATIONS CONTROL GROUP				
Mine Manager - Designate Mine Supt. - Designate Plant Supt. -Designate Safety Supt. - Designate Human Res. Supt. - Designate Electrical Frmn - Designate Mechanical Frmn - Designate				
SUPPORT GROUP				
Doctor Nurse Hospital Police Dept. Fire Dept. Ambulance				
SEARCH AND RESCUE TEAMS				
Rescue Officer - Designate Mine Rescue Teams-U/G - - - - -				

EMERGENCY PREPAREDNESS

ALERT LIST

(Figure 9 continued)

Department	Name	Office Phone	Home Phone	Date/Time
Emergency Response Teams - Surface - - - - - - - - - -				
GOVERNMENT AGENCIES				
Ministry of Labour - District Engineer Designate Ministry of Labour - Mine Rescue Officer Designate Ministry of Environment - District Engineer Designate Canadian Transportation Emergency Centre (T.D.G.) Canadian Centre for Occupational Health and Safety (Data Base)				
MUTUAL AID AGREEMENT				
Company /Organization - Contact Person Designate Supplier of Extrication Equipment - Contact Person Designate				

LEGAL REQUIREMENTS FOR REPORTING ACCIDENTS AND INCIDENTS

Accident / Incident Event :	Result	Legislation Act/Regulations	Requirement	In What Form	When	To Whom
Any Accident	***Medical attention required but worker not disabled***	Occupational Health and Safety Act CH 321 RSO 1980 Regulations 694 Section 20(3)	Record details of event	Written	Immediately	Retain records for review by Inspector
Any Accident	***First Aid only***	First Aid Regulation (950)	Record name, date, treatment or advice given to worker	Written	Immediately	Records on file
Worker reports ***Industrial Disease***	Employee may be eligible for Compensation	WCB Act CH 539 RSO 1980 Section 122	Report history of employee pertaining to causation of the industrial disease	Written Form 7	Within 72 hours	WCB
Recurrence of prior injury	Employee disabled from doing usual work	WCB Act CH 539 RSO 1980 Section 121	Report details of recurrent injury	Written Form 7 Form 156 Use original claim number	Within 72 hours	WCB Physician
Worker on Compensation returns to work	Employee no longer eligible for same level of compensation, if any		Report employee's return to work and details of pay and absence	Written Form 9	As soon as possible	WCB

LEGAL REQUIREMENTS FOR REPORTING ACCIDENTS AND INCIDENTS

Accident / Incident Event :	Result	Legislation Act/Regulation	Requirement	In What Form	When	To Whom
Unusual Occurrence involving	a) Failure of hoist, sheave, hoisting rope, shaft conveyance, shaft timber b) Flammable gas present in underground mine c) Spontaneous heating with evolution of gas d) Major failure or damage to equipment e) Rockburst > 5 tonnes uncontrolled, fall of ground > 50 tonnes f) Defective explosives g) Structural failure h) Dam or bulkhead failure i) Unexpected explosion j) Flood k) Fire	Occupational Health and Safety Act Section 27 Mining Regulation, section 20(5)	Report details of incident - what - when - damage - injuries MOL may investigate	Written	Within 2 days	MOL District office
Explosion or rupture of boiler, pressure vessel or plant	Death, injury or property damage	Boiler and Pressure Vessels Act CH 46 RSO 1980 CH 33 RSO 1983 Section 37	Report full details of incident	Most direct means available	Immediately	Chief Inspector of Ministry of Consumer and Commercial Relations
Accidental fire or explosion due to spills or leaks when handling gasoline		Gasoline Handling Act CH 185 RSO 1983 Ontario Regulation 439/83	Report occurrence and available details of event	Verbally or Written	Within 24 hours	Director of the Ministry of Consumer and Commercial Relations
Motor vehicle accident	Personal injuries or property damage in excess of $700.	Highway Traffic Act CH 198 RSO 1980 Section 173	Report occurrence, if **non-company vehicles involved or off company property**	Verbally	Immediately	Police

This is produced as a guide and MAPAO makes no guarantees as to the accuracy.
For exact wording, refer to respective act.

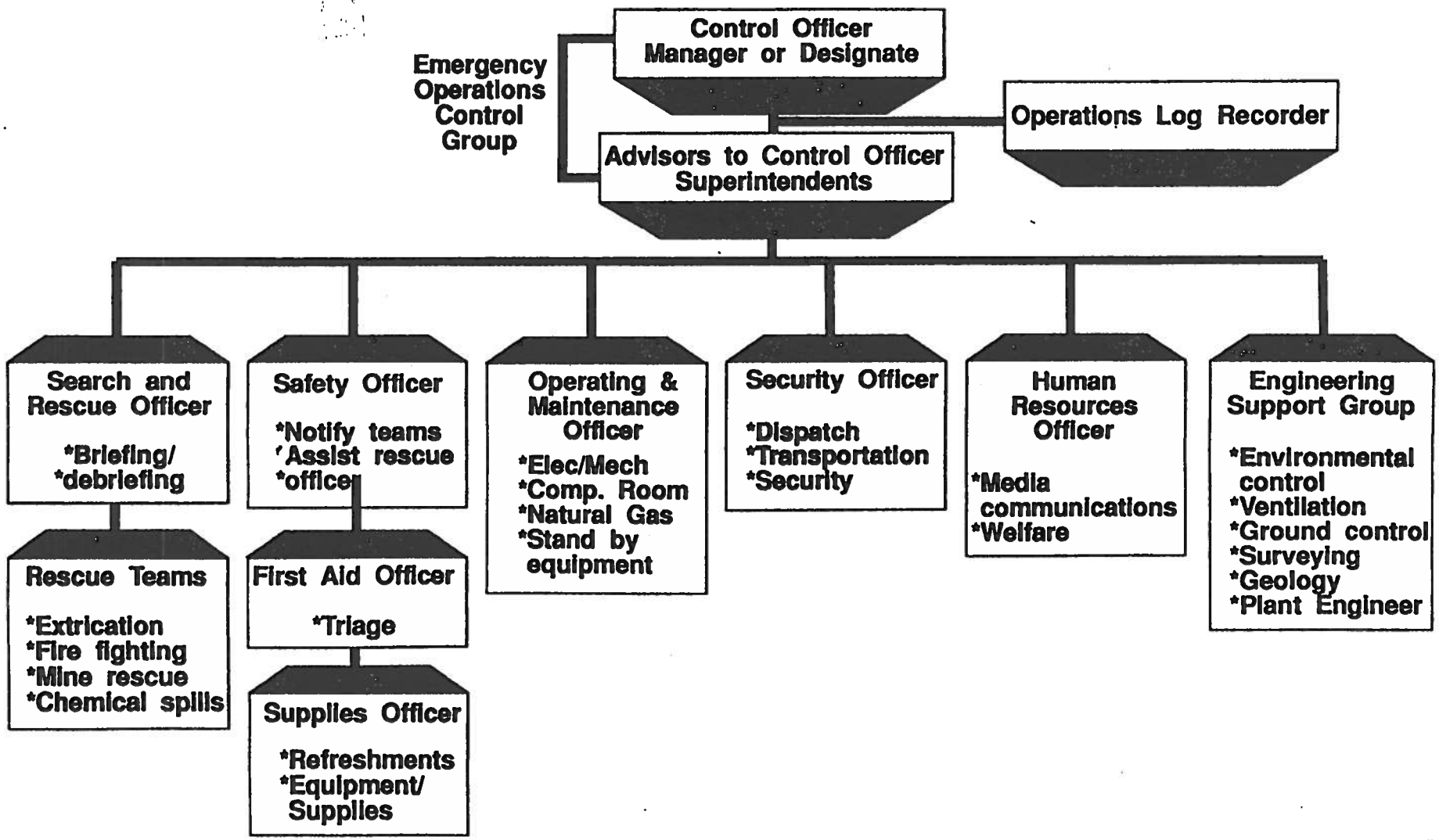
LEGAL REQUIREMENTS FOR REPORTING ACCIDENTS AND INCIDENTS

Accident / Incident Event :	Result	Legislation Act/Regulation	Requirement	In What Form	When	To Whom
Contaminants (see Act) released to environment in excess of legal limits	Injury, likely injury, or property damage even if no injury is likely	Environmental Protection Act CH 141 RSO 1980 Sections 12, 14	Report occurrence and available details of event	Most direct means available	Immediately	Ministry of the Environment
Spills of contaminants	Injury, likely injury or property damage	Section 80	Report occurrence and available details of event	Most direct means available	Immediately	Ministry of Environment plus local municipality
Pesticides released into environment	Injury, likely injury or likely property damage	Pesticides Act CH 376 RSO 1980 Section 22	Report occurrence and available details of the event	Most direct means available	Immediately	Director of the Ministry of Environment
Discharge emission or escape of dangerous goods (see Act) or an emission of ionizing radiation in excess of AEC limits during transport		Transportation of Dangerous Goods Act CH 36 RSC 1980 Section 17	Report occurrence and available details of the event	Most direct means available	Immediately	Inspector for the Ministry of Transport (Federal)

This is produced as a guide and MAPAO makes no guarantees as to the accuracy.
For exact wording, refer to respective act.

EMERGENCY PREPAREDNESS

EMERGENCY OPERATIONS ORGANIZATIONAL CHART



EMERGENCY PREPAREDNESS

EMERGENCY OPERATIONS CENTRAL CONTROL

Direction and control of the performance of any plan or operation are vital functions of management. Arrangements must be made to ensure that coordination of the plan, including the resource elements supporting the plan, is effectively managed and controlled. To achieve this, a focal point of management must be established.

Coordination of emergency activities should come from a well equipped and well protected Emergency Operations Central Control Room. When possible the command base should be pre-selected. The location must be relatively well protected from areas where emergencies are most likely to occur.

Occasionally it may be necessary for a mobile command centre to be established at the scene of the emergency. If this situation is likely, then the emergency plan should address this type of Central Control Base. Your plan should include: where the mobile command base will be located, who will establish it, what kind of equipment it will contain and other pertinent information.

Security must be maintained. The entrance to the Central Control base will normally be restricted to individuals listed on the Emergency Operations Organizational Chart.

It is essential that all communications related to the emergency be routed through the Central Control Base in order that the coordinator has current information on which to base his decisions.

We can't over-emphasize the importance of a well planned, well equipped Central Control Room. In order to ensure effective decision making and the transmitting of information to and from the accident scene, it should have the necessary equipment to plot the development of the incident and determine necessary action.

The function of the Emergency Operations Central Control may include the following:

- Assess the severity of the emergency
- Evaluate what has already been done
- Determine the future actions to be taken in order of priority
- Allocate resources to the area
- Determine what additional equipment is required and coordinate its movement to the scene
- Arrange for the prompt notification of the appropriate external agencies
- Maintain a close liaison with the person coordinating the operations at the scene
- Ensure that all the relayed instructions, forms, reports, telephone conversations and documentation are properly tabulated for filing as permanent record

Characteristics of an Emergency Central Control Room

Central control should have the following characteristics:

- Sufficient space and accommodations
- Security
- Auxiliary power supply
- Operational display boards
- Washrooms
- Communications systems ie. Fax machine

Specific Items and Equipment

Items and equipment to be readily available in central control may include:

- Emergency plans
- Emergency organizational chart (including position and function)
- Directory of mutual aid groups
- Directory of resources and equipment
- Directory of government agencies
- Emergency lighting
- Adequate internal telephone lines
- Adequate external telephone lines
- Telephone lines for transmitting only to prevent incoming calls from flooding the lines
- Directory of trained personnel
- Blackboards / easel
- Contingency plan to warn and evacuate community
- Material Safety Data Sheets
- A list of extrication equipment / resources
- Public address system or megaphones to communicate with people in safe areas
- Emergency back-up phones
- Information source for weather report, wind direction, etc...

Plans of underground operations indicating:

- Refuge stations
- Main ventilation fans
- Garage / shops
- Fuel bays / oil storages
- Electrical sub-stations
- Sprinkler system
- Escape routes
- Location of rescue equipment
- Ventilation flow
- Fuel lines
- Explosive storage
- Locations of all environmentally controlled materials ie. P.C.B.'s

Plans for surface operations indicating:

- Locations of hazardous materials
- Ventilation plans for buildings
- Location of fire hydrants
- Building plans
- Road systems and main gates
- Main shut off valves / switches for water, gas and hydro
- Location of rescue equipment
- Explosive magazines
- Pump houses
- Fire-breaks (for isolated areas)

Support material:

- Food and refreshment supplies ie. Coffee, pop, candy bars, potato chips, etc...

Central Control establishes a recognized point of authority responsible for the direction, control and coordination required during an emergency or disaster.

EMERGENCY PREPAREDNESS

ASSIGNMENT OF DUTIES

Confusion is often one of the hallmarks of an emergency. The worse the confusion the worse the emergency. An effective way to minimize confusion is to organize in advance an Emergency Operations Control Group. Each person should be allotted a role and responsibilities in keeping with his/her normal functions. Ideally their part in the emergency plan would be an extension of their everyday duties. Back-ups will have to be identified for every person in the group in order to compensate for shift rotation, vacation and absenteeism.

The following guidelines concerning roles and responsibilities of individuals and departments has been provided to assist with developing a site-specific program. Needless to say, this program will have to be altered and customized to meet the varying needs of different organizations.

Emergency Operations Control Group

The Emergency Operations Control Group would normally consist of a small gathering of senior management personnel representing most departments. The E.O.C.G. will direct all emergency/disaster operations from a pre-determined control centre. Their primary function is to advise the control officer (manager), and offer counsel in their particular area of expertise.

The following personnel or their designated alternates would typically make up the E.O.C.G.:

Mine manager (Control Officer)
Mine superintendent
Plant superintendent
Mill superintendent
Safety/security superintendent
Human resources superintendent
Mine engineer - Ventilation, Ground control, etc...
Electrical foreman
Mechanical foreman
Warehouse foreman

The following guidelines concerning roles and responsibilities of individuals and departments has been provided to assist with developing a site-specific program.

Duties of the Control Officer

The senior official in charge (mine manager or designate) will assume the responsibility of the Control Officer and will administer the overall plan of action and establish priorities.

His specific duties include:

- Along with the appropriate personnel from the E.O.C.G., he will determine the priorities and plan of action with the health and safety of all concerned being the prime concern.
- Make the final decision on all matters concerning the emergency or disaster (eg: changes to ventilation).
- Ensure the Operations Log Recorder is available and all events are properly recorded.
- Approve all information in regard to the emergency that will be released to the public, including media personnel.
- Monitor and check on conditions in the affected area.
- Notify union or health and safety representative.
- Notify Head Office if required.
- Coordinate the return of normal operations after all clear has been given.
- The Control Officer will authorize all movement in and out of the property except that of emergency vehicles.
- Issue request for mutual aid as required.
- In the event a community evacuation is necessary the control officer will alert the senior official in charge of the municipality emergency evacuation plan.
- Report to Government agencies - MOL, MOE, etc...
- Develop a list of all missing employees.

Duties of Operations Log Recorder

The operations log is intended to be a progressive record of events from the start of the incident through to its termination.

The following information should be recorded:

- The date and time the incident was reported, by whom, and the message.
- All subsequent developments as they occur.
- The arrival and departure of senior officials.
- Record all conferences and decisions made.
- Any other items he/she is instructed to record.
- Instructions given to officials during rescue operations and other activities.
- Ensure the control officer reads and initials the operations log book.
- At any time the Operations Log Recorder is unsure of any statement he/she is recording, the accuracy of the statement should be verified by the official in charge.

All logs and diaries relevant to the emergency must be forwarded to the Operations Log Recorder in order to assist him to prepare a final report. Figure 10 illustrates a typical Emergency Operations Log.

EMERGENCY PREPAREDNESS

EMERGENCY OPERATIONS LOG

(Figure 10)

AREA _____

PAGE _____ of _____
DATE _____
TIME STARTED _____
TIME COMPLETED _____

TIME	ACTIVITY	INITIATED / DIRECTED BY

Duties of the Emergency Operations Control Group

The advisers to the Control Officer will assemble at a designated Central Control or mobile command base as determined by the nature of the emergency. The command base should be located a suitable distance from the briefing and media rooms. In addition to advising the Control Officer, this group would also be responsible for coordinating specific segments of the overall plan such as: security, engineering support group and search and rescue.

General duties include:

- Advise the Control Officer of any necessary actions that are not covered in the emergency plan.
- Provide administrative and logistic support to all response teams involved.
- Take necessary actions to minimize the effects of an emergency or disaster.
- Be prepared to authorize the expenditures of resources and monetary funds which are required for the preservation of life and health.

Duties of Security Officer

The Security Officer will normally be under the immediate direction of the Safety Superintendent and would be responsible for the following duties:

- Seal off perimeters of the emergency or disaster site.
- Control traffic to facilitate the movement of emergency vehicles.
- Provide assistance to the Coroner.
- Act as liaison with municipal and provincial police.
- Provide security and prevent looting of evacuated areas.
- Maintain a log of all actions taken.

Duties of First Aid Officer

The Firs Aid Officer, upon being advised that an emergency has been declared, will be responsible for the following:

- Provide first aid to casualties.
- Notify a hospital of the emergency if necessary.
- Assist medical officer.
- Assist in casualty evacuation.
- Ensure sufficient first aid supplies are on hand.
- Provide emergency ambulance service.
- Establish triage facilities (Prioritize medical treatment for injured evacuees. Figure 12 illustrates a typical triage form).
- Maintain a log of all actions taken.

Duties of Dispatch Officer

The Dispatch Officer will normally be under the immediate direction of the Safety Superintendent and will be responsible for the following:

- Receive emergency calls.
- Obtain necessary information from the caller such as: his/her name and location, nature of the emergency, location of the emergency, is there a person injured, the assistance that is required, etc...
- The security dispatch officer on call will assume the responsibility of alerting the members of the E.O.C.G. or their designates.
- Request all security personnel to report to the security officer for briefing and assignment of duties.
- Once E.O.C.G. have been notified and arrived on site send no messages other than those approved by the control officer.
- Maintain a log of all messages sent and received.

Duties of Transportation Officer

The Transportation Officer will normally be under the immediate direction of the Security Officer and will be responsible for the following:

- Act as liaison with local transport companies; taxi firms, airplane services, railways, ambulance services, snow removal services, and boat services.
- Maintain a list of available vehicles that may be necessary to respond to various emergency situations.
- Maintain an adequate supply of fuel for all vehicles.
- Provide transportation for casualties, evacuees and special-care persons.
- Provide qualified personnel to operate vehicles.
- Maintain a log of all actions taken.

Duties of the Supplies Officer

The Supplies Officer will normally be under the immediate direction of the Safety Officer and would be responsible for the following:

- Provide an inventory of warehouse supplies and their location upon request.
- Maintain a record of all purchases from outside sources.
- Coordinate purchase and supply requirements.
- Provide refreshments as required.
- Maintain a log of all actions taken.

Duties of Communications Officer

The Communications Officer will be under the immediate direction of the Human Resources Superintendent and will be responsible for the following:

- Provide no information concerning the emergency to the news media or anyone else without approval from the Control Officer.
- Arrange for news media facilities.
- Prepare and constantly update background information.
- Establish a good rapport with the news media.
- Gather, process and disseminate information from the Control Officer.
- Prepare the post-emergency report.
- Provide a list of clergy assistance.
- Maintain a log of all activities and news releases.

Duties of Welfare Officer

The Welfare Officer will be under the immediate direction of the Human Resources Superintendent and will be responsible for the following:

- Develop a list of deceased, missing and injured persons, including names, addresses, occupations and telephone numbers.
- Arrange to direct relatives to a designated waiting area, and provide facilities for dealing with their inquiries.
- Keep media away from grieving and worried individuals and families.
- Request the assistance of church officials to assist those in need of comfort.
- Obtain details from next of kin when identification of bodies is required.
- Arrange financial or other assistance for dependents, as required.
- Notification of the next of kin should include the welfare officer and clergy representative.
- Maintain a log of all actions taken.

Duties of Safety Officer

The Safety Officer will be under the immediate direction of the Safety Superintendent and will be responsible for the following:

- Take photographs of the incident scene.
- Ensure first-aid ambulance capabilities.
- Provide assistance to Central Control Officer.
- Ensure the rescue crews are outfitted with the appropriate personal protective equipment. This is especially important when dealing with chemical spills.
- Assist search and rescue officer with the scheduling of rescue teams and technicians.
- Coordinate the call-out of rescue teams.
- Maintain a log of all actions taken.

Duties of Engineering Officer

The engineering officer or his delegates will represent several disciplines including ventilation, ground control, surveying, geology and environmental engineering. He/she will be responsible for the following:

- Provide technical advice to the Central Control Officer.
- Ensure maps/plans are maintained up-to-date in the central control room.
- Advise the E.O.C.G. when sustained damage to surface buildings or underground structures, including ground control, exceeds safe limits.
- Maintain a log of all actions taken.

Duties of Operation Maintenance Officer

The immediate duties of the Operations Maintenance Officer will concern the maintenance and necessary restoration activities for services and facilities such as compressor room, boiler room, natural gas, water and electricity. General duties will include:

- Act as liaison with the suppliers of gas, electricity and water.
- Provide maintenance and reconstruction as necessary.
- Maintain a log of all actions taken.

Duties of Search and Rescue Officer

The Search and Rescue Officer will be responsible for the following:

- Coordinate fire-fighting services with rescue operations.
- Coordinate mine rescue operations.
- Coordinate search for missing persons.
- Provide a list of distributors of specialized rescue equipment.
- Advise the control officer when mutual aid assistance is required.
- Coordinate clean up operations.
- Assist with training activities.
- Maintain a log of all actions taken.

Duties of Rescue Teams

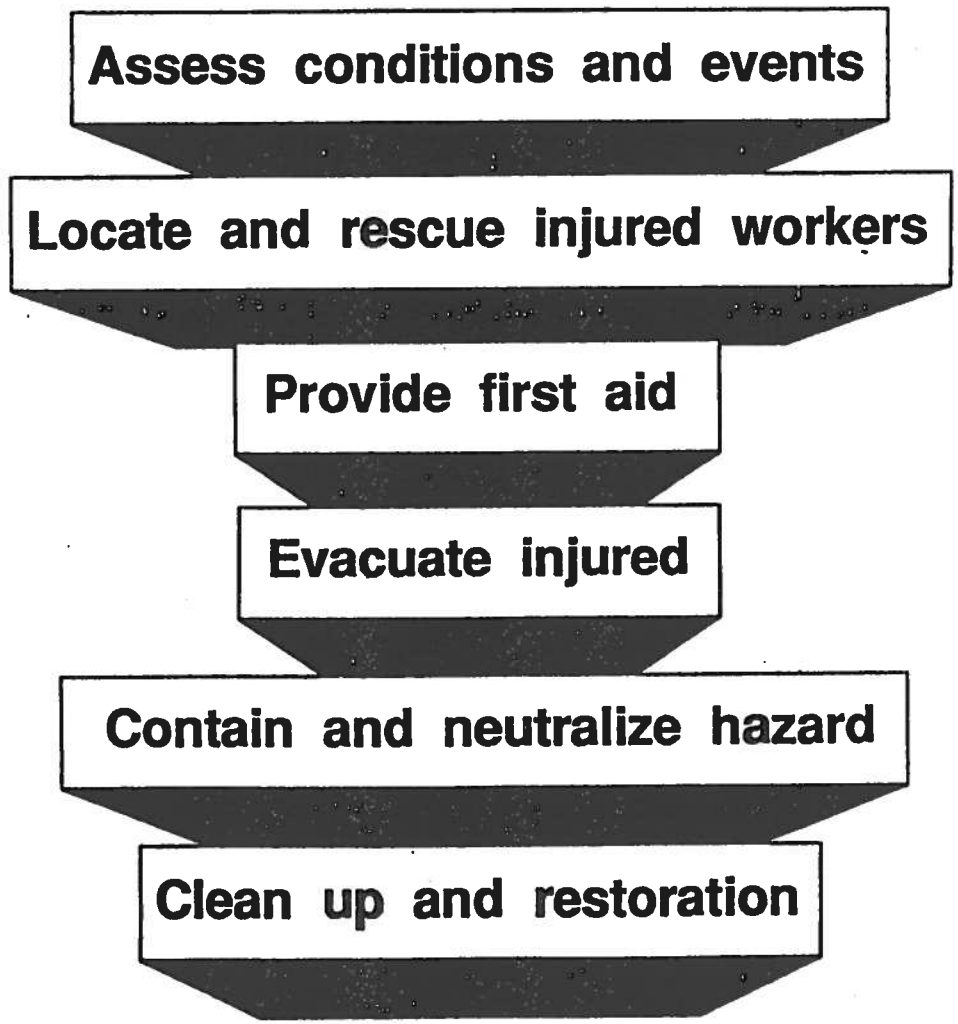
When an evacuation order is in effect, the appropriate search and rescue team, ie. U/G mine rescue team or surface emergency response team, will be responsible under the direction of the Search and Rescue Officer for the following:

- Report to the mine as soon as possible after being notified of the emergency.
- Report to pre-arranged briefing room.
- Report to the rescue officer.
- Field test any rescue equipment that is required.

- Assist with rescue and recovery operations.
- Summarize conditions observed and actions taken to the rescue officer.
- Return rescue gear to storage.
- Remain in the briefing room until dismissed by the rescue officer.

EMERGENCY PREPAREDNESS

SEARCH AND RESCUE ACTIVITIES



EMERGENCY PREPAREDNESS

SEARCH AND RESCUE

When the wail of a siren is heard throughout the surface operations of a mine or the pungent odour of "stench gas" is recognized underground the immediate reaction is universal. A surge of adrenalin explodes through your body and dread flashes briefly through your mind. Will the emergency response plan stand up to the test?

Once the emergency notification and call-out is given the search and rescue teams must be assembled as soon as possible, normally in a pre-arranged area.

General guidelines for search and rescue crews when called out to an emergency include:

- Members of the team must check in with security upon arrival at the mine.
- All members of the team should, if possible, report ready for work, fully equipped with suitable clothes, such as coveralls, boots, socks, hard hats, etc.
- No one should be permitted in irrespirable air without having been examined and found physically fit by a physician or, in the absence of a physician, by the most competent person present.
- No members should remain on one shift longer than six hours. During this period, no man should be permitted to remain under oxygen more than two hours except in extreme emergencies.
- No one should be permitted to take a second shift until he has had at least a six hours rest.
- Teams should be allowed 12 hours complete rest in every 24 hour day.
- Standby time "out of oxygen" should be no greater than six hours in each 24, in addition to the six hours under oxygen.
- Plain, well prepared food, not too rich in sugar and fats, should be eaten in moderation. No food, including candy, should be eaten one hour before taking active part in rescue and recovery work.
- Comfortable, clean sleeping quarters should be provided, where necessary, for members of rescue teams.

General guidelines for conducting a search are listed in Figure 11.

Search and Rescue Activities

While every emergency will be different, the basic response strategy will be the same. Normally, search and rescue are the emergency activities involved with:

- Assessing conditions and events that have occurred,
- Locating and rescuing trapped or injured persons,
- Providing immediate first aid for casualties,
- Evacuating the injured from potential or harmful exposures,
- Containing, dispersing and neutralizing the hazard, and
- Clean up and restoration.

EMERGENCY PREPAREDNESS

CONDUCTING A SEARCH

(Figure 11)

General guidelines to conduct the search in the safest and most efficient manner include:

- Minimum two-man teams for surface search and rescue.
- Minimum five-man teams for u/g search and rescue.
- Know where the nearest exits are.
- Move slowly to conserve air.
- Try to begin the search in the area of greatest danger or involvement (eg. top of buildings) in order that the search progresses toward safety and exits rather than away from them.
- Under some circumstances, it may be advisable to search on hands and knees if visibility is poor. The air may be cooler and clearer close to the ground.
- Completely search one room or work area before moving on to the next.
- Use guide lines (ropes) in all large buildings and dense smoke areas.
- Search underneath and behind all furniture and doors.
- Search all closets and shower stalls.
- Stop and listen for cries or other signs and signals.
- Shuffle the feet rather than walk and keep the weight of the body on the back foot. This provides the opportunity to test the floor ahead for safety before putting the weight on a weakened floor.
- Feel around with the back of the hand rather than the palm to protect against injury or grasping a hot wire from electrical shock.
- If it is necessary to go through a small space, remove the air pack and push it in front of you - do not remove the mask.
- If trapped, lie down in the safest location and conserve air. Bang on objects to signal other search teams.
- Leave the building if continuing on will create another casualty rather than help victims. A common symptom of collapse is lightheadedness.
- Bright flame indicates the presence of oxygen; murky, smoky flame indicates a lack of oxygen.
- Frequently contact the Search and Rescue Officer.

Assess Conditions and Events

Actions to be taken during the immediate assessment of conditions would include the monitoring of the area for atmospheric conditions and identification of any physical conditions or chemical releases that may pose immediate concern to the rescue team or the community. Once the initial findings have been reported, Central Control will provide logistic support in determining the future actions to be taken in order of priority. Where the release of hazardous materials is involved, virtually no action can be taken in any area until all leaking or spilled chemical materials have been positively identified non-toxic, non-explosive, non-flammable and non-violently reactive. Everyone, including all emergency responders other than properly equipped hazmat response and rescue teams, should be kept out of the area until this is done. The danger of even a small spill of highly toxic chemicals or volatile liquids or gases cannot be over-estimated. The initial assessment will also recognize what, if any, specialized equipment will be required.

Locate and Rescue Trapped or Injured Persons

Once all necessary precautions have been taken for the protection of the rescue team, the rescue of injured and extrication of trapped persons can begin. All emergency teams must be briefed as thoroughly as possible concerning the area they will be entering, with particular emphasis on all known hazards and the anticipated location of hazards. It will likely be of benefit for the in-house emergency services to liaise with government agencies such as fire departments, police departments, Ontario Mine Rescue and mutual aid services. The plan should make use of existing resources rather than stockpiling specialized items and equipment. The Ministry of Labour Mining Health and Safety Branch has prepared a Crisis Management Program which lists available search and rescue equipment for the province of Ontario.

Provide Immediate First Aid

The outcome of any serious injury in an accident may depend on the speed of the response in aid to the victim. An important function of the rescue team is the capability of providing immediate first aid for the casualties. First aid and rescue equipment must be readily available at all times. Central Control must be notified as to the number of casualties and the extent of the injuries. Emergency medical assistance should be requested as soon as possible, first aid must be initiated immediately in the event of a life-threatening injury. Caution must be taken to ensure the person providing assistance does not become a casualty from the same hazard that caused the victim's injury. There should be at least one pre-determined area where casualties can be taken. The availability of a complete list of material safety data sheets is a must when providing immediate care to casualties exposed to hazardous materials.

Evacuate the Injured

The company nurse or physician should have a plan for handling seriously injured casualties. Once casualties have been located and an assessment has been made to determine the extent of injuries and urgency of treatment, transport to appropriate medical facilities as soon as possible. The Emergency Medical Services Triage System provides an organized system of dealing with mass casualty incidents. See

Figure 12, Emergency Medical Services Triage Tag.

Contain and Neutralize the Hazard

The approach and techniques used to contain and neutralize the hazard will be determined by the immediate conditions and events. Central Control will play a vital role in providing information on hazard control and specific concerns the response teams may encounter. Containment may involve activities such as:

- fire-fighting
- isolation of power or stopping the flow of fuel or chemicals
- regulating fire doors and ventilation systems
- engaging emergency shut-down procedures
- clean up and monitor chemical spills
- remove ignition sources
- apply agents to chemical spills to dilute, neutralize and disperse
- use containment devices for chemical spills - valves, dykes and containers.

Clean up and Restoration

The actions taken to clean up, repair and recover from the effects of an emergency will vary with the results of the event. Obviously, pre-planning will be necessarily vague. Nevertheless, general plans should be prepared for the clean-up and restoration phase. Pre-planning considerations will include:

- develop a list of contractors and engineering firms who may be called upon to advise or assist with necessary activities
- prepare a list of names of equipment suppliers who may provide necessary resources in order to demolish and clear unsafe structures
- assess the quantity of spill or other destruction, impact on the environment, etc.
- proper disposal of debris and hazardous material
- an individual should be assigned the responsibility of reporting and communicating with the insurance company and regulatory agencies such as the MOL and MOE
- provincial or federal government assistance may be required
- no evidence should be removed before the inspection process has been completed

Emotional/Stress Related Problems

The restoration stage may include not only the physical restoration of property and process but also rebuilding emotionally. How people react to emergency situations is a very individual matter. Workers affected by the events will likely need reassuring and emotional support. In some cases professional counselling may be necessary.

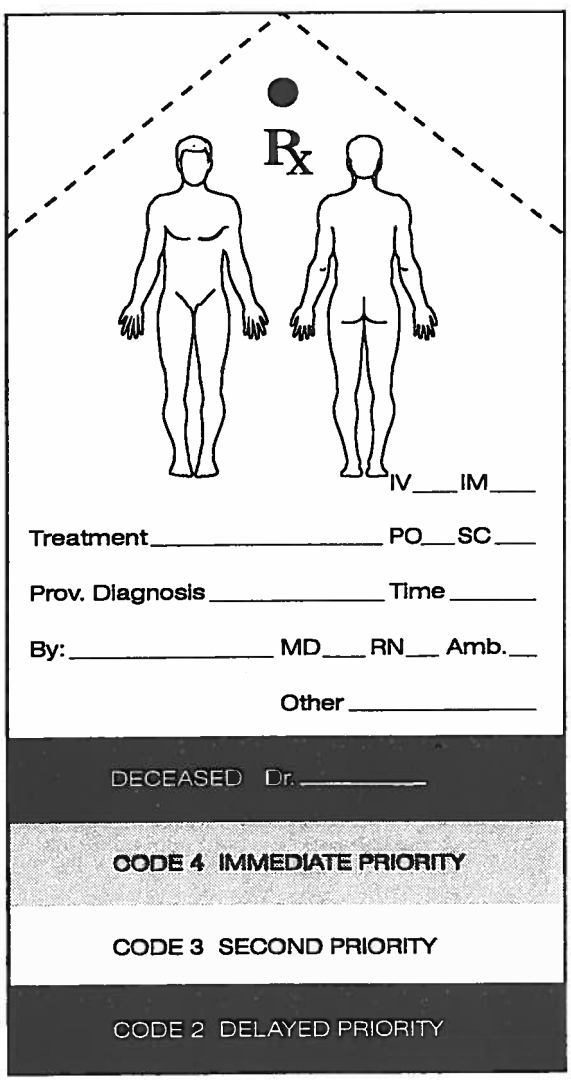
EMERGENCY PREPAREDNESS

Emergency Health Services Triage Tag

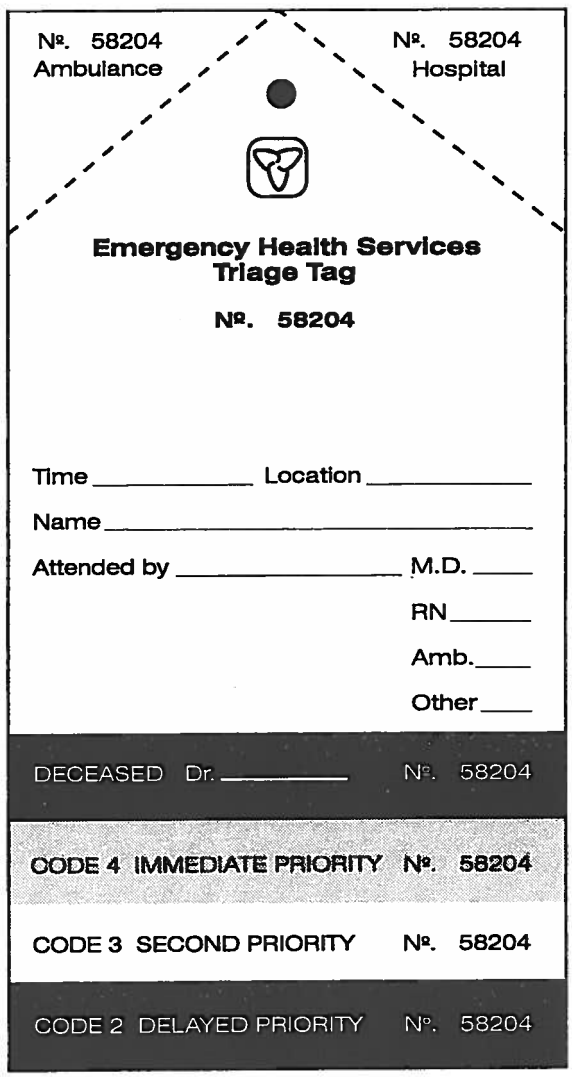
(Figure 12)

Handling mass casualty incidents should be a concern during the early planning stages of your response strategy. The triage system using colour coded tags provides a means of managing multiple casualty incidents. To be effective the triage system must be understood by all response agencies including the hospital. The triage tag indicated below has been adopted by the Emergency Health Services of Ontario.

BACK



FRONT



EMERGENCY PREPAREDNESS

SEARCH AND RESCUE

Triage

Triage is a medical term that refers to the sorting of victims and the allocation and priority of their treatment. A triage tag is a convenient method of forwarding information from the accident scene to the hospital concerning the initial assessment and first aid rendered. The basic principle of triage in a mass casualty incident is to do the most good for the most people utilizing all available resources.

The most important point concerning triage tags is that those people using them understand how to use them and what the tag means. The design of the tag is secondary. See Emergency Health Services Triage Tag -Figure 12.

How the Emergency Health Services Triage Tag Works

The tag is designed so that the attendant can tear off the portions of the tags that are not appropriate. The bottom portion of the tag that remains is the priority for treatment. Example: When triaging, you come across a code 4 patient (immediate priority) you would tear off the green and yellow portions of the tag (the two bottom sections of the tag), thus leaving the red portion as the bottom piece. This indicates the priority of treatment.

The tag is designed to reduce the amount of writing. Much of it enables the attendant to check off information. The front side of the tag is all you need concern yourself with during initial triage. Simply make a decision as to triage priority and tear off the appropriate colour. Note the time and place a check mark beside Amb. This is all that is necessary during initial triage.

Once all patients have been triaged and grouped together according to their priorities, treatment may begin. It is during this treatment stage that further documentation is necessary.

Record the name of the patient (if possible) on the front of the tag. The back of the tag enables you to record treatment information. This information is vital to hospitals receiving patients, especially if the patient has been administered any drug therapy at the scene. The back of the tag is designed to be a check-off system as much as possible. Any drugs administered should be recorded, indicating the amount and how it was administered. If time permits, indicate the area of injury on the figure drawing.

The two tear off numbered portions of the tag labelled Ambulance and Hospital are for those respective personnel. The ambulance tear-off portion is for the ambulance attendants transporting the casualty. The hospital tear-off portion is for documentation purposes when receiving the patient at hospital.

If a patient's condition changes the original will be removed and a new one put on.

EMERGENCY PREPAREDNESS

REMOVAL OR PROTECTION OF VITAL EQUIPMENT AND RECORDS

Vital equipment and records can be defined as "equipment and records which cannot be immediately replaced after disaster strikes, and which will be required to restore and rebuild the organization".

The main objective for the removal or protection of vital equipment and records program is to ensure their preservation from the effects of a disaster. If properly developed and executed this plan will contribute significantly to the rapid mitigation and restoration of normal activities.

The records and equipment selected for inclusion in this program will represent essential items which will provide direction for at least partial restoration of each department within the organization.

The plan should identify all vital equipment and records, their location, and steps to be taken to protect them.

The process of separating these essential items from those that are merely desirable will be one of the most difficult tasks in this process.

Removal or Protection of Essential Records

To ensure essential records are readily available a master inventory must be established. How much is too much? Generally essential records should comprise no more than 3-4% of the total volume of records held by an organization. People tend to over-emphasize the importance and value of the tasks they perform; this can result in too many records being considered essential. On the other hand, the records selected must be sufficiently complete that a person relatively unfamiliar with the function can carry out that function effectively.

Selection Criteria for Essential Records

It's important the same selection criteria is used for each Department within the organization. The following general rules apply to all circumstances.

- Select records on the basis that someone else must use them to reconstruct operations.
- Records should be complete, concise, clear and easy to understand.
- Records chosen should be essential, not merely desirable.
- Verify that the records are not duplicated in other departments.
- Choose the most concise form of record available (summary records such as personal history cards or general ledgers, pictorial records such as maps). On the following vital records report form is a sample list of items to be considered as essential records. Quick access and availability of these records will be crucial in the event of an emergency or restoration activities following a disaster.

Storage and Protection of Essential Records

Following the selection of vital records they should now be adequately protected. The best protection is through dispersal, storing them at another and preferably low-risk site. Having a complete set of documents at one location would certainly make the logistics of retrieval an easier task.

The size, type and number of documents to be stored will to a large degree determine both the facility and the media to be used. Microfilm which was once a popular choice is quickly being replace by electronic systems such as computer back-up storage. Photocopies provide the advantage of quick retrieval without the use of read-out equipment. The method best suited to the duplication of a specific type of record will often be determined by the speed in which the document must be retrieved.

Where possible, each record should be maintained in a file jacket that identifies the department and contents. The storage area itself should be secure, preferably without windows and with an entrance that is kept locked at all times. No smoking should be allowed in the storage room. A senior supervisor would be responsible for the security to ensure keys and lock combinations are carefully controlled.

Protection of Vital Equipment and Records

An effective means of protecting vital equipment and records from the threat of fire can be achieved through the installation of an automatic sprinkler system. The system includes a network of pipes with attached sprinkler nozzles at pre-determined intervals along the network.

Although water is a popular choice for suppression other suppression systems may be appropriate for special situations, such as high-hazard areas (eg. where flammable liquids are used), or electrically energized equipment. Special suppression systems appropriate for these types of situations include, halon, carbon dioxide, dry chemical and foam systems.

Suppression systems can be either total flooding or local application. A total flooding system discharges extinguishing agent throughout an entire enclosed area and may be used to protect large spaces. Local application systems are designed to protect specific pieces of equipment or small areas, with agents aimed directly at the expected location of the fire.

Your local fire department can be of assistance in recommending the location and type of suppression system to be used.

EMERGENCY PREPAREDNESS

VITAL RECORDS REPORT

Type of Vital Records	Reason for Selection	Method of Duplication	Frequency of Amendment	Location
Production Records				
Engineering Drawings	To Re-establish Basic Engineering Data	Blue Prints	Weekly	Mine Site Vault
Production Schedules and Statistics	To Re-establish Production Quotas from various U/G Levels	Photocopies	Monthly	Mine Site Vault
Maintenance and Production Contracts	To Re-establish Contractual Obligations and Agreements	Micro Film	Monthly	Mine Site Vault and Toronto Office
Ore Reserve Maps	To Re-establish Mining Sequence	Mine Layouts	Monthly	Mine Site Vault
Construction Drawings	To Re-establish Construction Work or Repair Damaged Facilities	Blue Print	As Required	Mine Site Vault
Mine 100 Scale Plans	To Re-establish Mining Operations	Mine Layouts	Monthly	

EMERGENCY PREPAREDNESS

VITAL RECORDS REPORT

Type of Vital Records	Reason for Selection	Method of Duplication	Frequency of Amendment	Location
Mine 20 Scale Plans	To Re-establish Mining Operations	Mine Layouts	Monthly	Mine Site Vault
Geological Plans	To Re-establish Diamond Drilling Operations	Mine Layouts	As Required	Mine Site Vault
Survey Station Data	To Re-establish Production Planning	Mine Layouts	Weekly	Mine Site Vault
Building Blue Prints and Drawings	To Re-build Structures or Aid with Evacuation	Blue Prints	As Required	Mine Site Vault
Instrumentation Drawings	To Re-establish Maintenance Schedules and Re-building Process	Blue Prints	Monthly	Mine Site Vault
Equipment Specifications	To Ensure Adequate Standards During Rehabilitation when Purchasing New Equipment	Computer Back-up Tape	As Required	Mine Site Vault and Toronto Office

EMERGENCY PREPAREDNESS

VITAL RECORDS REPORT

Type of Vital Records	Reason for Selection	Method of Duplication	Frequency of Amendment	Location
Corporate Records				
Minutes of Directors Meetings	To retain official corporate policy as determined by the Board of Directors	Photocopies	Following every Board of Directors meeting	Mine Vault and Toronto Office
Listings of Property owned and Leases Held	To establish ownership of company property	Photocopies	As Required	Mine Vault and Toronto Office
Listing of Patents held by Company	To establish records of all patents	Micro Film	As Required	Mine Vault and Toronto Office
Accounting Records				
Payroll Records	Retain records of payroll information	Computer Back-Up Tape	Bi-monthly	Mine Vault and Toronto Office
Banking Records	To establish the company's daily cash position	Computer Back-Up Tape	Daily	Mine Vault and Toronto Office
Accounts Receivable and Payable	To reconstruct outstanding accounts receivable and payable	Computer Back-Up Tape	Daily	Mine Vault

EMERGENCY PREPAREDNESS

VITAL RECORDS REPORT

Type of Vital Record	*Reason for Selection*	*Method of Duplication*	*Frequency of Amendment*	*Location*

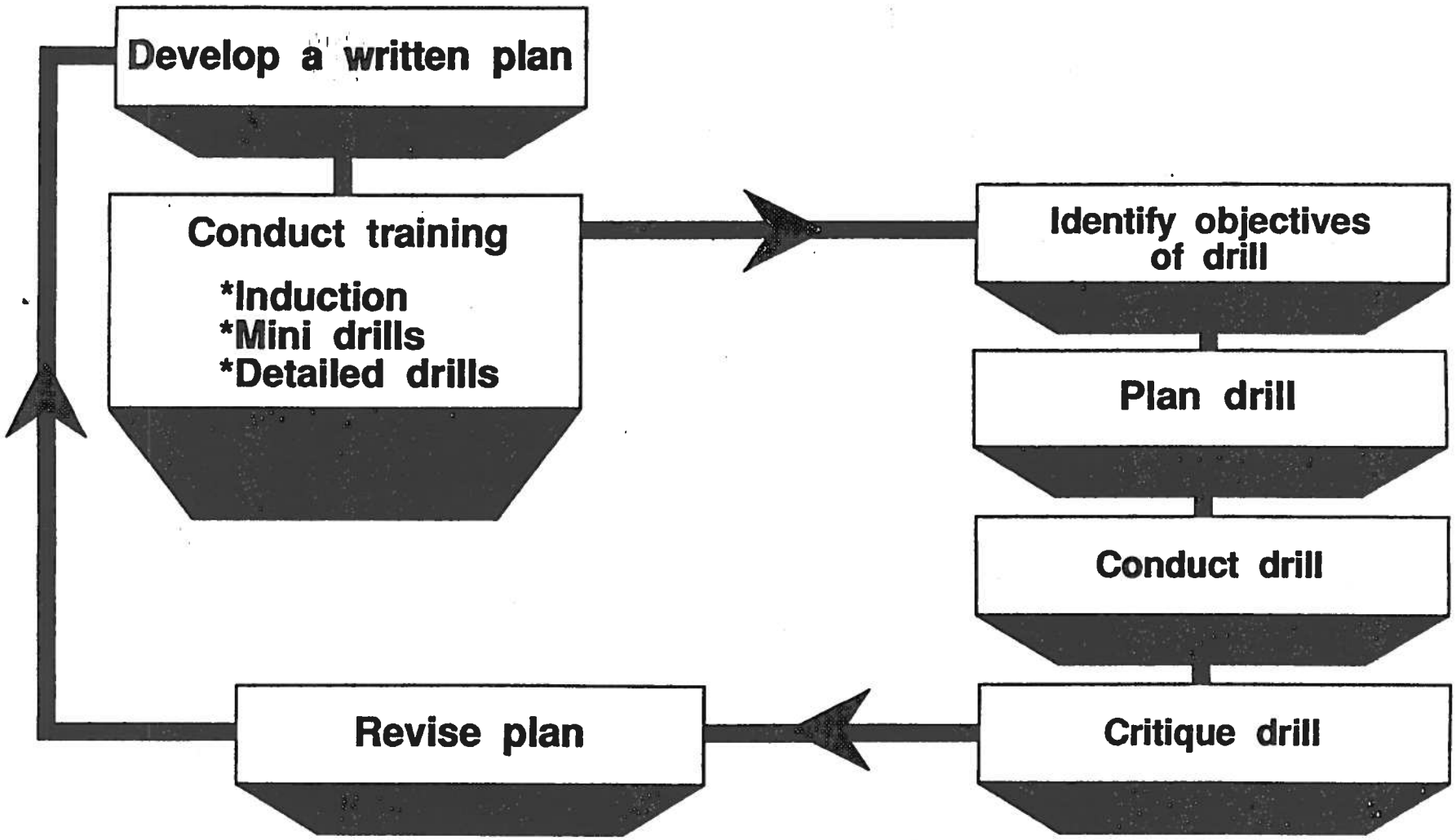
EMERGENCY PREPAREDNESS

ALL CLEAR AND RE-ENTRY

The Emergency Control Officer will not signal the all clear or end of the emergency until he is satisfied that all conditions are under control and there is no further danger. Even when the all clear has been given care must be taken when re-entering dangerous areas. A thorough examination will be necessary to ensure no further danger exists.

EMERGENCY PREPAREDNESS

TRAINING CYCLE



EMERGENCY PREPAREDNESS

TRAINING DRILLS

Training drills can be compared to practising birth control - to be effective, they should be practised consistently, correctly and by all members responsible for the procedure. Failure to do any of the above can have undesired consequences.

The attached flow diagram illustrates an effective strategy to address key elements of the training cycle.

Develop a Written Plan

Once probable emergency situations have been identified, a written procedure must be developed, describing necessary actions to be initiated to eliminate or prevent the events from escalating. The procedures will identify individual responsibilities and the tasks to be carried out. Visitors, contractors and the drivers of delivery trucks will also have to be considered when preparing the written plan.

Conduct Training

Training for emergency preparedness can be considered a three phase program.

- Induction
- Mini Drills
- Detailed Drills

Induction

The initial phase is primarily educational and could be presented as a verbal talk-through or walk-through drill. This initial process is ideally done during a new or transferred employee induction program. The purpose is to ensure a general understanding of specific aspects of the emergency plan that may involve or affect that individual. Figure 13 illustrates a typical list of items to be considered during the induction process.

Mini Drills

The second phase of the training program involves a series of mini drills, testing various small specific elements of the overall plan. For example the first actual physical drill may involve activities such as:

- Test of the alert/evacuation procedure
- Test of emergency respirator equipment
- Practise response action to electrical power failure

The purpose of this type of drill is to identify deficiencies that may seem trivial but could be critical in the event of a real emergency. Examples include:

EMERGENCY PREPAREDNESS

INITIAL TRAINING

(Figure 13)

The induction process for new or transferred employees offers management an opportunity to promote basic awareness of site-specific emergency preparedness. Equipment, procedures and facilities to be considered during initial training may include:

EQUIPMENT, PROCEDURE, FACILITY	INST. INIT.	EMP. INIT.	DATE
Employee check in/out board			
Review emergency procedure			
Review evacuation plan			
Evacuation signal or alarm system			
How and when to activate the alarm system			
Escapeway and exit locations			
Refuge stations or gathering site locations			
Location and use of respirators, self rescuers and and S.C.B.A.			
Refuge station or gathering site procedures			
Location and use of eye wash stations and deluge showers			
W.H.M.I.S. Training			
Location and use of Material Safety Data Sheet			
Location and use of fire fighting equipment			
Location of first aid room			
First aid training			
Location of rescue equipment ie. stretchers			
Emergency telephone numbers			
Locations of emergency shut-off valves			

- Sealing clay missing at refuge stations doors
- Fire extinguisher discharged
- Sprinkler heads painted over
- Outside fire hydrants frozen during winter months
- Missing nozzles on fire hoses
- Employees unfamiliar with respirators or self-contained breathing apparatus

These small things can cause a minor event to escalate into a disaster.

Detailed Drill

Phase three involves more elaborate drills which usually test multiple elements of the emergency plan simultaneously. They may involve persons from more than one department and perhaps employees from other companies and mutual aid organizations. The drill would include activities such as:

- Activating the emergency plan
- Search and rescue activities
- Fire fighting
- Chemical spills clean up

In some cases it may be wise to extend training beyond the plant gates, particularly if you don't have adequate numbers or expertise and must rely on municipal resources. A meeting with the area fire department, ambulance service and police department to familiarize them with your facility and what typical hazards exist may well be worthwhile. They should also be provided with a layout of the plant, including water mains, fire hydrants, hazardous materials, etc...

Identify Specific Objectives of the Drill

Every drill without exception offers opportunities for improvement, constructive criticism and verification of satisfactory performance levels of activities such as:

- Adequacy of training
- Equipment capabilities
- Personnel capabilities
- Exposure of unrealistic expectations or assumptions
- Evaluation of the written emergency procedure
- The value of inspections and preventative maintenance programs

Planning the Emergency Drill

When planning a drill to test your emergency plan there will likely be many considerations such as:

- What exactly are we trying to address?
- Who are we trying to test and how large a group of people are going to be involved?
- What time of day will the drill take place?

EMERGENCY PREPAREDNESS

INITIAL TRAINING

(Figure 13)

The induction process for new or transferred employees offers management an opportunity to promote basic awareness of site-specific emergency preparedness. Equipment, procedures and facilities to be considered during initial training may include:

EQUIPMENT, PROCEDURE, FACILITY	INST. INIT.	EMP. INIT.	DATE
Employee check in/out board			
Review emergency procedure			
Review evacuation plan			
Evacuation signal or alarm system			
How and when to activate the alarm system			
Escapeway and exit locations			
Refuge stations or gathering site locations			
Location and use of respirators, self rescuers and and S.C.B.A.			
Refuge station or gathering site procedures			
Location and use of eye wash stations and deluge showers			
W.H.M.I.S. Training			
Location and use of Material Safety Data Sheet			
Location and use of fire fighting equipment			
Location of first aid room			
First aid training			
Location of rescue equipment ie. stretchers			
Emergency telephone numbers			
Locations of emergency shut-off valves			

- Sealing clay missing at refuge stations doors
- Fire extinguisher discharged
- Sprinkler heads painted over
- Outside fire hydrants frozen during winter months
- Missing nozzles on fire hoses
- Employees unfamiliar with respirators or self-contained breathing apparatus

These small things can cause a minor event to escalate into a disaster.

Detailed Drill

Phase three involves more elaborate drills which usually test multiple elements of the emergency plan simultaneously. They may involve persons from more than one department and perhaps employees from other companies and mutual aid organizations. The drill would include activities such as:

- Activating the emergency plan
- Search and rescue activities
- Fire fighting
- Chemical spills clean up

In some cases it may be wise to extend training beyond the plant gates, particularly if you don't have adequate numbers or expertise and must rely on municipal resources. A meeting with the area fire department, ambulance service and police department to familiarize them with your facility and what typical hazards exist may well be worthwhile. They should also be provided with a layout of the plant, including water mains, fire hydrants, hazardous materials, etc...

Identify Specific Objectives of the Drill

Every drill without exception offers opportunities for improvement, constructive criticism and verification of satisfactory performance levels of activities such as:

- Adequacy of training
- Equipment capabilities
- Personnel capabilities
- Exposure of unrealistic expectations or assumptions
- Evaluation of the written emergency procedure
- The value of inspections and preventative maintenance programs

Planning the Emergency Drill

When planning a drill to test your emergency plan there will likely be many considerations such as:

- What exactly are we trying to address?
- Who are we trying to test and how large a group of people are going to be involved?
- What time of day will the drill take place?

- Who is assumed to be present and expected to respond?
- Will there be judges or evaluators? Who will they be?
- Will outsiders be invited to observe?
- What drill supplies will be needed and who will be responsible to see they are available?
- Will script cards be used?
- Will the drill be a complete surprise? Who needs to know?

Conduct the Drill

An emergency plan that is never tested is next to worthless. Only by exercising the plan will an organization discover if what is proposed in theory will work in practice. Every company should test its over all plan at least once a year for each operating shift. Critical portions of the plan, such as emergency power or remote alarm systems should be tested separately and more frequently. Every exercise should be followed immediately by a debriefing session to bring to light areas of the plan needing improvement.

It may be necessary to test some alarms and sirens on a regular basis, not only to ensure they are in good working order but also to familiarize employees with the various warnings that may be sounded. To ensure there is no confusion or a false alarm situation perceived, test alarms should be scheduled on a regular frequency and limited duration. For example, the emergency alarm to evacuate from a mill may be a continuous siren. A test alarm would be no longer than a five second horn and would be sounded every Friday at 2:00 p.m. Anything longer than the five second alarm would be considered an actual emergency.

Critique the Drill

A formal critique should be conducted as soon as possible, preferably immediately following the drill. Recognition should be extended to those individuals who performed well. Deficiencies must be described as specifically as possible.

Revise the Plan

Items requiring action should be assigned a target date and a person responsible to follow up. The written plan will also have to be revised when deficiencies are discovered or as the process changes.

Scheduling Training Drills and Equipment Tests

Ideally, there should be a formal schedule in place for the testing of all alarm systems including equipment tests and training drills. Figure 14 illustrates a schedule for equipment tests. Figure 15 illustrates a schedule for training drills.

A sustained program emphasizing planning, practice, discipline and teamwork are necessary elements of well balanced training drills. Experience has proven repeatedly that every drill is a good drill; every drill is beneficial and presents opportunities to demonstrate strengths and expose areas that require improvement.

EMERGENCY PREPAREDNESS

SCHEDULE FOR EQUIPMENT TESTS
(Figure 14)

EQUIPMENT TEST	MON	QUA.	ANN.
Emergency lighting			
Smoke detectors			
Heat detectors			
Remote alarm to Contact Fire Department and Security Service			
Emergency Alarms			
Self-contained breathing apparatus			
Communications Systems			
Emergency Power			
Emergency Telephone Systems			
First Aid Rescue Equipment			
Ambulance / Emergency Vehicle			
Fire Truck			
Fire Hydrants			
Fire Pumps			
Fire Fighting Equipment			
Respirators			
Hazardous Materials Detection Systems ie. Hydrogen Sulphide and Chlorine Detectors			
Combustible Gas Detectors			
Rescue Equipment			
Personal Protective Equipment			
Uninterrupted Power Supplies			
Extrication Equipment			

EMERGENCY PREPAREDNESS

SCHEDULE FOR TRAINING DRILLS

(Figure 15)

TRAINING DRILLS	MON	QUA.	ANN.
Evacuation and Head Count			
Search and Rescue			
Fire Fighting Drills			
Equipment and Process			
Shut-Down Procedures			
Chemical Spill Procedures			
Environmental Leakage Procedures			
Mutual Aid Response			
Regulatory Agency Response			
Off-Site Notification of Key Personnel			
On-Site Notification of Key Personnel			
Loss of Critical Utilities ie. Electricity			
Treatment of Casualties			
Liaison with Fire Department, Police, Medical , Ambulance, Hospital, including Provision of Information on Process/ Material used/Storage			
Special Problems - Multi-level of Operations, Egress From and Number of People Involved			

EMERGENCY PREPAREDNESS

MEDIA COMMUNICATION

An emergency invites media scrutiny. In some instances the repercussions of the way it's reported have been more tragic than the accident itself.

For better or worse, public perceptions are largely shaped by the media, and human nature being what it is, perceptions have a tendency to prevail over facts.

Be assured, the story will be told. If the mine manager won't talk, policemen, firemen and employees will. Health, safety and the environment are often front page issues and the competition to report these issues is sometimes fierce.

To ensure the accuracy of the essential facts, not to mention diffusing possible hysteria, an overall emergency response plan must include a comprehensive media communication strategy.

An honest straightforward approach will earn both media and public respect. Impart the facts clearly and ensure that everyone is told the same story. Discrepancies will only fuel suspicion and speculation.

Details to be considered when preparing your news media communication plan should include:

What the media do

The media will respond quickly when noteworthy events such as emergencies are declared. They will arrive at the mine site or emergency scene seeking information from security or response personnel in an attempt to find the cause and any other available information. They will share this information quickly with the public.

How the media can help

The media can be of great help, both before and during the emergency. They can assist in pre-emergency education as well as communicating an alert or warning to the public. They can help with the response by transmitting information and requesting assistance, as well as communicating requests from the Emergency Operations Control Group. Reassuring victims and their families is another important role of the media.

Before an emergency

Before an emergency strikes establish a media centre containing some basic requirements such as: telephones, fax machine, identification badges for media personnel, suitable electrical outlets for communication equipment, table, chairs, and a coffee machine. The involvement of media personnel in practice drills will assist in recognizing specific needs, not to mention building a good working relationship. The

appointment of a guide to ensure the needs of media personnel are cared for as well as coordinating information and press releases from the communications officer will assist in minimizing confusion.

Who will deal with the media?

Since the mine manager will likely be very busy administering the overall plan, the appointment of a single designate would be appropriate in most cases. Keep in mind this person is the only link to the company and the event. How he or she expresses what is to be said can be as, or more important than the message itself. A nervous, fidgety speaker conveys discomfort and may inadvertently give the impression of being evasive and untrustworthy. The individual responsible for media communications would benefit from formal training in communications and media relations.

During an emergency

Keep in mind the media has a job to do, they have deadlines to meet and are expected to deliver the goods to the public. Basically, the person wants the facts. If practical, issue fact sheets and periodic summaries to supplement verbal statements to the press. Avoid "what if" questions and focus on what is. Keep all statements short, the reporter has limited space and editing may alter the context of your remarks.

Photographs and video

The press may request photographs or videos of the accident scene and perhaps of individuals involved. Generally you are urged not to permit photographs nor to permit news media in the immediate area of the incident.

If it becomes necessary to provide photographs or videos they should be taken by company personnel and screened before distribution. All communications should be coordinated through the Communication Officer.

Demonstrate genuine commitment to preventing a repeat incident

Discuss tangible programs to be implemented but never make unauthorized promises. Your actions and the company's will come under close scrutiny, and neither the reporter nor the public will be fooled by empty rhetoric.

Always keep in mind that the media has a job to do. Learn how to accommodate their needs without compromising your own position. The fact of the matter is that if it's news, your emergency will be broadcast to the public.

But you are far from powerless. With few exceptions the media tries to be as fair as possible; it's up to you to help get the story straight.

EMERGENCY PREPAREDNESS

DEALING WITH THE MEDIA

(Figure 16)

1. PREPARE AND DESIGNATE A MEDIA CENTRE
2. IDENTIFY AND TRAIN YOUR COMPANY'S SPOKESPERSON
3. PREPARE AND CONSTANTLY UPDATE BACKGROUND INFORMATION
4. ANTICIPATE QUESTIONS AND PREPARE ANSWERS
5. BE CONCISE
6. BE FACTUAL
7. BE CONSISTENT
8. NEVER SAY "NO COMMENT"
9. STICK TO PREPARED STATEMENTS
10. NEVER GO "OFF THE RECORD"
11. NEVER CONFIDE IN A REPORTER
12. NEVER BE PERSONAL
13. **NEVER, EVER, EVER SPECULATE**

EMERGENCY PREPAREDNESS

SUMMATION

Earlier in this presentation we defined emergency as an unforeseen happening or state of affairs requiring prompt action, which if not acted upon in an effective well organized manner may quickly evolve to a sudden misfortune known as a disaster.

In reality, in this day and age of advanced communication and technology there are few events that can truly be called unforeseen and few misfortunes we haven't already experienced. Newspaper clippings, hazard alerts, accident statistics and technical reports act as our crystal ball in providing sound historical data and an image of what the future may hold for the ill prepared.

While it is true that history repeat itself it is also true that as industry changes, so too will the nature of the emergencies. Relying on techniques and emergency measures adopted from past experience will not always provide the same security for future events. The process of hazard identification and corrective actions must be continuous.

There is no doubt forecasting failure and predicting risk will become more integrated at the design stage of each project. This alone will not provide adequate security from the unexpected. As long as there are people designing and operating facilities and equipment there will always be risk of an accident.

Occasionally we may feel the time spent preparing for uncertain emergencies, some of which may never occur, seems to be competing with apparently more immediate and more pressing concerns. When this happens we may lose focus as to what our real objective is.

In closing we would like to forward a message that illustrates very well just what our real objective is. This message was scratched on a piece of paper and found at the scene of a Tennessee mine disaster in 1902.

"Ellen, darling, goodbye for us both. Elbert said the lord has saved him. We are all praying for air to support us, but it is getting so bad without any air.
Ellen, I want you to live right and come to heaven. Raise the children the best you can. Oh how I wish to be with you, goodbye. Bury me and Elbert in the same grave by little Eddy. Goodbye Ellen, goodbye Lily, goodbye Jemmie, goodbye Horace. Is 25 minutes after two. There is a few of us alive yet.

Jake and Elbert

Oh god for one more breath. Ellen remember me for as long as you live. Goodbye darling."

EMERGENCY PREPAREDNESS

SUMMATION

The following message was written on a piece of paper wrapping, and found at the scene of a Tennessee mine disaster in the year 1902.

Ellen darling, goodbye for us
both. Elbert said the Lord Has saved
him We are all praying for air to
support us, but it is getting so
bad without any air
Ellen I want you to live right and
come to heaven. Raise the children
the best you can. oh how I wish to be
with you, goodbye. Bury me and Elbert
in the same grave by little Eddy Godbye
Ellen, goodbye Lily, goodbye Jemmie goodbye
Horace. Is 25 minutes after two
There is a few of us alive. yet
Jake and Elbert
oh God for one more breath
remember me as long as
you live Goodbye darling

EMERGENCY PREPAREDNESS

APPENDIX

The following checklists and sample forms have been prepared in order to measure capabilities of hazard control and to offer guidance in the preparation of a site-specific hazard control program.

EMERGENCY PREPAREDNESS

GENERAL ASSESSMENT TO IDENTIFY AND CONTROL POTENTIAL HAZARDS

This General Assessment form can be completed by answering **Y - Yes, N - No,** or **NA - Not Applicable** to the following questions; your answer can be recorded on the corresponding line under the potential hazard. Does your emergency plan include at least the following:

POTENTIAL HAZARD

	Cave In Underground, Surface Subsidence, Structural (Building)	**Chemical Spills** Oil Spills, Ruptured Gas Main; Containment of Spill, Off-site, On-site, Storage Capabilities	**Civil Disturbance** Strike, Protest, Bomb Threat, Other Threat, Sabotage, Kidnap/Extortion	**Community Evacuation** Planned, Unplanned	**Elements** Flood, Hurricane, Earthquake, Storm, Dam Rupture, Mud or Land Slide
Evacuation of people to predetermined areas of safety?	_____	_____	_____	_____	_____
Notification of key personnel and emergency teams?	_____	_____	_____	_____	_____
Detailed instructions/duties of key personnel?	_____	_____	_____	_____	_____
Designation of Central Control?	_____	_____	_____	_____	_____
Control of the following hazards?	_____	_____	_____	_____	_____
Search and rescue plan including a mutual aid agreement with other organization?	_____	_____	_____	_____	_____
Removal or protection of vital equipment and material?	_____	_____	_____	_____	_____
All clear and re-entry procedure?	_____	_____	_____	_____	_____

EMERGENCY PREPAREDNESS

GENERAL ASSESSMENT TO IDENTIFY AND CONTROL POTENTIAL HAZARDS

The General Assessment form can be completed by answering **Y - Yes, N - No,** or **NA - Not Applicable** to the following questions; your answer can be recorded on the corresponding line under the potential hazard. Does your emergency plan include at least the following:

POTENTIAL HAZARD

	Environmental Air pollution, Water pollution, Waste material disposal problem	**Explosions / Implosions** Dust, Chemicals, Blasting Agents, Petroleum, Propane, Gas line Explosion	**Exposures** Temperature, Chemical, Biological, Physical, Radiological	**Fires** Underground, Plant and Surface, Forestry, Community, Vehicles (LHD)
Evacuation of people to predetermined areas of safety?	____	____	____	____
Notification of key personnel and emergency teams?	____	____	____	____
Detailed instructions/duties of key personnel	____	____	____	____
Designation of Central Control?	____	____	____	____
Control of the following hazards?	____	____	____	____
Search and rescue plan including a mutual aid agreement with other organizations?	____	____	____	____
Removal or protection of vital equipment and material?	____	____	____	____
All clear and re-entry procedure?	____	____	____	____

EMERGENCY PREPAREDNESS

GENERAL ASSESSMENT TO IDENTIFY AND CONTROL POTENTIAL HAZARDS

The General Assessment form can be completed by answering **Y - Yes, N - No,** or **NA - Not Applicable** to the following questions; your answer can be recorded on the corresponding line under the potential hazard. Does your emergency plan include at least the following:

POTENTIAL HAZARD

	Injuries On-site, Multiple, Fatality, Critical	**Power Failure** Short & Long Term, Electrical Blackouts, Gas Shortage, Water Storage	**Transportation** Auto Accident, Train Accident, Boat Accident, Airplane Accident, Hazardous Materials in Transit Accident	**Water Inrush** Diamond Drill Holes, Bulkhead, Crown Pillar, Tailings, Fractures, Water Main Rupture
Evacuation of people to predetermined areas of safety?	____	____	____	____
Notification of key personnel and emergency teams?	____	____	____	____
Detailed instructions/duties of key personnel	____	____	____	____
Designation of Central Control?	____	____	____	____
Control of the following hazards?	____	____	____	____
Search and rescue plan including a mutual aid agreement with other organizations?	____	____	____	____
Removal or protection of vital equipment and material?	____	____	____	____
All clear and re-entry procedure?	____	____	____	____

EMERGENCY PREPAREDNESS

FIRE PREVENTION AND SUPPRESSION FOR UNDERGROUND MOBILE EQUIPMENT

The majority of all mobile equipment fires are caused by electrical fault.

Requirements:

1. Encase all electrical wire in tubing or conduit and ensure all wiring is secure against movement.

2. Install heat sensitive fuse or manually resettable breaker of proper size.

3. Install properly sized master switches on all mobile equipment and mount them on the ground cable of the battery to isolate power to the whole wiring system (one disconnect close to the battery and accessible to the operator).

4. Cables, when passing through bulkheads, should have strain connectors and/or grommets.

5. Cable terminations should be sweated or crimped.

6. Infield cable repair should be either a sweated connection or a properly installed crimped connection. "U" connectors are not recommended.

7. Cables should be properly rated to carry maximum load.

8. To avoid overloading, circuits should be properly assessed by a specialist before additions or modifications are made. Only approved modifications should be made.

9. Maintenance personnel must be properly trained and equipped.

10. Oil and dirt should be kept away from all electrical components.

11. Batteries should be properly secured, with tight connections. Hoses should be routed clear of battery terminals.

12. Electrical circuits should be inspected after each thorough cleaning of the equipment.

EMERGENCY PREPAREDNESS

FIRE PREVENTION AND SUPPRESSION FOR UNDERGROUND MOBILE EQUIPMENT

CONTINUED

Hydraulic oil, fuel and grease are common causes of fire.

Requirements:

1. All hydraulic hoses should be properly routed and secured to avoid rubbing, kinking, whipping, heat sources, etc...

2. Critical hydraulic hoses should be wrapped with nomex foam, fire sleeve or better material to avoid spraying if ruptured.

3. Hydraulic hoses should be protected by installing a drive-line guard that is strong enough to withstand impact of a broken drive shaft.

4. The correct size and length of a hose must be used, as restrictions of any kind will increase the temperature of the oil.

5. Use only properly rated, good quality hoses.

6. Ensure that correct size hose ends are used and these are installed with care, according to manufacturer's recommendations.

7. Hydraulic circuits and components must be properly designed and maintained to ensure that the heat rise is kept to a minimum acceptable working temperature range. Oil cooler reservoir and pump capacity should be considered as a means to improve hose, components and oil life.

8. Exhaust and muffler should be wrapped with fire resistant or temperature absorbent insulating material to prevent fuel or oil from igniting. The insulating property of the material must be maintained in its original state.

9. Frequent cleaning of the equipment should be encouraged and enforced as a means to eliminate a potential fire hazard.

10. Fuelling procedures should ensure that spills are eliminated.

EMERGENCY PREPAREDNESS

FIRE PREVENTION AND SUPPRESSION FOR UNDERGROUND MOBILE EQUIPMENT

CONTINUED

A compressor fire should never occur.

Requirements:

1. A compressor should be checked regularly to ensure that oil is not being pumped into the air system. If this is happening, the compressor must be immediately repaired.

2. Prompt action to correct the problem should be undertaken when any of the following are detected:

   - Excessive oil build-up in the air tank or strainer

   - Slow build-up of air pressure by the compressor

   - An extremely hot compressor elbow or discharge hose

3. Ensure that the compressor air intake line is never obstructed or clogged.

4. The flex steel hose at the discharge of the compressor should never be replaced by a hose of material with less heat resistivity.

5. All compressors should be properly cooled.

Proper maintenance and scrutiny by all operators and mechanics would eliminate most brake related fires:

Requirements:

1. Hydraulic and air brake systems should have pressure gauges so that the operator may detect abnormal conditions in the system.

2. Eliminate the use of improper types of brake fluid by noting clearly on all reservoirs the type of fluid that should be used.

3. The drive-line brake should be fail safe and any loss of brake pressure should result in full brake system application.

4. The drive-line brake should be routinely cleaned of oil and grease

EMERGENCY PREPAREDNESS

FIRE PREVENTION AND SUPPRESSION FOR UNDERGROUND MOBILE EQUIPMENT

CONTINUED

Professionalism, training, attitude, etc. must be emphasized to achieve success in reducing the frequency of fire-related incidents:

Requirements:

1. Encourage and enforce good housekeeping and cleanliness.
2. Implement regular and thorough preventive maintenance programs.
3. Corrective measures should be ongoing and communicated to all employees involved.
4. Equipment should be parked away from any potential fire hazard.
5. All mobile equipment should be shut off and the master switch turned off when equipment is unattended by an operator.

EMERGENCY PREPAREDNESS

FIRE SUPPRESSION

It is important to remember that the fire suppression system in not a preventative measure and should be considered a last resort:

Requirements:

1. The system chosen should suit both the environment and the machine as required.
2. All training, modifications and maintenance should be done in collaboration with the manufacturer.
3. Operator training should include engine shut off and activation of the fire suppression system.
4. Each mobile equipment must have a hand-held, readily accessible fire extinguisher as a back-up to any other installed fire suppression system.
5. An effective operating and maintenance program should be implemented to ensure that the fire suppression system works properly when it is needed.

Please note that the turbo-chargers generate extreme temperatures, therefore creating an increased fire hazard.

EMERGENCY PREPAREDNESS

CHEMICAL SPILLS CHECKLIST

The following checklist will provide management with a self evaluation guide to measure and perhaps upgrade their capabilities in responding successfully to a chemical spill emergency.

Your answers to the following questions can be recorded by checking the appropriate line.
Y - Yes, **N** - No, **NA** - Not Applicable

	Y	N	NA
Has an emergency plan been prepared to initiate the clean up of a chemical spill?	___	___	___
Is an appropriate monitoring system available in storage area and immediate workplace to detect a chemical spill emergency ie. vapour alarm - smoke detectors?	___	___	___
Is there an emergency alarm signal indicating the necessity to evacuate the workplace?	___	___	___
Are annual tests conducted to determine the promptness and adequacy of response to alarms?	___	___	___
Does your company have a list of emergency telephone numbers? (see enclosed sample)	___	___	___
Are emergency telephone numbers posted in a prominent location?	___	___	___
Has an assessment been carried out to determine: -what chemicals exist in the workplace?	___	___	___
-what quantities of chemicals exist in the workplace?	___	___	___
-what potential hazards exist as related to the available chemicals?	___	___	___
Has a floor plan been prepared indicating the location of all hazardous materials?	___	___	___
Is all hazardous waste generated and stored on site identified with the appropriate label?	___	___	___
Have containment berms been placed around or under vessels containing hazardous chemicals ie. PCB's, fuel, oil or reagents?	___	___	___
Are material safety data sheets (MSDS) readily available in the workplace?	___	___	___

EMERGENCY PREPAREDNESS

CHEMICAL SPILLS CHECKLIST

CONTINUED

	Y	N	NA
Are eye wash stations suitably located in the workplace?	___	___	___
Have sufficient emergency deluge showers been made available in appropriate areas?	___	___	___
Have deluge showers in remote areas been equipped with an alarm mechanism to summon assistance?	___	___	___
Is an emergency clean-up kit readily available? (excluding PPE)	___	___	___
Minimum requirements include:			
- absorbent material (socks)	___	___	___
- proper container for chemical waste	___	___	___
- proper label affixed on waste container	___	___	___
Is required personal protective equipment (as required by MSDS) readily available to individuals involved in clean-up of chemical spills?	___	___	___
Minimum requirements include:			
- respirators	___	___	___
- self-contained breathing apparatus	___	___	___
- goggles / face shield	___	___	___
- gloves	___	___	___
- boots	___	___	___
- full body clean-up suit	___	___	___
- proper fit testing of PPE before commencing clean-up	___	___	___

EMERGENCY PREPAREDNESS

CHEMICAL SPILL CHECKLIST

CONTINUED

	Y	N	NA
Has appropriate training been provided to employees exposed to the risk of chemical spill emergencies?	___	___	___
Such as:			
First aid training	___	___	___
WHMIS training	___	___	___
Transportation of dangerous goods	___	___	___
Have emergency response teams been provided with specific training in order to address chemical spills?	___	___	___
Does your emergency plan include the proper disposal of chemicals as required by the Ministry of the Environment?	___	___	___
Oxidizing chemicals should not be stored with combustible materials. Is this being adhered to?	___	___	___
Reactive chemicals should not be exposed to water, sunlight or violent movement, nor should they be stored in a building with a sprinkler system. They should be stored in airtight water proof containers. Is this being adhered to?	___	___	___

EMERGENCY PREPAREDNESS

SPILL RESPONSE BASICS

The following ten steps outline a prudent and effective response to a hazardous spill.

1. **Get away**	Move away a safe distance, turn off any ignition sources. If possible, stop the flow.
2. **Identify what you see**	What was it? Did it have a label? Was there a fire? What was it doing?
3. **Get help**	Initiate the emergency response. Briefly explain what happened. Answer the questions. What chemicals? Where? How much? Is anyone injured?
4. **Seal off the area**	Warn others to stay away from the hazard.
5. **Look for injuries**	If necessary provide assistance or get assistance.
6. **Identify the hazard**	Look for placards, package labels, shipping papers and fellow workers who may be able to identify the hazardous materials.
7. **Prepare a plan of action**	Once you know what hazardous materials you are dealing with, decide what to do. By developing a plan of action, you will be able to anticipate problems.
8. **Get proper equipment and materials**	Select from the inventory the proper equipment and materials to prepare and to contain and clean up the spill effectively.
9. **Contain the spill**	Keep the spill from spreading. Minimize the danger to yourself and others.
10. **Clean up**	Use the right absorbent for the spill. The absorbed material must be properly packaged according to provincial/federal regulations.

EMERGENCY PREPAREDNESS

WHEN A BOMB THREAT IS RECEIVED

Listen carefully

Be calm and courteous

Do not interrupt the caller

Obtain as much information as possible

Initiate trace action if possible

Notify security

The following questions may assist in acquiring necessary information:

What time will the bomb explode?

Where is it located?

Why did you place the bomb?

What did the bomb look like?

Where are you calling from?

What is your name?

Log the exact words of the threat (word by word if possible including offensive language).

Characteristics of caller:

Sex and estimated age

Accent or ethnic background

Background noises

Was the voice familiar?

Was the caller familiar with the area of the mine?

Log the date, time, duration of the call and recipient's (your) name.

EMERGENCY PREPAREDNESS

WHEN A KIDNAP/EXTORTION THREAT IS RECEIVED

Keep the caller on the phone as long as possible.

Ask as many questions as practical.

Log the answers to the questions word for word.

Remain calm and think

Time call began

ASK

Who is this?

Is this a prank?

How do I know it is not a prank?

What is (he/she) wearing?

May I talk to (whomever) to verify this call?

What do you want?

How do you want it (money)?

Where should the money be delivered and when?

How will I recognize the person to whom I am to give the money?

Time call ended.

Characteristics of Caller

Sex of caller

Apparent age

Accent

Attitude (eg: intoxicated, angry, vulgar, excited)

Any other characteristics?

EMERGENCY PREPAREDNESS

STRANDED VEHICLE - COLD WEATHER SURVIVAL CHECKLIST

Appropriate for company employees or others who are at risk of being stranded in a vehicle during cold weather conditions.

	Y	N	NA
Battery Booster Cables	___	___	___
Flares	___	___	___
Tow Cable	___	___	___
Traction Plates	___	___	___
Sleeping Bag	___	___	___
Felt Lined Boots	___	___	___
Toque-Scarf-Mitts	___	___	___
Candles - Matches	___	___	___
Steel Pot	___	___	___
Emergency Food Kit	___	___	___
First Aid Kit	___	___	___
Note Pad and Pencil	___	___	___

EMERGENCY PREPAREDNESS

WILDERNESS EMERGENCY SURVIVAL CHECKLIST

Appropriate for Prospectors, Diamond Drillers and others exposed to being stranded in the wilderness.

	Y	N	NA
Map and Compass	___	___	___
Flashlight	___	___	___
Small Knife	___	___	___
Matches (waterproof container)	___	___	___
Candles	___	___	___
First Aid Kit	___	___	___
Mosquito Repellant and Sunscreen	___	___	___
Signalling Devices - Mirror and Whistle	___	___	___
Rain Gear and Extra Clothing	___	___	___
Shelter Material ie. Three ml - Plastic Sheet or Nylon Tarp carried with Survival Tube in Kit	___	___	___
Water (at least 1 quart)	___	___	___
High Energy Snacks - Candy, Jerky or Meat Bars	___	___	___
Note Pad and Pencil	___	___	___

EMERGENCY PREPAREDNESS

EMERGENCY TELEPHONE NUMBERS

This information card should contain the telephone numbers of individuals and services that may be contacted in an emergency. The card should be posted in a prominent location and contained in your emergency manual.

Police Department	-
Fire Department	-
Hospital	-
First Aid	-
Security	-
Mine Manager	-
Ambulance Service	-
Ministry of Labour, Area Engineer	-
Canadian Transportation Emergency Centre (TDG)	- (613) 996-6666
Canadian Centre for Occupational Health and Safety	- 1-800-263-8276
Mutual Assistance Groups	-

EMERGENCY PREPAREDNESS

INJURY EMERGENCIES

The following checklist will provide management with a self evaluation guide to measure and perhaps upgrade their capabilities in responding successfully to an injury emergency situation.

Your answers to the following questions can be recorded by checking the appropriate line.
Y - Yes, **N** - No, **NA** - Not Applicable

	Y	N	NA
Does your company comply with the WCB's first aid regulations with respect to:			
- Are workers required to report all injuries to supervisor/employer?	____	____	____
- Is immediate transportation to a hospital, a doctor's office or the worker's home available to the employee?	____	____	____
- Is a record kept of all first aid treatment administered or advice given to an injured employee (first aid log)? See attached sample.	____	____	____
- Is the poster known as Form 82 respecting the necessity of reporting all accidents and receiving first aid treatment prominently posted in the first aid station and workplace?	____	____	____
- Are first aid kits provided, and are the contents inspected at least quarterly using the provided inspection checklist card?	____	____	____
- Is the worker in charge of the first aid station a holder of a valid St. John Emergency First Aid certificate or its equivalent?	____	____	____
- Does the worker in charge of the first aid station work in the immediate vicinity of the station?	____	____	____
- Does your company have an adequate number of trained/qualified first aiders?	____	____	____
- Are full wages and benefits paid to the injured employee for the day or shift on which the injury occurred?	____	____	____
- Is an employer's report of Accidental Injury/Industrial Disease (Form 7) submitted to the Workers' Compensation Board, within three days of learning of an accident?	____	____	____

EMERGENCY PREPAREDNESS

INJURY EMERGENCIES

(CONTINUED)

	Y	N	NA
- Is a treatment memorandum (Form 156) completed and given to the worker if health care is needed?	____	____	____
Is equipment to facilitate rescue of injured workers in an underground mine stored at a location near a work area?	____	____	____
- Equipment enabling voice communication with surface?	____	____	____
- Basket stretcher including spine board with stretcher straps?	____	____	____
- Rope for lowering and hoisting basket stretcher?	____	____	____
- Two blankets, six triangular bandages and three pressure dressings, all sealed in a moisture-proof, airtight bag?	____	____	____
- Splints and cervical collar?	____	____	____
Has the Health and Safety Committee been consulted to determine what equipment is necessary to rescue injured workers?	____	____	____
Is all first aid and rescue equipment inspected at regular intervals?	____	____	____
Does your company have a modified work program to provide meaningful alternate work for employees recovering from an injury/illness or undergoing rehabilitation?	____	____	____
Has a general procedure been prepared to guide the immediate actions of employees encountering a worker who has sustained an injury? (See attached sample - procedure in the event of an injury.)	____	____	____
Has a general procedure been prepared to guide the immediate actions of first aid attendants when treating injuries? (See attached sample - procedure for first aid attendants.)	____	____	____

EMERGENCY PREPAREDNESS

EXPLOSIONS/IMPLOSIONS CHECKLIST

The following checklist will provide management with a self evaluation guide to measure and perhaps upgrade their capabilities in responding successfully to an injury emergency situation.

Your answers to the following questions can be recorded by checking the appropriate line.
Y - Yes, **N** - No, **NA** - Not Applicable

	Y	N	NA
Is there, in the event of an explosion/implosion, an alarm or procedure to evacuate the workplace?	____	____	____
Are annual tests conducted to determine the promptness and adequacy of response to alarms?	____	____	____
Does your company have telephone numbers listed and are they posted in prominent locations?	____	____	____
Has an assessment been made to determine what petroleum material/blasting agent or potentially explosive agents exist in the workplace?	____	____	____
What quantities of these products exist in the workplace?	____	____	____
What are the potential hazards to:			
a) Cause an explosion?	____	____	____
b) Cause problems after the explosion? ie. spills/fumes damage etc...	____	____	____
and are these hazards identified in writing with suitable control methods and an inspection program maintained?	____	____	____
Has a plan been developed to show the location of all petroleum material, chemical agents, and blasting agents?	____	____	____
Are the products and area identified with signs and labels?	____	____	____
Have proper storage areas for explosives, petroleum material and chemical agents been engineered and installed?	____	____	____
Are these storages areas inspected and maintained in accordance with regulations (ie. OHSA 121(2))	____	____	____

EMERGENCY PREPAREDNESS

EXPLOSIONS/IMPLOSIONS CHECKLIST
(CONTINUED)

	Y	N	NA
Do these storage areas conform to regulations. ie. OHSA S 118/120 etc...?	____	____	____
Does the storage area have adequate fire protection based on capacity etc...?	____	____	____
Is there an emergency response team?	____	____	____
Are they made aware of and do they routinely examine, locations of magazine and storage areas in the operation?	____	____	____
Have material/requirements to respond to an explosion been identified and made readily available for a quick response?	____	____	____
Have procedures been established for safe transportation of the blasting agents, chemical material, petroleum material? See OHSA S 126/127/128	____	____	____
When an explosion has occurred, are entry and re-entry procedures available and enforced?	____	____	____
Is there a procedure for notifying of a planned explosion?	____	____	____
Is there a procedure to safeguard personnel on site when a planned blast occurs?	____	____	____
Is the emergency response team trained and aware of proper disposal procedures for petroleum, chemical, and blasting agents?	____	____	____
Are disposal procedures available and enforced?	____	____	____

EMERGENCY PREPAREDNESS

RESOURCE CATALOGUE

The following companies have agreed to provide pertinent information to the MAPAO or member firms on the topics listed.

CAVE IN

Domtar Construction Materials Ltd.
Caledonia Gypsum Mine
P.O. Box 250
Caledonia, Ontario
N0A 1A0 (416) 765-4011

- Underground
- Surface subsidence

Dynatec Mining Limited
2 East Beaver Creek Road
Richmond Hill, Ontario
L4B 2N3 (416) 886-6950

- Underground
- Surface subsidence
- Structural (Building)

Falconbridge Ltd.
Kidd Creek Mine Division
P.O. Box 2002
Timmins, Ontario
P4N 7K1 (705) 235-7675

- Underground
- Structural (Building)

Inco Limited
Ontario Division
Copper Cliff, Ontario
P0M 1N0 (705) 682-4211

- Underground
- Surface Subsidence
- Structural (Building)

Placer Dome Inc.
Dome Mine
P.O. Box 70
South Porcupine, Ontario
P0N 1H0 (705) 235-3221

- Underground
- Surface Subsidence
- Structural (Building)

CHEMICAL SPILLS

American Barrick Resources Corp.
Holt-McDermott Mine
P.O. Box 278
953 Government Road West
Kirkland Lake, Ontario
P2N 3H7 (705) 567-9251

- On site

Canadian Gypsum Company
P.O. Box 99
Hagarsville, Ontario
N0A 1H0 (416) 768-3331

- On site

Denison Mines Ltd.
P.O. Box B2600
Elliot Lake, Ontario
P5A 2K2 (705) 848-9111

- On site

Dynatec Mining Limited
2 East Beaver Creek Road
Richmond Hill, Ontario
L4B 2N3 (416) 886-6950

- On site

Falconbridge Ltd.
Kidd Creek Division
P.O. Box 2002
Timmins, Ontario
P4N 7K1 (705) 235-7675

- On site
- Off site
- Storage compability

Inco Limited
Ontario Division
Copper Cliff, Ontario
P0M 1N0 (705) 682-4211

- On site
- Off site
- Storage compability

Placer Dome Inc.
Dome Mine
P.O. Box 70
South Porcupine, Ontario
P0N 1H0 (705) 235-3221

- On site
- Storage compability

Placer Dome Inc.
Dona Lake Mine
P.O. Box 338
Pickle Lake, Ontario
P0V 3A0 (807) 928-2601

- On site

Sifto Canada Inc.
P.O. Box 370
Goderich, Ontario
N7A 4C6 (519) 524-8351

- On site

CIVIL DISTURBANCE

Canadian Gypsum Company
P.O. Box 99
Hagarsville, Ontario
N0A 1H0 (416) 768-3331

- Bomb threat

Dynatec Mining Limited
2 East Beaver Creek Road
Richmond Hill, Ontario
L4B 2N3 (416) 886-6950

- Bomb threat

Inco Limited
Ontario Division
Copper Cliff, Ontario
P0M 1N0 (705) 682-4211

- Strike
- Protest
- Bomb threat

Mattabi Mines Ltd.
P.O. Box 190
Ignace, Ontario
P0T 1T0 (807) 934-2291

- MAYDAY Program
- Strike
- Protest
- Bomb threat
- Other

Placer Dome Inc.
Dome Mine
P.O. Box 70
South Porcupine, Ontario
P0N 1H0 (705) 235-3221

- Bomb threat
- Other (kidnapping)

Sifto Canada Inc.
P.O. Box 370
Goderich, Ontario
N7A 4C6 (519) 524-8351

- Strike
- Bomb threat

COMMUNITY EVACUATION

Falconbridge Ltd.
Kidd Creek Division
P.O. Box 2002
Timmins, Ontario
P4N 7K1 (705) 235-7675

- Planned

Inco Limited
Ontario Division
Copper Cliff, Ontario
P0M 1N0 (705) 682-4211

- Planned
- Unplanned

Placer Dome Inc.
Campbell Red Lake Mine
P.O. Box 10
Balmertown, Ontario
P0V 1C0 (807) 735-2075

Placer Dome Inc.
Dome Mine
P.O. Box 70
South Porcupine, Ontario
P0N 1H0 (705) 235-3221

- Planned
- Unplanned

ELEMENTS

American Barrick Resources Corp.
Holt-McDermott Mine
P.O. Box 278
953 Government Road West
Kirkland Lake, Ontario
P2N 3H7 (705) 567-9251

- Storm

Placer Dome Inc.
Dome Mine
P.O. Box 70
South Porcupine, Ontario
P0N 1H0 (705) 235-3221

- Flood
- Hurricane
- Earthquake
- Storm

ENVIRONMENTAL

American Barrick Resources Corp.
Holt-McDermott Mine
P.O. Box 278
953 Government Road West
Kirkland Lake, Ontario
P2N 3H7 (705) 567-9251

- Water pollution
- Soil pollution

Falconbridge Ltd.
Kidd Creek Mine Division
P.O. Box 2002
Timmins, Ontario
P4N 7K1 (705) 235-7675

- Air pollution
- Water pollution
- Waste material

Inco Limited
Ontario Division
Copper Cliff, Ontario
P0M 1N0 (705) 682-4211

- Air pollution
- Water pollution
- Soil pollution
- Waste material

Placer Dome Inc.
Dome Mine
P.O. Box 70
South Porcupine, Ontario
P0N 1H0 (705) 235-3221

- Waste material (PCB's)

Sifto Canada Inc.
P.O. Box 370
Goderich, Ontario
N7A 4C6 (519) 524-8351

- Air pollution
- Water pollution

Timminco Metals
Division of Timminco Ltd.
Haley, Ontario
K0J 1Y0 (613) 432-3621

- Air pollution (P.E.A.P.)
- Waste Management Plan

EXPLOSIONS/IMPLOSIONS

American Barrick Resources Corp.
Holt-McDermott Mine
P.O. Box 278
953 Government Road West
Kirkland Lake, Ontario
P2N 3H7 (705) 567-9251

- Dust
- Chemical
- Petroleum
- Blasting Agents

Dynatec Mining Limited
2 East Beaver Creek Road
Richmond Hill, Ontario
L4B 2N3 (416) 886-6950

- Blasting Agents

Falconbridge Ltd.
Kidd Creek Division
P.O. Box 2002
Timmins, Ontario
P4N 7K1 (705) 235-7675

- Dust
- Chemical
- Blasting Agents

Inco Limited
Ontario Division
Copper Cliff, Ontario
P0M 1N0 (705) 682-4211

- Dust
- Chemical
- Blasting Agents

Mattabi Mines Ltd.
P.O. Box 190
Ignace, Ontario
P0T 1T0 (807) 934-2291

- Dust

Placer Dome Inc.
Dome Mine
P.O. Box 70
South Porcupine, Ontario
P0N 1H0 (705) 235-3221

- Dust
- Chemical
- Petroleum
- Blasting Agents

Sifto Canada Inc.
P.O. Box 370
Goderich, Ontario
N7A 4C6 (519) 524-8351

- Dust (CH_4)
- Blasting Agents

EXPOSURES

American Barrick Resources Corp.
Holt-McDermott Mine
P.O. Box 278
953 Government Road West
Kirkland Lake, Ontario
P2N 3H7 (705) 567-9251

- Chemical

Dynatec Mining Limited
2 East Beaver Creek Road
Richmond Hill, Ontario
L4B 2N3 (416) 886-6950

- Temperature
- Physical

Falconbridge Ltd.
Kidd Creek Mine Division
P.O. Box 2002
Timmins, Ontario
P4N 7K1 (705) 235-7675

- Temperature
- Physical

Inco Limited
Ontario Division
Copper Cliff, Ontario
P0M 1N0 (705) 682-4211

- Temperature
- Physical
- Chemical
- Biological

Placer Dome Inc.
Dome Mine
P.O. Box 70
South Porcupine, Ontario
P0N 1H0 (705) 235-3221

- Radiological

Sifto Canada Inc.
P.O. Box 370
Goderich, Ontario
N7A 4C6 (519) 524-8351

- Physical

Timminco Metals
Division of Timminco Ltd.
Haley, Ontario
K0J 1Y0 (613) 432-3621

- Temperature (heat)

FIRES

American Barrick Resources Corp. - Underground
Holt-McDermott Mine - Plant and Surface
P.O. Box 278
953 Government Road West
Kirkland Lake, Ontario
P2N 3H7 (705) 567-9251

Dickenson Mines Ltd. - Underground
A.W. White Mine
Balmertown, Ontario
P0V 1C0 (807) 735-2077

Domtar Construction Materials Ltd. - Underground
Caledonia Gypsum Mine
P.O. Box 250
Caledonia, Ontario
N0A 1A0 (416) 765-4011

Dynatec Mining Limited - Underground
2 East Beaver Creek Road - Plant and Surface
Richmond Hill, Ontario
L4B 2N3 (416) 886-6950

Falconbridge Ltd. - Underground
Kidd Creek Division - Plant and Surface
P.O. Box 2002
Timmins, Ontario
P4N 7K1 (705) 235-7675

Canamex Resources Inc. - Underground
Bell Creek Mine - Plant and Surface
P.O. Box 550
Porcupine, Ontario
P0N 1C0 (705) 235-2303

Denison Mines Ltd. - Underground
P.O. Box B260 - Plant and Surface
Elliot Lake, Ontario
P5A 2K2 (705) 848-9111

Inco Limited
Ontario Division
Copper Cliff, Ontario
P0M 1N0 (705) 682-4211

- Underground
- Plant and Surface

Mattabi Mines Ltd.
P.O. Box 190
Ignace, Ontario
P0T 1T0 (807) 934-2291

- Underground
- Plant and Surface
- Forest

Placer Dome Inc.
Dome Mine
P.O. Box 70
South Porcupine, Ontario
P0N 1H0 (705) 235-3221

- Underground
- Plant and Surface

Place Dome Inc.
Dona Lake Mine
P.O. Box 338
Pickle Lake, Ontario
P0V 3A0 (807) 928-2601

- Underground

Sifto Canada Inc.
P.O. Box 370
Goderich, Ontario
N7A 4C6 (519) 524-8351

- Underground
- Plant and Surface

Timminco Metals
(Training manual)
Division of Timminco Ltd.
Haley, Ontario
K0J 1Y0 (613) 432-3621

- Plant and Surface

Westroc Industries Ltd.
Drumbo Mine
R.R. 2
Drumbo, Ontario
N0J 1G0 (519) 463-5711

- Underground

INJURIES

American Barrick Resources Corp.
Holt-McDermott
P.O. Box 278
953 Government Road West
Kirkland Lake, Ontario
P2N 3H7 (705) 567-9251

- On site
- Multiple
- Fatality
- Critical

Canadian Gypsum Company
P.O. Box 99
Hagarsville, Ontario
N0A 1H0 (416) 768-3331

- On site
- Multiple
- Fatality
- Critical

Canamex Resources Inc.
Bell Creek Mine
P.O. Box 550
Porcupine, Ontario
P0N 1C0 (705) 235-2303

- On site
- Fatality
- Critical

Denison Mines Ltd.
P.O. Box B2600
Elliot Lake, Ontario
P5A 2K2 (705) 848-9111

- On site
- Fatality
- Critical

Domtar Construction Materials Ltd.
Caledonia Gypsum Mine
P.O. Box 250
Caledonia, Ontario
N0A 1A0 (416) 765-4011

- On site

Dynatec Mining Limited
2 East Beaver Creek Road
Richmond Hill, Ontario
L4B 2N3 (416) 886-6950

- On site
- Multiple
- Fatality
- Critical

Falconbridge Ltd.
Kidd Creek Division
P.O. Box 2002
Timmins, Ontario
P4N 7K1 (705) 235-7675

- On site
- Multiple
- Fatality
- Critical

Inco Limited
Ontario Division
Copper Cliff, Ontario
P0M 1N0 (705) 682-4211

- On site
- Multiple
- Fatality
- Critical

Mattabi Mines Ltd.
P.O. Box 190
Ignace, Ontario
P0T 1T0 (807) 934-2291

- On site

Placer Dome Inc.
Dome Mine
P.O. Box 70
South Porcupine, Ontario
P0N 1H0 (705) 235-3221

- On site
- Multiple
- Fatality
- Critical

Sifto Canada Inc.
P.O. Box 370
Goderich, Ontario
N7A 4C6 (519) 524-8351

- On site
- Multiple

Timminco Metals
Division of Timminco Ltd.
Haley, Ontario
K0J 1Y0 (613) 432-3621

- On site

Westroc Industries Ltd.
Drumbo Mine
R.R. 2
Drumbo, Ontario
N0J 1G0 (519) 463-5711

- On site

POWER FAILURE

American Barrick Resources Corp.
Holt-McDermott
P.O. Box 278
953 Government Road West
Kirkland Lake, Ontario
P2N 3H7 (705) 567-9251

- Long term
- Short term

Domtar Construction Materials Ltd.
Caledonia Gypsum Mine
P.O. Box 250
Caledonia, Ontario
N0A 1A0 (416) 765-4011

- Long term
- Short term

Inco Limited
Ontario Division
Copper Cliff, Ontario
P0M 1N0 (705) 682-4211

- Long term
- Short term

Sifto Canada Inc.
P.O. Box 370
Goderich, Ontario
N7A 4C6 (519) 524-8351

- Short term

TRANSPORTATION

American Barrick Resources Corp.
Holt-McDermott Mine
P.O. Box 278
953 Government Road West
Kirkland Lake, Ontario
P2N 3H7 (705) 567-9251

- Land, Off site, On site

Inco Limited
Ontario Division
Copper Cliff, Ontario
P0M 1N0 (705) 682-4211

- Land, Off site, On site
- Water

Mattabi Mines Ltd.
P.O. Box 190
Ignace, Ontario
P0T 1T0 (807) 934-2291

- Land, Off site, On site
- Water
- Air

Sifto Canada Inc.
P.O. Box 370
Goderich, Ontario
N7A 4C6 (519) 524-8351

- Land, Off site, On site
- Water

Timminco Metals
Division of Timminco Ltd.
Haley, Ontario
K0J 1Y0 (613) 432-3621

- Land, Off site, On site
- Transportation of Dangerous Goods

WATER INRUSH

American Barrick Resources Corp.
Holt-McDermott Mine
P.O. Box 278
953 Government Road West
Kirkland Lake, Ontario
P2N 3H7 (705) 567-9251

- Tailings

Canadian Gypsum Company
P.O. Box 99
Hagarsville, Ontario
N0A 1H0 (416) 768-3331

- Diamond drill hole

Domtar Construction Materials Ltd.
Caledonia Gypsum Mine
P.O. Box 250
Caledonia, Ontario
N0A 1A0 (416) 765-4011

- Fractures

Inco Limited
Ontario Division
Copper Cliff, Ontario
P0M 1N0 (705) 682-4211

- Bulkhead
- Crown pillar
- Tailings
- Fractures

Placer Dome Inc.
Dome Mine
P.O. Box 70
South Porcupine, Ontario
P0N 1H0 (705) 235-3221

- Crown pillar
- Tailings

EMERGENCY PREPAREDNESS

AUDIT

The primary objective of conducting an audit is to determine the loss control effectiveness of a company's safety activities as measured against an accepted standard. This system can be used not only to evaluate how well your program measures up against this standard, but also as a blue print for action that may be needed to improve your program.

One of the twenty elements addressed in the International Mine Safety Rating System is emergency preparedness. Sub-sections of this element include:

- Leadership and administration
- Emergency plan
- Supervisory training in first aid
- Employee training in first aid
- Source of energy control
- Protection and rescue equipment
- Emergency team
- Qualified first aid attendants
- Organized outside help and mutual aid
- Protection of vital records
- Post-event planning

The Mines Accident Prevention Association is the jurisdictional agency for the Ontario Mining Industry concerning this program. Further information and assistance will be extended to all member firms upon request.

EMERGENCY PREPAREDNESS

BIBLIOGRAPHY

National Safety Council Accident Prevention Manual for Industrial Operations, Administration and Programs, Eighth Edition, 1982. National Safety Council, 444 North Michigan Avenue, Chicago, Illinois, 60611

National Safety Council Accident Prevention Manual for Industrial Operations, Engineering and Technology, Eighth Edition, 1980. National Safety Council, 444 North Michigan Avenue, Chicago, Illinois, 60611

Hammer, Willie. Occupational Safety Management and Engineering, Fourth Edition, 1989 Prentice Hall
Englewood Cliffs, New Jersey, 07632

National Fire Protection Association, Industrial Fire Hazards Handbook, 1990, National Fire Protection
Association, Quincy, Massachusetts

Krikorian, Michael, Disaster and Emergency Planning, International Loss Control Institute, Atlanta, Georgia

Federal Government of Canada Emergency Preparedness Canada, 1989, Emergency Preparedness College,
Amprior, Ontario

Federal Government of Canada "Emergency Preparedness Canada", Emergency Preparedness Digest, Volume 17, No. 4, October-December 1990

International Loss Control Institute, International Mine Rating System, Fifth Revised Edition, 1988, Institute Publishing, Division of International Loss Control Institute, 4546 Atlanta Highway, P.O. Box 345, Loganville, Georgia, 30249

A Disciplined Approach to Emergency Response

(A process to help protect lives property and the environment in an efficient manner)

PROBLEM

QUANTITY AND NATURE OF MATERIAL

Properties of dangerous goods (TDG) classifications:

1. explosives
2. gases:
   - flammable
   - non-flammable
   - poisonous
   - corrosive
3. flammable liquids
4. flammable solids spontaneously combustible substances, flammable when wet substances
5. oxidizing substances and organic peroxides
6. poisonous and infectious substances
7. radioactive materials
8. corrosives
9. miscellaneous dangerous goods
10. non-dangerous goods
11. quantity spilled

TYPE, CONDITION AND BEHAVIOUR OF CONTAINER

type of container

1. bulk fixed
   a. storage tank
   b. pipe line
   c. drilling well
2. bulk transport
   a. marine
   b. rail
   c. truck
   d. air
3. packages, drums, kegs, etc.
4. container in danger of failure
   a. stress from heat or fire
   b. stress from mechanical damage
   c. stress from chemical reaction
5. container has failed
   leak
   puncture
   BLEVE

STAGE OF INCIDENT

1. stable
2. unstable: potential for escalation of the incident

MODIFYING CONDITIONS

LOCATION

1. remote
2. populus
3. difficult terrain
4. limited access
5. land spill
6. involves water
   a. land based
      - fresh water
      - salt water
   b. marine spill
      - fresh water
      - salt water
7. product location and migration
8. combination of circumstances

TIME

1. time of day
2. time of week
3. time of year
4. time of first alarm
5. response time
6. tide information
7. time of incident

WEATHER CONDITIONS

1. temperature
2. wind direction
3. wind speed
4. air inversion
5. kind of precipitation
6. weather forecast

POTENTIAL LOSSES

EXPOSURE

1. life (civilian & emergency personnel)
2. property
3. equipment
4. environmental damage
5. impact on image
   - media reports
   - complaints
6. other claims
7. regulatory non compliance

CONTROL MEASURES

INTERNAL RESOURCES

1. amount & training of personnel
2. equipment
   a. personnel protection
   b. communications
   c. command post
   d. patching capping & containment
   e. recovery & transfer
3. control agents
   a. fire fighting
   b. dispersants
   c. neutralizing agents
4. supportive
   a. technical advisors
   b. aerial surveillance
   c. dispersion modeling
   d. public affairs

Adequacy of Resources?

EXTERNAL RESOURCES

1. implement emergency plans
   a. TEAP
   b. PGAC
   c. CHLOREP
   d. WCFA
   e. oil spill co-ops
   f. LPG-MAP
2. use police for control of traffic and crowds
3. fire department and other civil authorities
4. use medical for treatment of injured
5. utilities power, gas, phone
6. use media as a communications aid
7. for product information use
   a. CANUTEC
   b. CHEMTREC
8. contractors

Adequacy of resources?

SITUATION ANALYSIS PHASE

OBJECTIVE: PROTECT LIVES, PROPERTY AND THE ENVIRONMENT IN AN EFFICIENT MANNER

DEFINE CRITICAL ISSUES

Protect what life, property and environment _____ From what hazards _____

PRIORITIZE CRITICAL ISSUES

DOES SITUATION STABILIZE, INTENSIFY, OR OTHERWISE CHANGE

PREVENTIVE STRATEGIES

RESCUE INJURED OR ENDANGERED PERSONS

1. protect response team
2. rescue trapped or injured persons
3. evacuate from exposure

PROTECT EXPOSURES

1. place personnel and vehicles in proper position
2. protect nearest unaffected material
3. use explosion resistant barriers
4. use tactical withdrawal
5. protect environmentally sensitive areas
6. use public affairs

CONTAIN, DISPERSE OR NEUTRALIZE THE HAZARD

1. stop the leak
2. remove ignition sources
3. use containment devices
   a. valves
   b. capping kits
   c. dykes
   d. booms
   e. containers
4. apply agents
   a. diluting
   b. neutralizing
   c. dispersants
5. start controlled ignition
6. promote natural degradation
7. take no action

EXTINGUISH IGNITED MATERIAL

1. use proper extinguishing agent
2. remove fuel supply
3. remove oxygen source
4. let substance burn
5. remove ignition sources

PREVENT CONTAINER FAILURE

1. cool containers
2. place barriers between sources and objects of stress
3. remove uninvolved materials
4. depressurize container

CORRECTIVE STRATEGIES

CLEAN UP AND RESTORATION

1. assess quantity spilled and area affected
   a. sensing
   b. monitoring
   c. sampling
2. assess impact on the environment
   a. safety
   b. spill destination
   c. effect on wildlife
   d. evaporation/ bio-oxidation
3. evaluate available clean up technology
   a. skimmers
   b. vacuum trucks
   c. pumps
   d. manpower
   e. water wash
   f. dispersants
4. assess impact of clean up and disposal on the environment
   - worker safety
   - environmental (balance impact vs. benefits

DISPOSAL

1. separate
2. treat on site
3. dispose of product
   a. reuse/recycle
   b. treat/ neutralize
   c. incinerate
   d. use land disposal surface burial secure landfill
4. dispose of material and debris

STRATEGY AND TACTIC SELECTION

DECIDE

ACT

IMPLEMENTATION

RG7778 02/92 MCS/9

RESPONSIBLE CARE: A TOTAL COMMITMENT

Developed by Imperial Oil Limited and supported by the Canadian Chemical Producers' Association, TEAP, Lambton College Industrial Training Division and Canadian Petroleum Products Institute.

Esso CHEMICAL Imperial Oil