

Health and Safety Programs

Working in extreme conditions

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What would be considered an "extreme condition"?

The CSA Standard Z1010-2018 *Management of work in extreme conditions* defines extreme condition as "existing in a very high degree; exceeding the ordinary, usual, acclimatized to, or expected condition".

Extreme conditions include work both indoors and outdoors that involves conditions such as:

- Extreme cold, heat, or humidity
- High winds, including thunderstorms, tornados, and hurricanes
- Heavy rain, sleet, hail
- Flash flooding
- Lightning
- Severe winter weather such as high snowfall, or ice conditions (e.g., ice buildup, slippery conditions)
- High altitude
- High and low atmospheric pressure conditions
- Low visibility (e.g., low/no light, fog, smog, smoke, etc.)
- Forest fires
- Location - such as a complex terrain (e.g., rocky, uneven, sloped), or remote work site
- Other extreme conditions, such as ice roads

This document covers general situations when working in extreme conditions. Some conditions are not specifically addressed here, such as high altitude, atmospheric pressure, or forest fire fighting.

What are some tips when conducting a hazard assessment?

When assessing hazards associated with extreme conditions, always consider both the reasonable and potential harm that may occur. There may be changes to how the equipment, tools, machines, or products operate when used in an extreme environment. Also include any psychological or cognitive demands that may affect the worker, or may contribute to the severity of situations.

For more information on hazard identification and risk assessment, please see the OSH Answers documents on [hazard and risk](#), [hazard identification](#), [hazard control](#), and [risk assessment](#).

What are elements of a management program for extreme conditions ?

Planning for extreme conditions will include:

- On-site rescue procedures
- Rescue equipment
- Availability of first aid or medical assistance, including the response time or distance
- Site evacuation
- Coordination with other services (e.g., neighbouring organizations, police, fire, paramedic services, etc.)
- Location - remote vs. urban
- Living/rest shelters (if needed)

A management program will help to manage and control the hazards and risks. This program is ideally part of the organization's overall occupational health and safety management system, if one exists. Elements of a program for extreme conditions include:

- Procedures for safe work in the anticipated conditions
- Emergency response and rescue plans
- Use of monitoring systems, when available (e.g., cold, heat, humidity, etc.)
- Monitoring weather conditions

- Communication between all parties involved
- Transportation, including alternates if there is damage to the infrastructure (e.g., roads are closed)
- Work site design, where possible
- Administrative controls used, including restricting access, safe work procedures, etc.
- Education and training for work in those conditions
- Awareness of what controls are in place such as monitoring devices, guards, safety nets, warning signals (e.g., lights, horns) warning signs, working in a buddy system, etc.
- Assisting workers with any psychological or cognitive demands
- Fitness for work in those conditions

Determine what external groups may be available to help or if outside help depends on the situation (e.g., an extreme storm may mean that other services such as ambulance and police are not available).

Review programs, and conduct practice drills. Evaluate your program and the results of the drills. Elements of [incident investigation](#) may be helpful to structure this review.

Where can I find more information from CCOHS about extreme conditions?

This document covers planning for work in extreme conditions. Further information is available in OSH Answers, including:

- [Cold environments - general](#)
- [Cold environments - working in the cold](#)
- [Cold environments - health effects and first aid](#)
- [Driving Tips - winter](#)
- [Emergency planning](#)
- [Emergency management checklist](#)
- [Fall protection](#)
- [Fire Protection](#)
- [Flood clean-up](#)
- [Hot environments - control measures](#)
- [Hot environments - health effects and first aid](#)

- [Humidex rating and work](#)
 - [Post-traumatic stress disorder \(PTSD\)](#)
 - [Skin cancer and sunlight](#)
 - [Temperature conditions - cold](#)
 - [Temperature conditions - hot](#)
 - [Weather - lightning](#)
 - [Weather - high winds](#)
 - [Working on or near ice covered water](#)
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