Extreme Weather and Natural Disaster

This response policy helps you identify suitable measures to protect yourself, your co-workers, contractors and the public against potential injuries while also securing our operations and from damage due to extreme weather events.

Roles and Responsibilities

All of us are responsible to:

- → Be familiar with and recognize threats from weather patterns
- → Immediately inform your supervisor of potential extreme weather
- → Report any violations of this policy which did or could result in an incident or injury

In addition, your supervisor is responsible to:

- → Monitor and review weather conditions to ensure a safe work environment
- → Immediately correct any violations of this policy which have been brought to his attention

Beyond these, management is responsible to:

- → Ensure compliance with this policy by all levels of the company including contractors, visitors and the general public within company's areas of responsibility
- → Ensure adequate resources are available to effectively implement this policy

Extreme Weather

Tornado

A tornado is nature's most violent form of storm activity.

- → They can produce upwardly spiraling winds of between 120 to 450 km per hour (75-280mph)
- → Tornados making ground contact can cause devastating damage along a path 50 to 300 meters in width (150-1000 feet).
- → The forward motion of the tornado funnel may be quite erratic as it zigzags along a southwest to north easterly direction (usually) at a forward speed of 50 to 70 km per hour (30-45mph).
- → A severe thunderstorm is the driving force behind a tornado.
- → A tornado may be accompanied by lightning, high winds, and hail.
- → Tornados can occur in any season however they typically occur during spring and fall due to changing weather patterns.
- → Tornadoes are often spawned from hurricanes

Signs

Hot, humid weather combined with a cold front could be a sign that a tornado is brewing, and a funnel cloud hanging from a dark cloud may be visible before the tornado actually occurs.

A tornado is recognizable by a funnel cloud hanging from the base of a dark, ominous looking storm cloud. The sound has been described as a tremendous roar which sounds like an express train or jet aircraft (only louder).

Clouds may be green or yellow tinged.

In a thunderstorm approaching from a westerly direction, the most likely place for a funnel cloud to appear is near the left-hand side (southern flank) of an approaching curtain of heavy rain and hail.

There is usually a noticeable lowering of a portion of the cloud that contains a large, swirling, turbulent mass from which the funnel will hang.

Preparedness

- → Ensure you know how to shut off gas, water and electricity.
- → Participate in mock drills.
- → Know where to find first aid kits, a flashlight, a portable radio, and extra batteries.

Watches and Warnings

- → The weather office issues warnings and radio and television repeat weather watches and warnings.
- → A **Tornado Watch** is an advisory only.
  - Nothing may happen but a watch could develop into a warning.
  - Stay alert! Listen to your radio.
  - A Watch means that all the conditions that make a tornado are present. It does not mean that a tornado will occur.
  - The message may include the phrase "Remember some severe thunderstorms can produce a tornado." This is really the same as a tornado watch.
- → A **Tornado Warning** means that the event is imminent.
  - If the warning is for the area where you are, take precautions immediately and listen to your radio for constant updates.
  - A Tornado Warning usually means that a tornado has touched down.

If you are indoors

- → Seek shelter in areas such as a basement, closet or bathroom, or along an interior wall of a substantial building to protect against flying glass.
- → Stay away from windows.
- → Avoid travelling any distance and being caught in the open.

If you are outdoors

- → Find shelter if possible
  - Shield yourself from flying objects.
- → If you cannot reach shelter
  - lie flat in a ditch, excavation or culvert.

Once the tornado passes, the danger may not be over.

- → Check for potential falling items, leaking gases, electrical threats or fires.
- → If you drive be aware of possible debris and road damage.

Lightning

Signs

- → Development of storm clouds in the area (20- 30 km (12-20 mile) range)
- → If you feel static electricity around your body, you may be in danger of being struck by lightning.
- → Use the 30/30 Rule.
- → Stop all work and find shelter if lighting is present in area.

30/30 Rule *(If 30 seconds, then wait 30 minutes)*

- → If the time between lightning and thunder is 30 seconds or less, go to a safer location
  - Every 5 seconds between the flash and thunder is 1 mile (1.6km)
- → Even if the lightning can't be seen, hearing thunder means you may need to go to a safer location
- → Wait at least 30 minutes after hearing the last thunder before leaving the safer location

General Procedures

- → Halt all aerial operation (cranes, booms and man lifts) until a storm has moved to a safe distance (approximately 6 miles or 10km)
- → Stay away from metal poles, fences, clothes lines etc.
- → Never shelter under tree/s.
- → Discard all metal objects.
- → If undertaking water activities, leave the water immediately.
- → Lightning Safe Position
  - Squatting or crouching with knees drawn up and feet together, preferably on dry insulating material (e.g. foam mat).
  - Keeping hands off the ground.
  - Spread group members out — about ten metres apart, but within calling distance.

If shelter is near-by:

- → Seek shelter in a hard top vehicle or solid building.
- → Keep clear of windows.
- → Avoid small structures or fabric tents.

If shelter is not available:

- → Remove metal objects from head/body.
- → Crouch (alone, feet together), preferably in a hollow. Make yourself a small target.
  - Do not lie down (the more of you that is in contact with the ground, the more 'attractive' you are to lightening) but avoid being the highest object.
- → Stay away from high and low points (hilltops, ridges & gullies), rock overhangs and shallow caves.
- → Keep out of, and well away from, water bodies or watercourses.
- → If your hair stands on end or you hear buzzing on nearby rocks, fences etc., move immediately. At night, a blue glow may show if an object is about to be struck.
- → If you're unable to take shelter inside, find the safest accessible location and stay there until the storm has passed.

If in a vehicle:

- → slow down or
- → park away from trees, power lines or other objects that may be damaged by storm activity.
- → Stay inside metal-bodied (hard top) vehicles but do not touch any metal sections.

- → The steel frame of a hard topped vehicle provides increased protection if you are not touching metal.
- → Although you may be injured if lightning strikes your car, you are much safer inside a vehicle than outside.

Rubber soled shoes and rubber tires provide NO protection from lightning.

If lightning strikes rubber tired equipment or vehicles

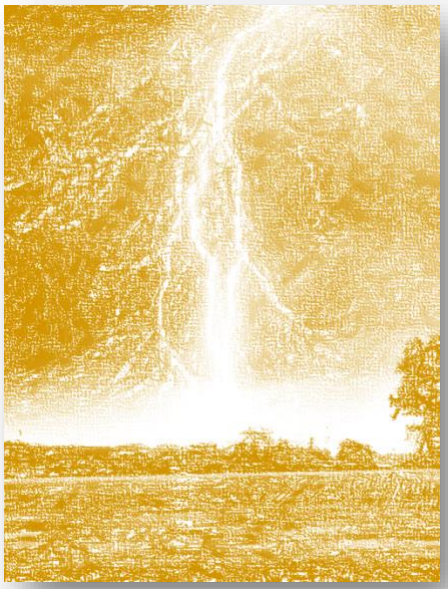
- → The equipment will NOT remain electrically charged.
  - The charge will typically ground itself through the tire rim base and arc to the ground through the rubber tire.
  - The greatest hazard exists in a tire fire or explosion due to the paralysis of the rubber.
- → After the strike, exit the unit while minimizing exposure with the tires and sidewalls.
- → Walk 300 meters (1000 feet) away from the front of the unit in a straight line and in the direction of the tire tread.
  - All other equipment operators should keep outside a 300metre (1000 foot) radius away from the unit.
- → Place "DO NOT ENTER" signs 300 meters (1000 feet) around the unit for at least 24 hours.
  - After 24 hours a competent person will use an infrared heat sensor to check for hot spots on the unit.
  - If hot spots remain, the area will continue to be barricaded for another 6 hours.
  - If there are no hot spots on the unit, particularly on the tires, a competent tire technician will then proceed to inspect the tire.

If lightning strikes track-type equipment

- → The equipment will NOT remain electrically charged.
  - The charge will typically ground itself through the tracks of the machine.
  - The greatest hazard exists if the operator is outside the cab of the machine and touching it when lightning strikes.
- → After the strike, exit the unit.
- → Walk 300m (1000 feet) away from the unit in a straight line.
- → Place "DO NOT ENTER" signs around the vehicle until the unit has been inspected by a competent mechanical Technician.

First aid

- → Apply immediate CPR to lightning victims until medical help arrives.
  - You won't receive a shock from the victim.



Hurricanes / Strong Winds

Hurricanes are second in ranking in destructive power to tornados but can wreak damage over a much larger area for a much longer duration.

- → Hurricanes are tropical cyclones that form over tropical oceans
- → They often cause considerable on shore damage and flooding
- → Hurricanes are characterized by the magnitude of sustained wind speeds
- → They are also known as Typhoons in some parts of the world.

What causes a hurricane?

Tropical storms become hurricanes only when different conditions exist over warm tropical oceans.

- → Tropical storms, warm ocean waters, moisture and winds are all prerequisites in the formation of hurricanes.
- → Once formed, hurricanes are further categorized (1-5) based on sustained wind speeds.
- → Category 1 hurricanes have winds of 119-150 km per hour (74-95mph)
- → Category 5 hurricanes have wind speeds of over 250km per hour (155mph).

General Precautions

- → Know if you are in a potential hurricane affected area
- → Monitor local news and media outlets during severe weather for updates
- → Develop an emergency response plan
- → Keep an emergency supply kit available
- → Follow local emergency response agencies directions during an evacuation
- → Do not return to the area until deemed safe by local authorities
- → The eye (center) of the storm passing through can seem like the storm is over.
    - ○ However, after the eye passes, the wind direction will change and quickly return to hurricane force.

Flood

The effects of flood waters include:

- → Excessive water on roads (above the wheels)
- → Washed out areas due to speed of water
- → Increase in depth to dugouts, low lying areas
- → Electrical hazards due to connections being under water

Flood Preparedness

We need to

- → know our risks
  - is our business located on a flood plain?
- → create a plan to mitigate our losses
  - government flood phone numbers
  - check for changes in local weather conditions via media
- → check the insurance coverage
- → identify critical assets and their exposure
  - staff and families
  - equipment
  - documents
  - information technology
  - facilities
  - stock
  - suppliers and
  - customers

Each location should assemble an Emergency Kit for the workplace.

Information and information technology	Ensure information is secure and backed up regularly and that backups are stored offsite and out of the impacted area. Computer equipment should be off ground or basement floors, and placed on higher floors. Create documentation for restoring computer equipment.
Critical systems	Identify critical systems such as Dispatch, IT or Payroll and determine a plan to have people work from home or another location.
Staff members and their families	Provide first aid training, develop phone tree contact lists and a contact point outside of the impacted area. Identify any worker who may need special assistance.

Documents	Move critical documents such as licenses and permits, accounts receivable and accounts payable records, cash, cheques, personnel records, mailing lists, supplier list, copies of software and backup of computer data, to safe storage or offsite.

During a Flood

Safety and security of lives is paramount. Ensure communications to stakeholders and prepare to evacuate.

- → Continue to listen and adhere to community messages from local government authorities and media.
- → Continue to update staff and customers on our situation.
- → Turn off all non-essential utilities
- → Gather clothing and supplies for at least 3 days

If an evacuation is ordered

- → Turn off all remaining utilities
- → Go to higher ground and avoid areas subject to flooding
  - Do not attempt to walk across flowing streams or flooded roadways
- → If you have come into contact with floodwaters, wash your hand with soap and disinfected water
- → If water rises before you can evacuate, go to the roof top, top floor, attic

Protecting critical assets

- → Equipment
  - Remove all hazardous materials to prevent pollution of the flood waters.
  - Move equipment to higher ground and turn off electrical power and water supply.
- → Facilities
  - Sandbag at points where water could enter the building.
  - Turn off fuel and water supply lines.
  - Lock the building and move stock to higher ground.

When ordered to evacuate

- → Follow evacuation routes recommended by authorities.
- → Do not drive on submerged roads.
- → If rising waters prevent your escape, move to a rooftop or high ground.
  - Wait for help.
- → Go to a predetermined assembly point and let people know you are safe.
- → Use the phone tree communications plan to contact others.
- → Volunteer if you are able to offer assistance.

Blizzard

Blizzards are the most threatening of winter storms

A typical blizzard will last longer than six hours, combine falling, blowing and drifting snow with wind speeds over 40 km per hour (25mph), reduce visibility, produce low temperatures and a snowfall of more than 10 centimetres (1/2 inch).

During a blizzard

- → If roads are in poor condition and travel is not recommended, stay where you are until the situation changes.
- → If you must travel, take a cellular phone with you or advise someone what route you are taking and your expected arrival time.
- → Work or walk slowly. Over exertion and exposure to the weather may lead to a heart attack unless you are in prime physical condition.
- → Always think in terms of preserving body heat. Perspiration can mean a dangerous loss of body heat. Your clothing is the closest insulation to your body and it must be kept dry. When you perspire, your clothing will become damp and lose its insulation value.
- → After the blizzard or bad weather has past, seek help during daylight hours.
- →
- → Use the high-energy foods packed in your Emergency Kit. Your body requires fuel to keep warm.
- → Stimulate circulation by moving your arms, hands and feet.

If you are indoors

- → Stay put, stay calm and await instructions from an emergency or designated person.
- → If there is no heat, close off unneeded rooms or areas, stuff rags or paper in cracks under doors.
- → Eat and drink to provide heat and prevent dehydration.
- → Wear layers of warm, loose clothing, if available.

If you are outdoors

- → Cover all exposed parts of your body.
- → Seek dry shelter.
  - ○ If shelter is not available, prepare a lean-to, wind break, or snow cave for wind protection.
- → If possible build a fire for heat and to attract attention.
- → Do not eat snow.
  - ○ It will lower your body temperature. Melt it first.

If you are driving

- → Always drive with extreme caution!
- → If your vehicle becomes stuck, think carefully before attempting to push the vehicle manually or shovel during strong biting winds, blinding snow and cold temperatures.

If you are stranded in your vehicle

- → Stay with and in your vehicle.
  - Slightly open a window on the sheltered side, away from the wind, for ventilation and to avoid carbon monoxide poisoning.
  - Wait for help. In a blizzard, rescue workers will be looking for stranded vehicles.
  - If you attempt to walk and find help in blowing snow, low temperature storm - disorientation can occur quickly and you can become lost.
- → Run the engine about 10 minutes each hour.
  - If your vehicle's exhaust pipe is buried in snow, try to clear the snow away or exhaust fumes will travel into the vehicle when it's running.
- → If you can't run your vehicle, use a candle and matches from your Vehicle Emergency Kit.
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- → Make yourself visible to rescuers.
  - Tie a coloured cloth to your vehicle's antenna, turn your dome light on at night.
  - Leave the car hood up to signal distress.
  - Turn on your emergency flashers to attract the attention of passing motorists or the police.
- → Exercise to keep blood circulating and stay warm.
- → Avoid overheating - loosen clothing at the neck, wrist and in front or remove layers of clothing.
  - Keep warm and dry.

Stay relaxed and think through possible actions.

Natural Disasters

Report and Response Procedures

- → Immediately after identifying signs of a potential severe weather or natural disaster event, any operations / worksite activity that may be at risk shall be halted.
- → Equipment, workers, Contractors, visitors and general public within the work site shall be directed to applicable safe locations as determined by the ERP and local authorities.
- → Supervisors / Management shall assist ERP teams to ensure all persons are accounted for.

Forest and Wild Fires

Forest or grassland fires can begin without warning,

- → They can spread up to seven kilometers per hour, the speed of a fast-walking man.

General Precautions

- → Follow all instructions given by local authorities during a forest fire event
- → Listen for public notices and warnings about the presence of smoke and air quality
- → Avoid outdoor activities when air quality is low
- → Breath through a damp cloth when in the presence of thick smoke
  - keep the cloth in front of your nose and mouth in order to avoid inhaling smoke
- → Close doors and windows and close off any unfiltered air exchange system
- → Ensure a vehicle emergency kit is available in your vehicle(s)

If an evacuation is ordered and time permits

- → Close any natural gas or propane valves into buildings
- → Move equipment to open areas away from combustible materials
- → Spray walls and roof of buildings abundantly with water
- → Lock all doors and windows
- → Make contact with others (friends, family, management) and advise of your location and plan during evacuation
- → Avoid driving routes where fire is present
- → Be on the lookout for new hazards or problems
- → Only return when permitted by authorities, during daylight hours
- → Document any damage immediately with photos

Earthquake

Earthquakes occur when two large blocks of earth suddenly slip past each other

- → Earthquakes are unpredictable
- → The surface where they slip is the fault line
- → The location where the earthquake occurs is called the hypocentre
- → Smaller aftershocks can occur before and after a larger earthquake

General Precautions

- → Know if you are in an earthquake prone area
- → Ensure you know how to shut off gas, water and electricity.
- → Participate in mock drills.
- → Know where to find first aid kits, a flashlight, a portable radio, and extra batteries.
- → Prepare an emergency supply kit and store it near a safe zone
- → For interiors:
  - Know the safe spots: interior walls, under sturdy tables or desks.
  - Place heavy items on lower shelves and place hanging objects away from seating

If you are indoors

- → Seek out the safe spots: interior walls, under sturdy tables or desks.
- → Stay away from the dangerous areas such as windows, hanging objects, shelves or cabinets.
- → During the shaking, drop to the ground, cover and hold.
- → Once shaking stops stay calm and check for injuries.

Afterward

- → Apply first aid if you are qualified.
  - Do not move any seriously injured persons unless they are in immediate danger.
- → Check for fires and damage to gas or electrical lines.
- → If you smell gas, do not use matches or electrical devices including your phone.
- → Check the building for structural damage.
- → Stay at least 10 metres from downed power lines.
- → Keep disaster response routes clear for emergency vehicles.
- → Be prepared for aftershocks.

Landslides

Landslides occur when the slope changes from a stable to an unstable condition

A change in the stability of a slope can be caused by a number of factors acting together or alone

Natural causes of a landslide include:

- → Groundwater
- → Loss of vegetation on slope
- → Erosion at the toe of a slope
- → Weakening of a slope through saturation by snow melt or heavy rains
- → Earthquakes and tremors
- → Volcanic eruptions

Human activities that can trigger landslides include:

- → Deforestation
- → Vibrations from machinery or traffic
- → Blasting
- → Earthwork which alters the shape of a slope
- → Construction work

General Procedures

- → If outdoors, move quickly away from its likely path
  - Avoid embankments, trees, power lines and poles
- → If indoors, find cover in the building that is furthest away from the approaching landslide
  - take shelter under a strong table or bench
  - hold on firmly until all movement has stopped
- → Afterward, stay away from the landslide as there may be additional movement for hours or days afterward

Vehicle Emergency Kit

Company and personal vehicles should be equipped with supplies which could be useful in an emergency including but not be limited to:

- → Blanket
- → Booster cables
- → Extra clothing and footwear
- → Fire extinguisher (rated A-B-C)
- → First aid kit with first aid manual
- → Flashlight and batteries
- → Gas line antifreeze
- → Maps
- → Matches and a "survival" candle in a tin can (to warm hands, heat a drink or use as an emergency light)
- → Non-perishable high energy foods (raisins, granola bars, etc).
- → Sand
- → Shovel
- → Solar, wind-up or battery radio
- → Tool kit
- → Water (bottled)
- → Warning light or reflectors

In addition to the above listed items, company vehicles which travel in remote / isolated areas should also include at a minimum:

- → Sand
- → Facial Tissue
- → Sleeping bag for each passenger
- → Pocket knife
- → Extra food and water supplies
- → Change of clothing along with extra socks, hats, mittens, boots and coats
- → Catalytic heater or propane lantern for heat and light.


SNAPLIGHT

References and Resources

Weather & Warnings

→ *Environment Canada — Weather Warnings*
Environment Canada — Weather Office

Preparedness

→ *Government of Canada – Get Prepared*
→ *FEMA – Federal Emergency Management Agency (USA)*
→ *National Oceanic and Atmospheric Administration*

Regulatory

→ Occupational Health & Safety Act, Regulation and Code