2016
V4.03

HIGH RISK HAZARDS
Field Support Guide

A COPY OF THIS GUIDE IS TO BE PLACED IN EVERY AMBULANCE FOR REFERENCE.

REVISED JULY 13, 2016

BCEHS | BC Emergency Health Services

Contents

INTRODUCTION

The High Risk Hazard project was started in 2015 as an initiative to inform employees and supervisors of high risk activities that paramedics could be exposed to during the course of their work in the field. It is a result of collaboration among many departments including Patient Care Delivery, Patient Care Communication & Planning, Provincial Programs, Occupational Health and Safety and BCEHS Learning.

The objective is not to use this, or any other document to train workers in safe work procedures, rather to aid responding staff in conducting a risk assessment, identifying high risk activities and hazards and setting expectation of a safe work environment for all responders. This document is designed to be used as a guide and reference in support of training that will be rolled out to the staff as well as daily operations.

This guide is a living document. Changes will occur as the organization and field staff makes recommendations or improvements to the guide and its content that further enhance the safety of responders in the field. Suggested updates, changes, additions, or alterations may be forwarded to your District Occupational Health and Safety Committee, Regional Safety Officer, or Manager who will review and forward to leadership.

SCOPE

This element of the program applies to all BCEHS employees that operate in the field.

DEFINITIONS

Avalanche Risk Area – Area that has been mapped and defined as having potential for avalanche along with having a hazard level greater than "Green."

CBRNE TA – BCEHS Technical Advisor program provides real-time technical information to on-site supervisors and crews regarding hazardous substance and chemical, biological radioactive, nuclear and explosive (CBRNE) responses throughout the province. Working in conjunction with each Dispatch Centre, the technical advisors and supervisors provide a solid 'first line of defence' towards protecting personnel and first receiver sites/facilities.

Confined Space – A confined space is an enclosed or partially enclosed area that is big enough for a worker to enter. It is not designed for someone to work in regularly, but workers may need to enter the confined space for tasks such as inspection, cleaning, maintenance, and repair. A small opening, a high opening, or a layout with obstructions can make entry and exit difficult and can complicate rescue procedures.

Entry into confined spaces can be very hazardous. Workers must not be allowed to enter such spaces unless proper training, equipment, and procedures are in place. Significant risk exists to workers entering a confined space without appropriate training and PPE.

D5 "All Hazards" – BCEHS procedure related to activation of the BCEHS Technical Advisor.

Depths – Can include trenches, excavations, and holes.

Dynamic Environment – Refers to the potential risk created by the ever changing nature of pre-hospital work. Requires employees to remain aware of their environment during an event and perform continuous scene assessments for risks and hazards.

Evacuation – (inside / outside exclusion zone) Emergency evacuation is the immediate and urgent movement of people away from the threat or actual occurrence of a hazard. In situations involving hazardous materials or possible contamination, evacuees may be decontaminated prior to being transported out of the contaminated area. Crews must follow directions of the Technical Advisor or Command and remain in communication with dispatch at all times. Public Health, Fire Department or local authorities c3an determine if evacuation is necessary.

- Sierra, Technical Advisor (TA) or Ministry of Health Duty Officer (MoH DO) to determine site of evacuation "Reception Centre" from local Emergency Manager or Emergency Social Services and communicate location. BCEHS crews are to assist staff at center and deal with all medical issues etc., until center can function properly

Hazard – An unsafe condition or practice that creates a risk of injury or illness to an employee.

High Risk Hazard – substance or situation with potential for causing death, significant injury or illness, damage to property, or damage to the workplace environment is especially acute.

High Risk Hazard CAD Message – Pre-scripted messages designed to convey information related to employees' activity near high risk hazards. These messages might be delivered to the mobile CAD terminal automatically based on the MPDS assessment, or added by the dispatcher based on the circumstances of the response.

Industrial/Construction Area – Typically an industrial or construction area is restricted to employees only and general public access is denied. This is due to WorkSafeBC regulation along with both worker and public safety.

Industry refers to the commercial production and sale of goods. Industrial companies make tangible items to sell to the public, government or other entities. They create products where no product existed through manufacturing processes. They build factories to create these products and hire engineers and scientists to design new ones.

Construction includes erection, alteration, repair, dismantling, demolition, structural maintenance, painting, land clearing, earth moving, grading, excavating, trenching, digging, boring, drilling, blasting, or concreting, the installation of any machinery or plant, and any work or undertaking in connection with a project but does not include any work or undertaking underground in a mine

Mine Site – includes

a) a place where mechanical disturbance of the ground or any excavation is made to explore for or to produce coal, mineral bearing substances, placer minerals, rock, limestone, earth, clay, sand or gravel,
b) all cleared areas, machinery and equipment for use in servicing a mine or for use in connection with a mine and buildings other than bunkhouses, cook houses and related residential facilities,
c) all activities including exploratory drilling, excavation, processing, concentrating, waste disposal and site reclamation,
d) closed and abandoned mines, and
e) a place designated by the chief inspector as a mine;

MPDS – Medical Priority Dispatch System – The tool that dispatch uses to assess incoming requests for service

Perimeter In Dispatch - The exclusion area established around an event. In dispatch this is accomplished by closing or restricting roads and areas around an event and notifying active units of the event perimeter. At this time CAD perimeters are only visible on dispatch CADs and are not seen by crews on MobileCAD in the ambulance. For many events like gas leaks, fires, bomb threats crews will be staged outside the event perimeter. Once there is a unit on scene the BCEHS Incident Commander is responsible for establishing unified incident command, updating dispatch on perimeter requirements (in consultation with the TA as required) and directs all BCEHS activity within the perimeter. Dispatch will coordinate and work with the BCEHS Incident Commander for any new service request within the perimeter;

Poor Communications – Refers to the risk that is created through lack of communication. This can be between partners, agencies, crew and dispatch and others.

Right To Refuse Unsafe Work - The refusal of unsafe work is both a fundamental right and a responsibility held by workers. A worker's refusal of unsafe work is an integral element in ensuring work is carried out safely. Workers who reasonably believe work is unsafe must refuse to perform that work and are entitled to have their employer investigate and, where necessary, correct the hazard.

a. *"Undue hazard"* – An unwarranted, inappropriate, excessive or disproportionate thing or condition that may expose a person to a risk of injury or occupational disease.
b. *"Reasonable cause to believe"* - Means that the worker must assess the situation as a reasonable person, taking into account relevant and available information and exercising good faith judgment with respect to the hazard with due regard to the worker's training and experience.

Shelter In Place - means to take immediate shelter where you are—at home, work, school, or in between. It may also mean "seal the room;" in other words, take steps to prevent outside air from coming in. Local authorities may instruct you to "shelter in place" if chemical or radiological contaminants are released into the environment. Crews directed to shelter in place must follow directions of the Technical Advisor or Incident Commander and remain in communication with dispatch at all times. If an order to shelter in place comes into effect crews will be directed to stay at their location until they can be safely moved out of the event area.

Slopes & Inclines – Can include ditches, banks of rivers or highways

Staging Zones – A location established where resources can be placed while awaiting a tactical assignment.

a) Cold zone – (also referred to as the safe zone) an uncontaminated area where workers and equipment could be assembled without risk of exposure to hazardous conditions.
b) Hot zone - (also referred to as the exclusion zone). Is the area where contamination may occur. The primary activities performed in this area are hazard assessment, control of the release or hazard and rescue. Personnel working in the hot zone wear high-level personal protective equipment required for that site.
c) Warm zone - An area adjacent to a hot zone where decontamination of personnel and equipment takes place.
d) Restricted zone **-** The area, within which exposure control measures are likely to be needed, based on the results of field monitoring.
e) Buffer/Security zone - In a planning context this zone is intended to separate the public and other facilities from the consequences of an incident involving hazardous materials. This zone describes the allowable land uses around a hazardous facility.

Supervisor – A person, who instructs, directs and controls workers in the performance of their duties. In BCEHS this can include: manager, Duty Supervisor, Dispatch Supervisor/Charge Dispatcher, Dispatch Officer, Unit Chief, Technical Advisor, ETP/PRP (EPOS), instructor, and preceptor.

Water – refers to any body of water where a risk of drowning exists.

RESPONSIBILITIES

Managers and Supervisors:

- Are directly responsible for ensuring supervision is fair and unbiased;
- Ensure all policies, procedures and guidelines related to this section of the program are communicated and followed;
- Not expose workers to unmanaged high risk hazards;
- Ensure that workers are instructed in safe practices at the time they are given assignments and as the work progresses;
- Ensure that workers are able to demonstrate standard operating procedures;
- The required personal protective equipment (PPE) is supplied and the use of equipment is enforced, as required;
- Established safety policies, safety rules and job procedures are enforced and disciplinary action is taken where indicated, in accordance with provisions of the Collective Agreement;
- Risk assessments are conducted, and control measures are developed for identified hazards;
- Ensure that employees understand their roles and responsibilities under the OSH Program and are able to fulfill them effectively;
- Compliance with the WSBC OHS Regulation and Workers Compensation Act, as well as any other Acts, policies or regulations pertaining to BCEHS;
- The public is protected from the potential dangers of work being undertaken by BCEHS;
- Ensure resources to support supervision of employees are provided;

- Ensure that a safe and healthy work environment is promoted among the employees in the unit/department;
- Coach employees by establishing goals, action plans and time lines; and, mentor employees as needed.

Workers (Paramedics & Dispatchers)

- Comply with operational direction in regards to High Risk Hazards;
- Conduct a proper scene assessment evaluating hazards, taking appropriate measures to ensure the safety of all emergency personnel and bystanders;
- Notify appropriate supervisor as directed in the Duty Supervisor & District Manager Notification matrix; or when unmanaged risks are identified;
- Take reasonable care to protect their health and safety and the health and safety of other persons – bystanders and other responders – who may be affected by their work;
- Use protective equipment, devices and clothing as required;
- Refuse to perform work that they have reasonable cause to believe the work would create an undue hazard to the safety or health of any person;
- Report any incidents (injuries, contact/ exposures to an infectious agent, incident with the potential for causing serious injury) to their supervisor and the Workplace Health Call Centre (WHCC);
- Report unsafe conditions, equipment and acts to supervisors or management;
- Take an active role in protecting and promoting their own health and safety;
- Carry out their work in accordance with established standard operating procedures, and Exposure Control Plans;
- Refrain from activities which may jeopardize their own health and safety as well as the health and safety of others;
- Cooperate with the Workers' Compensation Board;
- Set a good example for safety.

Paramedic Responsibilities at High Risk Hazard Scenes

a. Based on the information provided by Dispatch, crews will be staged in a safe zone until the scene is determined to be safe. Crews will form unified incident command with other responders and will not proceed until the area is deemed safe.

b. Crews will perform their own independent scene assessment for risks and hazards and will stage in a safe zone as required. Crews are not to engage in rescue activities.

    (i) When performing their scene assessment, if the paramedics determine that the response area is a risk or hazard they will obtain the advice of the Technical Advisor or other subject matter expert (avalanche technician) to determine the safety of the response plan.

Incident Commander Responsibilities

a. A unit (first unit on scene) or a supervisor on scene is the Incident Commander and notifies dispatch that Incident Command (IC) has been established.

b. Reports to Command Post or forms Unified Command with other agencies.

c. Assesses the situation and communicate to Dispatch the hazards, the safe staging area, access/egress routes, patient numbers, resources required, technical support required, and provide regular status update reports.

d. Confirms with Dispatch the event perimeter size and boundaries around the incident, if required.

e. Provides Dispatch with any restrictions or access issues as well as any known hazards.

f. Manages and directs all resources, patients, EMS activities inside the event perimeter.

    (i) Liaises with other responders and provide for the safety and health of all responders

    (ii) Ensures the safety of all EMS providers working inside the event perimeter.

g. Coordinates and communicates with Dispatch any activities inside the event perimeter.

h. Provides regular updates on the event and needs including changing conditions, progress, crew or responder requirements, operational periods, and anticipated demobilized.

i. Notifies Dispatch of any restrictions/access issues as we demobilize. Provide Dispatch with contact information if Incident Command is remaining in place (ongoing event but EMS is no longer required).

RELATED DOCUMENTS

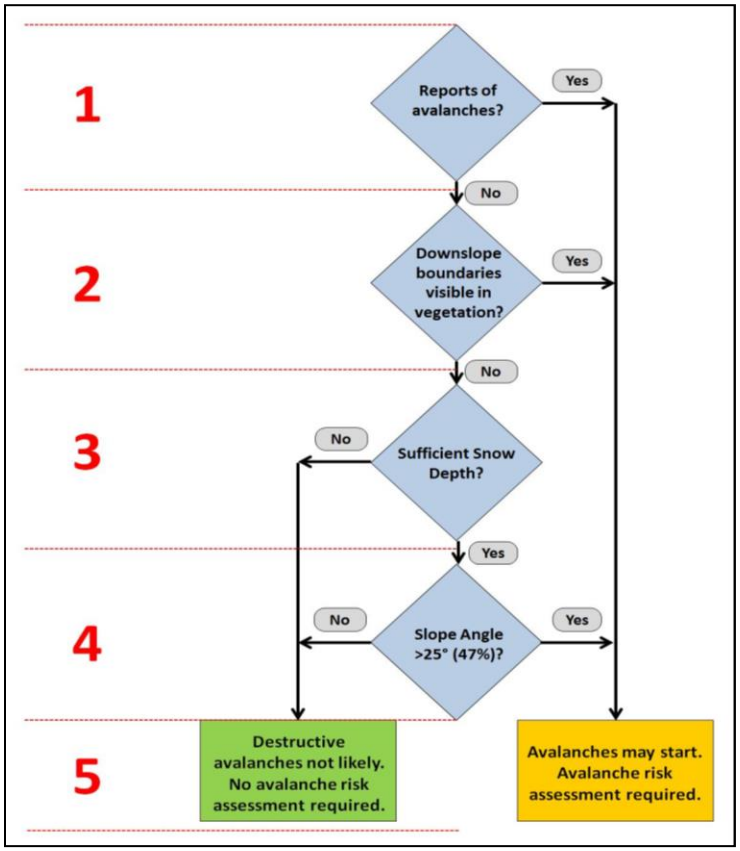
- High Risk Hazards – Field Support Guide for Supervisors
- High Risk Hazards – CAD Messaging
- Paramedic Quick Reference Guide
- Exposure Control Plan – part 1
- Exposure Control Plan – part 2
- High Risk Hazards – Dispatch Operations – D5 All Hazards
- Policy – Paramedic Safety at the Scene
- Policy – Search and Rescue Situations

AVALANCHE HAZARD AREAS

Information:

Many areas of British Columbia are exposed to an avalanche hazard when a sufficient snowpack exists. During the avalanche season (typically November-April), there is the risk of responding into areas that may have an avalanche hazard. Avalanche hazards are commonly found in mountainous backcountry terrain and along mountain highways and road systems. An avalanche risk assessment must be completed for worksites where there is, or may be, a risk from an avalanche to the worker. Further information is available on the BCEHS intranet on the BCEHS Avalanche Safety Plan.

The following flow chart is designed as a preliminary assessment tool in order to recognize avalanche risk areas:



Hazards inside an avalanche zone can be very high. They can include:

- Moving snow and debris
- Confined Spaces
- Heavy Debris
- Cold Temperatures
- Wet Conditions
- Environment (Weather)
- Slope

Risks:

- Being hit, moved, or buried by moving snow and/or debris
- Suffocation/Asphyxiation
- Hypothermia
- Trauma/Injury
- Poor Communications
- Fatality

Figure 1: Flowchart outlining steps for recognizing potential avalanche hazard (adapted from CAA, 2002[1])

Operational Direction:

- No employee is to enter an area at risk of avalanche unless an assessment has been undertaken and they are doing so under the guidance of an avalanche technician. In addition, crews must not stop in areas designated by "Avalanche No Stopping Zone" signage until a risk assessment has been completed.
- When employees identify unmanaged risks or are unsure of scene safety they are to contact a supervisor, directly or through dispatch, for guidance.
- Crews are not to engage in rescue activities.

1 Canadian Avalanche Association. 2002. Land Managers Guide to Snow Avalanche Hazards in Canada.

WORKING AROUND POWERED MACHINERY/EQUIPMENT

Information:

Many hazards exist when working around powered machinery and equipment. Powered machinery and equipment can include:

- Moving conveyor belts/production equipment
- Powered hand held or stand-alone machinery
- Working around de-energized equipment and machinery that may still be under other forces.

If the unexpected energization or start-up of machinery or equipment or the unexpected release of an energy source could cause injury, the energy source must be isolated and effectively controlled.

Hazards:

- Noise
- Vision
- Odor
- Vibration
- Rotating shafts
- In-running nip points
- Shearing parts
- Reciprocating parts
- Punching action
- Impact hazards
- Flying debris
- Abrasive surfaces
- Electrical hazards
- Hot/toxic fluids
- Vapours
- Emissions
- Radiation
- Fuels

Risks:

- Being struck by/caught in equipment
- Not having proper PPE
- Entanglement
- Trauma/Injury
- Carbon Monoxide or other atmosphere
- Electrocution
- Poor Communication
- Fatality

Operational Direction:

- Employees are not permitted to work around machinery or equipment unless it is verified that the machinery/equipment is de-energized.
- Verification of **lockout** (a device used to ensure that machines remain inoperable while repairs or adjustments are made) & **de-energization** (to disconnect from source of power) must be provided by the owner/operator or Rescue.
- For **UNCONTROLLED SITES, Machinery or Equipment** crews will need to stage in safe zone and the patient will need to be brought to the safe staging area. Crews may need to request assistance through dispatch.
- When employees identify unmanaged risks or are unsure of scene safety they are to contact a supervisor, directly or through dispatch, for guidance.
- Crews are not to engage in rescue activities.

WORKING AROUND MOVING VEHICLES AND EQUIPMENT

Information:

Emergency Medical Services (paramedics) performing their duties while responding to emergencies or unplanned events on highways, roadways, and parking areas are at risk of being injured as a result of traffic hazards, especially in the vicinity of moving vehicles.

Moving vehicles include but are not limited to: cars, trucks, trains, buses, aircraft, forklifts, ATV's, snowmobiles etc.

Hazards:

- Excessive noise
- Odor
- Vibration
- Vapours
- Carbon Monoxide or other Atmosphere
- Fuels

Risks:

- Being struck by/caught in equipment
- Being struck by a vehicle
- Trauma/ Injury
- Poor Communication
- Burns
- Fatality

Operational Direction:

- All employees working around moving vehicles are to wear high visibility apparel.
    - In the event the patient cannot be brought to the ambulance in workplaces and non public sites, paramedics must be escorted to the patient by Industry site personnel or owner/operator using a safe route.
    - For public sites/roads crews can be escorted or assisted by RCMP or someone in charge of traffic control.
- Employees may direct the stoppage of vehicles and equipment to provide scene safety but are not to provide traffic control (flagging).
- Employees are not permitted to perform search and rescue operations. In addition, employees are also not permitted to ride on any mobile equipment, machinery or a vehicle that is <u>not</u> one of the following:
    - BCEHS property or,
    - Subcontracted by BCEHS for the purpose of transporting a patient or,
    - NHA Transportation Bus
    - Coast Guard or,
    - BC Ferries, MOTI Inland Ferries, or Water Taxis
    - Police, fire or, corrections vehicle (employee must be orientated to the vehicle in case of emergency where practicable).
    - Public transportation (sky train/ gondola/ taxi/ train/ planes/ buses)
    - Any exceptions will require an SOP (ex. Sicamous Rescue boat, Hartly Bay Gator, Private Ambulance, etc.)
- When employees identify unmanaged risks or are unsure of scene safety they are to contact a supervisor, directly or through dispatch, for guidance.
- Crews are not to engage in rescue activities

WORKING AROUND WATER

Information:

When working over and around water as well as natural ice over water presents special dangers. Safe work practices exist to reduce the risk of drowning to employees responding to locations over or near water where a risk of drowning is present or if the crew is not certain if a risk of drowning exists. For the purpose of this document water refers to both standing or flowing water where a risk of drowning or harm to the employee exists.

Hazards:

- Dynamic Environment
- Boats, Vessels
- Tides
- Currents
- Waves
- Cold Temperatures
- Environment (Weather)
- Contaminated water
- Swift water
- Floating Debris
- Dock/Wharf

Risks:

- Being struck by or fall in or immersed/submersed in water
- Struck by, cut and/or trapped by floating debris
- Drowning
- Hypothermia
- Trauma / injury
- Health hazards
- Poor Communication
- Fatality

Operational Direction:

- Where there is a risk of drowning, all employees working near water where guardrails are not in place must wear a personal floatation device.
- Employees are not to enter the water or natural ice over water surfaces to rescue patients/victims.
- When employees identify unmanaged risks or are unsure of scene safety they are to contact a supervisor, directly or through dispatch, for guidance.

FLOODING

Information:

Floods can be caused by intense rainfall, melt-off from heavier than normal winter snowfall, landslide dams on rivers, and tsunamis. They may be precipitated by an earthquake and, in turn, may precipitate landslides.

There may be sufficient advance warning to permit evacuation prior to the event, possibly enough advance warning to permit flood proofing to protect your home. The effects of flooding can be localized or widespread.

All of BC is subject to risk of flooding.

Hazards:

- Swift water
- Floating Debris
- Unstable banks
- Electrical – downed power lines
- Contaminated water
- Tides
- Currents
- Waves
- Wind
- Cold
- Environment (Weather)
- Swift water
- Pollution
- Chemicals
- Fertilizer/ Pesticides
- Wildlife
- Domestic Animals
- Sewage
- Oil or chemical waste

Risks:

- Being struck by or fall in or immersed/submersed in water
- Struck by, cut and/or trapped by floating debris
- Electrocution
- Infection
- Drowning
- Hypothermia
- Trauma/injury
- Poor Communication
- Fatality
- Chemical Burns
- 60 centimeters (2 feet) of moving water can cause a vehicle to be swept away
- 15 centimeters of water can cause unstable footing
- Stagnant Water (bacteria and mold)

Operational Direction:

- Crews are not to engage in rescue activities.
- HUSAR trained staff are exempted from this direction if they are responding as part of CANDF1.
- Crews are **not** to perform rescues of any nature. This includes but is not limited to swift water rescue, traversing over flooded plains. Crews should not stop on bridges or linger near slide areas or riverbanks that are experiencing high flows.
- If crew identify unmanaged risks or are unsure the scene is safe they are to contact dispatch and request a supervisor to contact them for guidance.
- Crews must wear appropriate PFD and PPE as indicated.

CONFINED SPACES

Information:

A confined space means an area, other than an underground working, that is enclosed or partially enclosed, is not designed or intended for continuous human occupancy, has limited or restricted means for entry or exit that may complicate the provision of first aid, evacuation, rescue or other emergency response service, and is large enough and so configured that a worker could enter to perform assigned work. Confined spaces including but not limited to silos, vats, hoppers, utility vaults, tanks, sewers, pipes, access shafts, truck or rail tank cars, aircraft wings, boilers, manholes, manure pits, storage bins, ditches and trenches. Any enclosed area that work does not normally take place.

Hazards

- Carbon Dioxide
- Carbon Monoxide
- Methane
- Ammonia
- Hydrogen Sulfide
- Poor to no ventilation
- No oxygen
- Entrapment
- Engulfment
- Biological exposure
- Explosive atmosphere
- Ignitable Atmosphere

Risks:

- Entrapment
- Exposure to toxic gases
- Trauma/Injury
- Suffocation/Asphyxiation
- Hypothermia
- Hyperthermia
- Poor Communication
- Fatality

Operational Direction:

- No employee is permitted to enter a confined space.
- Situation requires contact with the CBRNE TA (by or via dispatch or directly by the crew) for continued safety of response; their specific training in CBRNE provides best practice instruction for complete scene-patient risk management. Crews will comply with direction provided by the TA.
- Crews will stage in a safe location and have patients brought to them.
- When employees identify unmanaged risks or are unsure of scene safety they are to contact a supervisor, directly or through dispatch, for guidance.
- Crews are not to engage in rescue activities.

WORKING AT HEIGHTS

Information:

There are a variety of jobs in construction and other industry that require employees to work from heights. This type of work poses some very unique risks and some significant dangers. Falls from heights still remain one of the main causes of work related injuries, disabilities, and death.

Because of the risk involved any worker who works from a height of 3m (10ft) or more must have adequate training and certification in addition to: proper maintained equipment; engineered anchors; and a fall protection plan. BCEHS paramedics currently do not receive training in fall protection and do not engage in search or rescue.

Hazards:

Areas or structures at a height above the ground including but not limited to buildings, machinery, ladders, scaffolding, bridges, wharfs, stairwells, escalators, stages, back decks, patios, balcony's, observation platforms, fences, suspended scaffolds, scissor lifts.

Risks:

- Falling from a height
- Trauma/Injury
- Loss of balance / unstable platform
- Weight
- Restricted access or egress
- Not having proper PPE or fall protection
- # of people
- Poor Communication

Operational Direction:

- Employees are not permitted to work at heights above 1.22m (4ft) unless the area is enclosed by permanent guardrails.
- Employees are not permitted to work above 3m (10ft) unless a fall protection system is in place – which includes permanent guardrails.
- If working on a flat roof, employees must remain 2m (6.5ft) from the edge.
- Employees are not permitted to access ladders, scaffolds or temporary work platforms.
- When crews identify unmanaged risks or are unsure of scene safety they are to contact a supervisor, directly or through dispatch, for guidance.
- Crews are not to engage in rescue activities.

WORKING AROUND BLASTING AND EXPLOSIONS

Information:

Blasting operation includes preparing, placing, and firing a charge, handling a misfire, and destroying or disposing of explosive materials.

Hazards:

- Blasts or explosions
- Noise
- Vision
- Odor
- Vibration
- Vapours
- Emissions
- Radiation

Risks:

- Contact with blast/explosive devices
- Concussive impact of blasts/explosions
- Being hit or stuck by debris as a result of blasts/explosions
- Buried by debris
- Trauma/Injury/Burns/Blast Injury
- Atmosphere
- Poor Communication
- Fatality

Operational Direction:

- No employee is to enter an area where blasting or demolition is taking place.
- Situation requires contact with the CBRNE TA (by or via dispatch or directly by the crew) for continued safety of response; their specific training in CBRNE provides best practice instruction for complete scene-patient risk management. Crews will comply with direction provided by the TA.
- When crews identify unmanaged risks or are unsure of scene safety they are to contact a supervisor, directly or through dispatch, for guidance.
- Crews are not to engage in rescue activities.

PRESSURE WASHING & ABRASIVE BLASTING

Information:

Abrasive blasting or high-pressure washing can release lead dust or other toxic substances into the air. Crews may encounter these activities in construction sites or renovation projects. Be aware of these hazards and avoid exposure to them.

Note for paramedics: N95 respirator is not adequate protection.

Hazards:

- Inhalation of hazardous atmosphere
- Excessive noise
- Limited visibility
- Wet/slippery surfaces
- Slip / Fall
- Electricity
- Glass shards

Risks:

- Trauma/Injury/Penetrating eye injury
- Carbon Monoxide or other atmosphere
- Electrocution
- Exposure to debris and physical forces
- Poor Communication

Operational Direction:

- Crews will not enter a scene until work procedures have stopped and employees have confirmed with the contractor, owner or employer that employees will not be exposed to a hazard.
- No employee is to enter an area where pressure washing/abrasive blasting is taking place or the system is under pressure (not de-energized)
- Situation requires contact with the CBRNE TA (by or via dispatch or directly by the crew) for continued safety of response; their specific training in CBRNE provides best practice instruction for complete scene-patient risk management. Crews will comply with direction provided by the TA.
- When employees identify unmanaged risks or are unsure of scene safety they are to contact a supervisor, directly or through dispatch, for guidance.
- Crews are not to engage in rescue activities.

WORKING AT DEPTHS

Information:

Workers can be critically injured or die in an excavation cave-in. Most cave-ins occur on small, short-duration jobs like water, gas, electrical and sewer connections. Be aware environmental factors can also affect the stability of an excavation site.

Hazards found on excavation sites include but are not limited to:

1. entry into trenches or excavations more than 1.2m (4ft)
2. excavated material or other objects falling on workers
3. exposure to underground services or overhead electrical cables
4. hazardous atmosphere (noxious gases/lack of oxygen/ flammable or explosive gases)
5. incidents involving vehicles and other mobile equipment

Hazards:

- Fire
- Physical Forces
- Excessive noise
- Limited vision
- Vibration
- Electrical hazards
- Hot/toxic fluids
- Vapours
- Emissions
- Hazardous atmosphere & toxic gases
- Entrapment
- Engulfment
- Biological exposure
- Explosive or ignitable atmosphere

Risks:

- Being trapped in/crushed
- Electrocution
- Drowning
- Exposure
- Poor Communication
- Fatality

Operational Direction:

- Employees are not permitted to enter or work in excavations over 1.2m (4ft) in depth.
- Situation requires contact with the CBRNE TA (by or via dispatch or directly by the crew) for continued safety of response; their specific training in CBRNE provides best practice instruction for complete scene-patient risk management. Crews will comply with direction provided by the TA.
- Watch for signage at scene for PPE requirements & wear PPE as indicated.
- Employees will not enter a scene until work procedures have stopped and employees have confirmed with the contractor, owner or employer that employees will not be exposed to a hazard.
- Sloping/ Shoring and other mitigation measures must be in place to ensure the hazard has been addressed. (see educational bulleting for Excavation)
- When employees identify unmanaged risks or are unsure of scene safety they are to contact a supervisor, directly or through dispatch, for guidance.
- Crews are not to engage in rescue activities.

WORKING AROUND FIRE, FLAMES, AND LIGNTNING

Information:

As part of EMS Group activities within Incident Management Procedures, BCEHS Crews will establish a Rehydration Unit at all incidents involving but not limited to associated services response personnel that are involved in extended and/or extreme response operations, including but not limited to:

- Exposure to extreme ambient temperatures
- Prolonged fire suppression activities
- Personal Protective (HAZMat) encapsulation, i.e. Level A,B,C.
- Provide pre and post activity documentation and medical assessment of personnel

Hazards:

- Dynamic environment
- Explosions
- Excessive noise
- Electricity
- Toxic gases
- Environment (Weather)
- Heat
- Poor to no ventilation
- No oxygen
- Entrapment
- Engulfment
- Secondary explosion

Risks:

- Being exposed to excessive heat
- Being hit or struck by sparks/flames
- Being trapped in burning areas
- Being hit or struck by debris
- Being exposed to fumes of burning substances
- Smoke inhalation
- Electrocution
- Trauma / Injury / Burns
- Hyperthermia
- Poor Communication
- Fatality

Operational Direction:

- Intentional and unintentional fires – stage in a safe location and contact TA
- Fire Standby:
    - Workers are to ensure that in the event they are dispatched to a fire (to provide Rest and Rehydration to Fire Crews) or on standby to assist during Wildfire season they remember to rehydrate frequently.
- When crews identify unmanaged risks or are unsure of scene safety they are to contact a supervisor, directly or through dispatch, for guidance

WORKING NEAR OIL AND GAS PIPELINES

Information:

The Oil and Gas industry produces and uses many chemical products on its worksites. Workers exposed to chemicals produced and used in the industry may develop occupational diseases of the lungs, skin, and other organs, depending on the amount and length of time of exposures. Workers exposed to hazardous noise levels may develop noise-induced hearing loss. Other dangers include confined spaces, in which untrained workers have been seriously injured or killed.

Hazards:

- Fire
- Multiple Chemical, Hydrocarbon products
- Multiple methods of exposure, atmosphere, dermal, inhalation
- Explosion
- Dynamic Environment
- Excessive noise
- Vapours
- Emissions
- Environment (Weather)
- Toxic Gases
- Poor to no ventilation
- Engulfment
- Explosive or ignitable atmosphere
- Confined Spaces and associated hazards

Risks:

- Burns
- Asphyxiation
- Trauma / Injury
- Exposure
- Poor Communication
- Not having proper PPE
- Fatality

Operational Direction:

- Employees will not enter a scene until work procedures have stopped and employees have confirmed with the contractor, owner or employer that employees will not be exposed to a hazard.
- Employees are not permitted to work around machinery/equipment unless it is verified that the machinery/equipment is de-energized.
- On sites requiring specific training or PPE (i.e. H2S, rescue respirators) employees will stage in a safe area and will not enter the site. Crews should note closely any PPE signage on approach and scene assessment.
- When the patient cannot be brought to the ambulance, employees must be escorted to the patient by appropriate personnel using the safest route possible.
- Situation requires contact with the CBRNE TA (by or via dispatch or directly by the crew) for continued safety of response; their specific training in CBRNE provides best practice instruction for complete scene-patient risk management. Crews will comply with direction provided by the TA.
- When crews identify unmanaged risks or are unsure of scene safety they are to contact a supervisor, directly or through dispatch, for guidance.
- Crews are not to engage in rescue activities.

WORKING AROUND ANIMALS AND WILDLIFE

Information:

While working as a paramedic encounters with animals and wildlife can be frequent. While many encounters may be pleasant, some can be extremely dangerous. Steps can be taken to reduce these risks, but it is important that paramedics remain cautious when in the presence of animals and wildlife.

Hazards:

- Wildlife in domestic, rural or backcountry settings
- Wildlife hit by vehicles
- Blood and body fluids (BBF)
- Zoonotic transmission

Risks:

- Being bitten, struck or attacked by animals
- Being exposed to diseases animals may carry
- Trauma/Injury
- Exposure
- Inhalation
- Poor Communication

Operational Direction:

- Domestic Animals:
    - Crews should ensure they request family members to lock up and or secure all domestic animals that may be present with the patient so they may assess the patient.
- Wildlife:
    - Do not proceed into back country or areas of the attack – have patient brought to you. If wildlife is suspected ensure you contact dispatch to request conservation officer, animal control or police presence.

WORKING AROUND AIRCRAFT

Information:

Working at airports exposes paramedics to a wide range of hazards, many of which are unique to this area of emergency work. There are many things which need to be considered to maintain the safety of all workers. Usually paramedics will receive an orientation before boarding the aircraft. This is because there are safe operation procedures that will vary between aircraft.

Hazards:

- Moving or stationary aircraft, vehicles or machinery
- Dynamic environment
- Fuel
- Excessive noise
- Vibration
- Vapours
- Emissions
- Environment (Weather)

Risks:

- Contact with aircraft propeller or engines
- Being hit or stuck by aircraft, vehicles or mobile machinery
- Being exposed to substances
- Flying debris and dust
- Trauma/Injury
- Inhalation
- Poor Communication

Operational Direction:

- NO – Hot debarking (unless specifically exempted)
- Hi- Vis apparel required
- Crews are not to approach a running aircraft.
- If crew identify unmanaged risks or are unsure the scene is safe they are to work with the local airport authority or contact a supervisor, directly or through dispatch, for guidance.

WORKING AROUND MINES

Information:

A **mine** includes

a) a place where mechanical disturbance of the ground or any excavation is made to explore for or to produce coal, mineral bearing substances, placer minerals, rock, limestone, earth, clay, sand or gravel,
b) all cleared areas, machinery and equipment for use in servicing a mine
c) all activities including exploratory drilling, excavation, processing, concentrating, waste disposal and site reclamation,
d) closed and abandoned mines, and
e) a place designated by the chief inspector as a mine;

Hazards:

- Natural or man-made structures below ground level
- fire, unplanned explosion, hazardous atmosphere or other hazardous condition
- Physical forces
- Noise
- Vision
- Odor
- Vibration
- Hot/toxic fluids
- Vapours
- Emissions
- Radiation
- Toxic Gases
- Hydrogen Sulfide
- Poor to no ventilation
- No oxygen
- Entrapment
- Engulfment
- Biological exposure
- Explosive and ignitable atmosphere

Risks:

- Struck by object hazards
- Loose/ unstable/ slippery surfaces
- Caught in between objects
- Cave ins, blasting hazards
- Confined space hazards
- Mobile machinery and equipment hazards, falling objects, trip hazards, dust, etc. . .
- Trauma / Injury
- Poor Communication
- Exposure
- Not having proper PPE
- Carbon Monoxide or other atmosphere
- Fatality

Operational Direction:

- Prior to accessing any mine site crews must contact the TA and liaise with site personnel to ensure the route and activity is safe. Crew have the proper PPE and will be escorted to the patient side and escorted back out of the mine site
- Crews will not enter the scene until mining operations have stopped and have confirmed with the contractor, owner or employer that there will not be exposure to a hazard.
- Crews must wear hi-vis apparel and hard hat when entering a mine site.
- No employee is permitted to enter a confined space.
- Area Dispatch Operations Centre will have contacted the BC Mine Emergency Line.
- When crews identify unmanaged risks or are unsure of scene safety they are to contact a supervisor, directly or through dispatch, for guidance.
- Crews are not to engage in rescue activities.

WORKING AROUND ELECTRICITY

Information:

Injuries to paramedics from exposure to electrical hazards can be very serious or fatal. It is vital that electrical hazards are identified and managed appropriately as required.

Hazards:

- Power lines, power sources, power plants, underground services
- Electricity
- Power poles
- Transmission lines
- Transformers
- Fire
- Explosion
- Falling hazards
- Contact with a line
- Unseen power lines

Risks:

- Trauma/Injury
- Burns
- Electrocution
- Poor Communication

Operational Direction:

- A 10m (33ft) perimeter must not be entered around all power lines involved in incidents – this includes vehicles that have contacted a power line – and must be maintained until a representative of a local electricity provider crew arrives on scene and provides a face-to-face confirmation to the incident commander that it is safe for responders to enter that safety perimeter.
- When crews identify unmanaged risks or are unsure of scene safety they are to contact a supervisor, directly or through dispatch, for guidance.
- Crews are not to engage in rescue activities

WORKING AROUND FALLING HAZARDS

Information:

The most common injuries workers suffer from falling objects are bruises, fractures, strains, and sprains. The objects that commonly fall range from large items such as roof trusses and steel beams to small items such as fasteners and small hand tools.

Safety headgear must be worn by a worker in any work area where there is a danger of head injury from falling, flying or thrown objects, or other harmful contacts.

Hazards:

- Natural and manmade objects including but not limited to trees, rocks, tools

Risks:

- Being hit/stuck by falling objects
- Being caught in between moving objects
- Trauma / Injury
- Poor Communication
- Not having proper PPE

Operational Direction:

- Most areas where there is a risk of being struck or hit by a falling/ moving or flying object the workspace will have signage to indicate what PPE is to be worn. If the patient cannot be brought to you in a safe area, crews may be escorted on site. In the event this happens the crew must don all appropriate PPE available to them with regards to the hazards present (hi-vis vest; safety headgear; safety glasses, hearing protection, etc…). Crews are to perform a continuous risk assessment while on scene.
- Crews will not enter a work area where an unmanaged risk of falling object hazard has been identified.
- When crews identify unmanaged risks or are unsure of scene safety they are to contact a supervisor, directly or through dispatch, for guidance

RESOURCE OR ACCESS ROADS

Information:

BCEHS employees may be required to drive or stop on resource roads when responding to events. Travel on active access roadways is acceptable if NOT stopping in an avalanche zone or any area deemed high risk. It is important to know and understand the local signage, have the proper radio frequencies and radio protocols when using these roads.

Paramedics can be prepared by knowing the risks they may be exposed to due to weather conditions and ensuring both the vehicle is stocked with items that will assist in reducing the exposure and personal planning. For example, vehicles are stocked with ice grips, extra blankets, grit, tire chains, and a survival kit in winter months.

Hazards:

- Moving vehicles and equipment including but not limited to logging trucks and excavation equipment
- Unpaved roads
- Dangerous trees, loose rocks, stumps, or other unstable materials that is hazardous to road users.
- Brush, foliage or debris which prevents an adequate view by a vehicle operator and other hazards created by limited sight distance.
- Environment
- Serious weather conditions

Risks:

- Being hit or struck by moving vehicles and equipment
- Loss of control of the vehicle
- Wildlife
- Avalanche/Mudslide/Fire
- Flash Flood
- Bridge Damage
- Bridge washout
- Road washout
- Poor Communication
- Trauma/Injury
- Becoming Lost
- Vehicle Breakdown in isolated area
- Running out of fuel
- Lack of available food and water

Operational Direction:

- Travel on active roadway is acceptable if NOT stopping in avalanche area/zone/ terrain.
- Crews will perform a scene assessment upon arrival including assessing terrain for avalanche or debris slide risk and if necessary stage in a safe/cold zone until it has been determined that the risk level is acceptable.
- Events where crew is unable to drive to scene or walk to the patient - cannot access patient safely require SEARCH AND RESCUE - Crews will stage in cold zone and await the patient to be brought to them.
- Employees will not use unapproved transportation at any point during the response. This can include: ATVs, snowmobiles, or any other equipment NOT BCEHS property or subcontracted by BCEHS for the purpose of transporting a patient
- When crews identify unmanaged risks or are unsure of scene safety they are to contact a supervisor, directly or through dispatch, for guidance.

RESOURCE OR ACCESS ROADS (page 2)

SIGNAGE	Description
	**Name of Resource Road**
	**Road Entry Signage Includes**: • Road Channel • When and How to call in the direction travelled
	**Standard MUST CALL sign** Paramedics must call on the portable radio when they come upon these signs.
	**MUST CALL JUNCTION SIGN** Paramedics must call the direction they are traveling as posted on the signage present.
	**Kilometre Board**
	**Radio Channel Tab**

BACK COUNTRY RESPONSE

Information:

Backcountry responses entail risks, even if participants do not intend to place themselves in harm's way. In some circumstances, such as being in remote locations or in extreme weather conditions, even a minor accident may create a dangerous situation that requires survival skills.

Hazards:

- Dangerous trees, loose rocks, stumps, or other unstable materials that are hazardous to walk on
- Brush, foliage or debris which prevents an adequate view of other hazards created by limited sight distance
- Environment
- Weather
- Avalanche/ slide/fire
- Flash flood
- Wildlife
- No food or water
- Slips/ Trips/falls

Risks:

- Being bitten, struck or attacked by wildlife
- Exposure to diseases animals may carry
- Trauma/Injury
- Exposure to Elements
- Poor Communication
- Dehydration

Operational Direction:

- Stage in a safe/cold zone until it has been determined that the risk level is acceptable.
- Remember to assess for Avalanche risks in winter.
- Events where crew is unable to drive to scene or walk to the patient safely based on your BCEHS Equipment and Training will require SEARCH AND RESCUE - Crews to stage in cold zone and await the patient to be brought to them.
- When crews identify unmanaged risks or are unsure of scene safety they are to contact a supervisor, directly or through dispatch, for guidance.
- Crews are not to engage in search and rescue activities.

AGITATED OR VIOLENT PERSONS & WEAPONS

Information:

Paramedics are exposed to agitated or aggressive patients, and/or scenes that may expose the paramedics to the presence of a weapon.

Agitation can be defined as excessive motor activity associated with subjective experiences of tension. Depending on the degree of agitation, these patients might pose a risk for their own safety and for that of the paramedics and other first responders.

The assessment and clinical management of an agitated, potentially aggressive, or openly violent patient are complex tasks demanding different skills from paramedics that need to be applied in a coordinated manner.

Hazards:

- Violent or aggressive people
- Purpose built or improvised weapons

Risks:

- Being hit, struck, slashed, stabbed, impaled, shot or verbally abused
- Including but not limited to verbal and physical threats, such as hitting, biting, spitting, kicking
- Trauma/Injury
- Poor Communication
- Fatality

Operational Direction:

- If crew identify risk or safety issues they are to remove themselves from the situation/scene. Then stage in a safe location and notify dispatch of the situation.
- Request police assistance if they believe that an act of violence or a potential act of violence is a serious threat to their own safety or to the safety of another individual; and report to a supervisor any violent or improper behaviour they witness or are involved in and that they believe could result in a threat to their own safety or the safety of another individual.
- Report to a supervisor any violent or improper behaviour they witness or are involved in and that they believe could result in a threat to their own safety or the safety of another individual.
- If crew identify risks or are unsure the scene is safe they are to contact dispatch and request a supervisor to contact them for guidance.

TUNNELS

Information:

Tunnels pose unique challenges for paramedics tasked with responding to events located underground. In addition to the hazards presented by the scope of whatever emergency has occurred, the tunnel environment itself can also pose extraordinary risks to those entering the space to manage the problem.

Hazards:

- Man-made or natural tunnels and underground workings
- Access, Egress
- Carbon Monoxide or other Atmosphere
- Moving vehicles
- Dynamic Environment
- Noise
- Vision
- Odor
- Vibration
- Vapors
- Emissions
- Poor to no ventilation
- No oxygen
- Entrapment
- Explosive and ignitable atmosphere

Risks:

- Being trapped in confined spaces
- Being hit/stuck by falling objects
- Poor Communication
- Trauma/Injury
- Fire
- Explosion
- Carbon monoxide or other residual toxic atmosphere
- Hazardous materials

Operational Direction:

- Crews should stage in a safe location outside of the tunnel.
- Situation requires contact with the CBRNE TA (by or via dispatch or directly by the crew) for continued safety of response; their specific training in CBRNE provides best practice instruction for complete scene-patient risk management. Crews will comply with direction provided by the TA.
- If possible, any patients should be brought from the tunnel to staging crews.
- In the event crews need to enter the tunnel because the patient cannot be brought to them; the tunnel must be secured by traffic control and cleared by the fire department to ensure there is no risk of fire or exposure to toxic gases or smoke.
- When crews identify unmanaged risks or are unsure of scene safety they are to contact a supervisor, directly or through dispatch, for guidance

SLOPES AND INCLINES

Information:

Steep slopes, hills, inclines, and riverbanks may be hazardous and have increased risk for slips, trips, and falls due to the angle and terrain of the slope. The risk of falling while navigating a slope is further increased while trying to carry gear up or down the slope. Slopes may also have uneven, loose, unstable, or wet surfaces that affect traction. Care must be taken when walking or working on such surfaces.

When considering the slope during assessment remember that high angle rescue is defined by a slope greater than 45^{o} and at that point rescuers or patients are dependent on a life safety rope and not a fixed surface of support such as the ground. Slopes less than 45^{o} are low angle operations where rescuers depend on the ground for their primary support with a roper serving as a secondary means of support. At a slope of 35^{o} and less with stable ground the slope becomes safer for field staff to navigate without additional aid.

Hazards:

- Slippery surfaces
- Rocky terrain
- Loose rocks, stumps, or other unstable materials (sand/ mud/ rocks)
- Brush, foliage or tree branches/ stumps
- Environment (Weather)
- Dynamic Environment
- Landslides
- Flash floods

Risks:

- Inability to access/egress in an emergency
- Slip, trip or fall
- Trauma / Injury
- Not having proper PPE
- Poor Communication

Operational Direction:

- Crews may work in and around slopes after considering their safety under the following conditions:
  - Slope is less than 35^{o} **and also related to the embankment 30m or less.
  - There is no risk of falling (or tumbling) greater than 10 feet (3m).
  - If Slope is greater than 35^{o} there is a walkway present designed for human traffic
  - Terrain is walkable – no boulders, ice, or soil saturated with water
  - Must not require the assistance of ropes for workers to descend or ascend.
- When crews identify unmanaged risks or are unsure of scene safety they are to contact a supervisor, directly or through dispatch, for guidance.
- Crews are not to engage in rescue activities.

COMMERCIAL CARGO (TANKERS/TRANSPORTS/COURIERS)

Information:

As a paramedic you may be called to attend the scene of a transportation incident involving dangerous goods. For example, a vehicle has struck a tanker trailer carrying a dangerous good and the dangerous good may be leaking. In situations like this, paramedics must be able to recognize hazards quickly and take the appropriate action to protect yourself and others.

Hazards:

- Fire
- Explosion
- Toxic Gas/Fumes
- Exposure to chemical gases
- Dynamic environment
- Vibration
- Vapours emissions
- Engulfment
- Explosive atmosphere

Risks:

- Being trapped in burning areas
- Being hit or struck by debris
- Exposure to fumes of burning substances
- Smoke inhalation
- Trauma / Injury / Burns
- Poor Communication
- Fatality

Operational Direction:

- Crews should stage in a safe location as required.
- Situation requires contact with the CBRNE TA (by or via dispatch or directly by the crew) for continued safety of response; their specific training in CBRNE provides best practice instruction for complete scene-patient risk management. Crews will comply with direction provided by the TA.
- Additional consultation with the TA on decontamination process if patient is brought to staging area or has been exposed.
- If ongoing risk is present crews should have the patient brought to the cold zone.
- When crews identify unmanaged risks or are unsure of scene safety they are to contact a supervisor, directly or through dispatch, for guidance.

CHEMICAL RESPONSES

Information:

Every day there is a risk of paramedics being exposed to hazardous materials in their workplace, whether at the station or at the response scene. Examples include: waste management, clan labs, agriculture, courier vehicles, educational institutes, labs, research centres, oil & gas industry, chemical industry, shipping yards, mechanical shops, pulp and paper production, textiles, wholesale distributers, rail, pools, ice rinks, paint & solvent industry, manufacturing industry, welding/cutting, metal manufacturing, pharmaceutical industry, etc…

Hazards:

- Fire
- Multiple Chemical, Hydrocarbon products
- Multiple methods of exposure, Atmosphere, dermal, inhalation
- Explosion
- Dissemination / Dispersal
- Dynamic Environment
- Excessive noise
- Vapours
- Emissions
- Environment (Weather)
- Poor to no ventilation
- Entrapment
- Engulfment
- Explosive atmosphere
- Ignitable Atmosphere
- Cytotoxic and Hazardous Drugs
- Delayed to extremely rapid onset of signs and symptoms
- Affinity for body's areas of moisture

Risks:

- Trauma / Injury
- Not having proper PPE
- Poor Communication
- Unknown Chemicals
- Unknown Powders, materials, liquids
- Mixtures
- Exposure
- Not aware of exposure
- Delayed onset of signs and symptoms
- Undetected hazardous chemicals
- Exposure due to PPE being incorrectly worn or of inappropriate design or classification

Operational Direction:

- Situation requires contact with the CBRNE TA (by or via dispatch or directly by the crew) for continued safety of response; their specific training in CBRNE provides best practice instruction for complete scene-patient risk management. Crews will comply with direction provided by the TA.
- Watch for signage at scene for PPE requirements & wear appropriate PPE as indicated
- Refer to BCEHS Exposure Control Plan – part 1
- When crews identify unmanaged risks or are unsure of scene safety they are to contact a supervisor, directly or through dispatch, for guidance.

BIOLOGICAL RESPONSES

Information:

Paramedics can be put at risk of being exposed to hazardous materials in their workplace, whether at the station or at the response scene. Examples include: agriculture/forestry/fishing, health and community services, zoos, hoarders residence, patient residences, patients travelling from different countries where communicable disease is present and on the rise, etc…

Hazards:

- Multiple methods of exposure
- Contact
- Droplet
- Airborne (small droplet < 5 microns)
- Explosion
- Vapours
- Emissions
- Entrapment
- Engulfment
- Unknown powders, liquids or other materials (or a mix of these)
- Environment (Weather)
- Poor to no ventilation
- Delayed onset of signs and symptoms
- Bio hazardous Wastes
- Lab cultures
- Animal products
- Animal urine/faeces
- Living Animals
- Human bodily matter
- Hoarders
- Waste Depots (Dumps)
- Mold

Risks:

- Exposure due to PPE being incorrectly worn or of inappropriate design or classification
- Poor communication
- Lack of, inadequate or inappropriate ventilation
- Lack of warning
- Not aware of exposure
- Delayed onset of signs and symptoms
- No detection equipment

Operational Direction:

- Situation requires contact with the CBRNE TA (by or via dispatch or directly by the crew) for continued safety of response; their specific training in CBRNE provides best practice instruction for complete scene-patient risk management. Crews will comply with direction provided by the TA.
- Watch for signage at scene for PPE requirements & wear your PPE as indicated
- Refer to BCEHS Exposure Control Plan – part 2
- When crews identify unmanaged risks or are unsure of scene safety they are to contact a supervisor, directly or through dispatch, for guidance.

RADIOLOGICAL RESPONSES

Information:

Paramedics risk being exposed to hazardous materials in their workplace, whether at the station or at the response scene. Examples of radiological sources can include: hospitals, educational institutes, patients under treatment or testing, courier trucks, commercial carrier transporting radiological equipment, etc…
Paramedics should watch for placards when radiological material might be present.

Hazards:

- Multiple methods of exposure, Atmosphere, dermal, inhalation
- Explosion
- Radiation
- Delayed onset of signs and symptoms

Risks:

- Trauma/Injury
- Exposure due to PPE being incorrectly worn or of inappropriate design or classification
- Poor Communication
- Unknown powders, materials, liquids
- Mixtures
- Not aware of exposure
- Delayed onset of signs and symptoms
- Long term consequences

Operational Direction:

- Situation requires contact with the CBRNE TA (by or via dispatch or directly by the crew) for continued safety of response; their specific training in CBRNE provides best practice instruction for complete scene-patient risk management. Crews will comply with direction provided by the TA.
- Watch for signage at scene for PPE requirements & wear PPE as indicated.
- Refer to BCEHS Exposure Control Plan – part 1
- When crews identify unmanaged risks or are unsure of scene safety they are to contact a supervisor, directly or through dispatch, for guidance.

TOXIC GASES

Information:

Gases and vapors produced, under many circumstances, have harmful effects on workers exposed to them by inhalation, absorption, or ingestion. Many toxic substances are dangerous to health in concentrations as little as 1ppm (parts per million). Given that 10,000ppm is equivalent to 1% volume of any space, it can be seen that an extremely low concentration of some toxic gases can present a hazard to health.

Gaseous toxic substances are especially dangerous because they are often invisible and/or odorless. Their physical behavior is not always predictable: ambient temperature, pressure and ventilation patterns significantly influence the behavior of a gas.

The toxic air pollutants of greatest concern are those that cause serious health problems or affect many people. Health problems can include cancer, respiratory irritation, nervous system problems, and birth defects. Some health problems occur very soon after a person inhales a toxic air pollutant. These immediate effects may be minor, such as watery eyes or they may be serious, such as life-threatening lung damage. Other health problems may not appear until many months or years after a person's first exposure to the toxic air pollutant. Cancer is one example of a delayed health problem.

Some sources of toxic gases can include: motor vehicles, burning fossil fuels such as coal or oil, fire, decaying organic matter such as compost, cleaning chemicals, and many others.

Hazards:

- Fire
- Asphyxiation
- Explosive atmosphere
- Ignitable Atmosphere
- Delayed to extremely rapid onset of signs and symptoms
- Affinity for body's areas of moisture
- Dangerous in concentrations as little as 1ppm

Risks:

- Trauma / Injury
- Not having proper PPE
- Poor Communication
- Unknown substance
- Mixtures
- Exposure
- Not aware of exposure
- Delayed onset of signs and symptoms
- No detection equipment
- Suffocation / Asphyxiation

Operational Direction:

- Situation requires contact with the CBRNE TA (by or via dispatch or directly by the crew) for continued safety of response; their specific training in CBRNE provides best practice instruction for complete scene-patient risk management. Crews will comply with direction provided by the TA.
- Watch for signage at scene for PPE requirements & wear PPE as indicated.
- Refer to BCEHS Exposure Control Plan – part 1
- When crews identify unmanaged risks or are unsure of scene safety they are to contact a supervisor, directly or through dispatch, for guidance.

ENVIRONMENTAL EXPOSURES - COLD

Information:

Exposure to cold temperatures below -7°C can result in cold injuries such as frostbite and hypothermia. Hypothermia (literally “low-heat”) is a condition marked by an abnormally low internal body temperature. It develops when body heat is lost to a cool or cold environment faster than it can be replaced. Temperatures do not have to be below freezing for hypothermia to occur.

Certain conditions can cause your core body temperature to drop below 36° C and thus lead to cold stress. Health problems that can result from cold stress include hypothermia and frostbite.

Hazards:

- Cold can increase the effects of some exposures such as vibration
- Insufficient PPE/appropriate clothing
- Decreased temperature in working environment
- Workers not accustomed to working conditions

Risks:

- Cold Stress
- Cold can increase the effects of some exposures such as vibration
- frostbite
- hypothermia
- Increased risk of MSI

Operational Direction:

- Paramedics should dress for the weather/environment
- Assess the environment and risk and ongoing access to (rewarming shelter) the ambulance.
- Monitor for cold exposure
- If the crew is not equipped to safely respond notify dispatch request assistance
- Refer to BCEHS Exposure Control Plan – part 1
- When crews identify unmanaged risks or are unsure of scene safety they are to contact a supervisor, directly or through dispatch, for guidance.

ENVIRONMENTAL EXPOSURES - HEAT

Information:

Human bodies naturally maintain temperatures between 36°C and 38°C. When the body temperature rises above this range, the body will get rid of the excess heat. However, if the body continues to gain heat faster than it can get rid of it, the body temperature increases and the person experiences heat stress. The body can generate heat itself or it can absorb it from the environment. These conditions may result in heat stress.

Hazards:

- High environmental temperatures
- Workers not accustomed to working conditions

Risks:

- Heat Stress
- Sunburn
- Dehydration
- Heat Exhaustion
- Heat Stroke

Operational Direction:

- Paramedics should dress for the weather/environment
- Monitor for heat exposure
- If the crew is not equipped to safely respond notify dispatch request assistance
- Refer to BCEHS Exposure Control Plan – part 1
- When crews identify unmanaged risks or are unsure of scene safety they are to contact a supervisor, directly or through dispatch, for guidance.

NOISE/VIBRATION

Information:

Noise is defined as unwanted sound and can exist in different forms: continuous, intermittent or impulsive. Continuous noise remains constant and stable over a given time period while intermittent noise varies between quiet and noisy. Impulsive noise is a burst of loud noise which remains for less than 1 second. Prolonged exposure to noise over 85db can begin to cause permanent damage.
Vibration of an object is the mechanical oscillation around an equilibrium point. Vibration exposures transmit between objects when objects are in contact with one another.

Sources:

- compressed air
- vacuum sources and ventilation systems
- pneumatic tools
- compressors
- engines/outboard motors
- aircraft

Risks:

- Exposure to noise can cause non-auditory effects (e.g. stress, annoyance, psychological effects) and auditory health effects. Auditory outcomes include: acoustic trauma (sudden hearing damage following an impulsive noise), tinnitus (ringing or buzzing), and temporary or permanent hearing loss.
- The slow progressing health effects associated with hand-arm vibration include tingling, numbness and pain. With continual exposure, Hand-Arm Vibration Syndrome can lead to the damage to blood vessels and nerves. This can cause the appearance of white fingers and may present symptoms such as a loss of grip and a loss of sensitivity to touch. The short-term health effects associated with whole-body vibration exposure include fatigue, headache, and insomnia. Long-term exposures to whole-body vibration may contribute to disorders of the digestive, musculoskeletal, circulatory and nervous systems.
- Poor Communication

Operational Direction:

- If crews suspect that this hazard may be present, then confirmation with the contractor, employer, or building owner that the crews will not be overexposed to noise and vibration.
- Paramedics should don appropriate hearing protection prior to entering the scene.
- Watch for signage at scene for PPE requirements.
- When crews identify unmanaged risks or are unsure of scene safety they are to contact a supervisor, directly or through dispatch, for guidance.

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