



PROPONENT'S GUIDE: Assessing and Mitigating the Risk of Human-Bear Encounters

Human-bear encounters can range from observing bears near a camp to an interaction causing injury or death to a worker. **It is critical to minimize the risk of even mild encounters** because they can escalate to serious encounters in the future.

This guide will help you assess the level of risk for human-bear encounters at your proposed camp/work sites and adopt mitigation measures for minimizing potential encounters. It provides a seven-point checklist for assessing risks as well as detailed information about the four general types of mitigations for human-bear encounters: elimination, engineering controls, administrative controls and personal protective equipment.

The guide was developed to ensure Quartz Mining Land Use Permit applicants can thoroughly assess risks and use effective mitigation for human-bear encounters. It was prepared by Government of Yukon departments of Environment, Energy, Mines and Resources, Executive Council Office Development Assessment Branch and Yukon Workers' Compensation Health and Safety Board (YWCHSB).

This guide complements *Guidelines for Industrial Activity in Bear Country* published by the Government of Yukon. The links to this publication and other resources are provided at the end of this document.



Assessing the Risks

The level of risk of human-bear encounters depends on when and where your camp is operating, how you operate, the nature of the local bear population and other activities in the area. The *Occupational Health and Safety Regulations* (section 1.04) requires employers to take all reasonable precautions, starting with a hazard assessment. Consider the items in this **seven-point checklist** carefully to assess your level of risk.

1 When is your camp operating?

Human-bear interactions are most likely to occur from April to November in Yukon, when bears are out of their dens foraging for food. Bears can also be active (that is, out of their dens) for short periods during the denning season (November to April). If a bear is active when you expect it to be denning, you must continue appropriate mitigation measures until you no longer see the bear or evidence of it (such as tracks).



2 What human-bear encounters happened in the past?

The presence of food-conditioned or human-habituated bears greatly increases the risk of a human-bear encounter at your camp or work site. Since it is not uncommon for a bear to travel more than 100 km in a season, it's important for you to look at what bear encounters have happened within 100 km of your camp (including at your own camp if you are returning to an already established camp). Bears quickly become food-conditioned – from human food or garbage – and become bold when trying to obtain more food, either at the camp where they first got food or at a nearby operation. Proponents must increase their precautions against future human-bear encounters if bears in the area have received a 'food' reward in the past.

3 How long does your camp operate?

The longer a camp remains in one place, the higher the likelihood of a bear encountering your camp throughout its daily and seasonal movements – and the higher the risk of a human-bear encounter happening. Also, repeated smells (e.g. from cooking) cannot be completely contained and will increase the probability of attracting bears to your camp over time. Temporary camps (e.g. several days) may be less prone to these risks but mitigations must still be used; for example, a temporary camp may be inadvertently set up near an area used by bears.

4 Where is your camp?

Although a bear could encounter a camp anywhere in Yukon, **there are areas where the likelihood of having a bear in the area is higher than normal:**

- **Areas important for family groups:** Female bears (sows) often use less suitable bear habitats, away from other bears that may threaten the cubs. These areas can be steep or rocky slopes, typically with minimal vegetation.
- **Areas near important bear forage:** Berry patches, salmon streams, or any other area with concentrated natural bear foods are likely to have bears frequently using the site.
- **Travel corridors:** Bears move through the landscape mainly in search of food. Typical travel corridors include mountain passes, streams, rivers and valleys between mountains. Look for game trails in the area around your camp.



Bear den

- **Other high use areas:** Bears reuse denning areas over many years; Areas within 5 km of a bear den will have higher-than-normal bear use, particularly in the spring and fall. Areas where there is obvious bear sign, such as tracks, day beds or rub trees may also be high use areas.

You may be less likely to encounter bears at higher elevations or in areas with a low density of bears. Wherever you are, risks exist and appropriate precautions must be taken.

5 What attractants are at your camp?

Attractants are potentially the largest cause of human-bear encounters at camps and work sites. You must prevent bears from accessing attractants to minimize the risk of creating food-conditioned bears and associated problems. The more attractants in a camp, the higher the risk of a bear entering your camp. Attractants come in many forms, some less obvious than others:

- Food, garbage, compost
- Meat caches, outside freezers and fridges
- BBQs, food residue and grease trap on barbecues
- Grey water (food particles, soap residues)
- Petroleum products (oils, fuels, lubricants). Even 1L oil cans will attract bears.
- Improperly functioning incinerator or other garbage burning method
- Toiletries (e.g., toothpaste, shampoo, soap)
- Cleaning products (e.g., soaps, dish detergent)
- Pet foods and pets
- Outhouses and any associated air fresheners

While dogs are often brought to camps to deter bears, this is typically only effective with well-trained bear dogs. An untrained dog may increase the likelihood of a human-bear encounter because they run back to camp with the bear in pursuit. Improperly stored dog food can also attract bears, increasing the risk profile for the camp.

Consider how you deal with attractants even when workers are not on site. Camps left unattended during the operating season can have an increased risk of bears obtaining food or garbage and becoming food-conditioned. When camps are abandoned in winter, bears will check out any attractants left behind, which may result in a food-conditioned bear waiting for your return to camp next season.

6 What are you doing outside of the camp perimeter?

Consider the amount and type of activity occurring outside of the camp perimeter. For example, bears may be attracted to drill sites where there is a higher likelihood of uncontained fuel (e.g. generator fuel and oil) or food (e.g. worker lunches brought to the site).

7 How many other camps are in the area?

An area with a higher density of camps is at greater risk of bear encounters than areas with less human activity. With more camps in a bear's home range there is a greater volume of attractants in the area, and a higher risk of the bear being attracted to and/or rewarded at one or more camps. A bear that is food-conditioned at one camp will likely create problems at other camps because it associates rewards with camps in general. The Guidelines for Industrial Activity in Bear Country can assist in providing best practices for camp location and camp layout to minimize bear encounters.



Black bear

Mitigation Options

To minimize the risk of human-bear encounters and increase worker safety, the Yukon Workers' Compensation Health and Safety Board (YWCHSB) requires that mitigations be employed in a hierarchical fashion with **elimination, engineering controls, administrative controls** and **personal protective equipment** to be used and, when possible, in that order. Properly used, a combination of all four mitigation types will minimize the chance of most human-bear encounters.

1 Elimination

Eliminating a hazard from the workplace is the most effective way to control the risk posed by that hazard. It is neither possible nor desirable to eliminate bears from Yukon but it is possible to eliminate or effectively deal with bear attractants to reduce the potential of human-bear encounters.

2 Engineering controls

To minimize human-bear encounters, consider these three types of engineering controls: **fencing, hardened camps, and bear-proof containers.**

A Fencing

Animal proof fencing and electric fencing prevent bears from entering enclosed areas, particularly when combined with proper management of bear attractants. Both fencing types have been shown to be 98-100 per cent effective at keeping black bears, grizzly bears, and polar bears away from highly attractive foods (as long as the fence is properly installed before an incident and maintained in good working order). Fences are most effective when used proactively. It can be more challenging to prevent an already food-conditioned bear from going through the fence.

Animal proof fencing is a **permanent, solid fence that is typically 8-10 feet high.** It is an exclusion fence that works to keep all wildlife out of the enclosed area.

Electric fences that are properly set up are highly effective at keeping out most carnivores with proper maintenance. Some small carnivores, like foxes, may still jump over or burrow under electric fences. A variety of electric fence types and qualities are available – use the right one for your circumstances.

The YWHSCB recommends entire camps be enclosed in either animal proof or electric fencing which, when combined with proper management of attractants, can create a very safe camp for workers. Gate control is important.

Fencing an entire camp may be impractical for larger camps, however. Use fencing in combination with other measures in these cases, such as an effective attractant management plan. **The plan would require attractants to be used and stored in a fenced area.** It could require that no attractants (snacks, garbage, toiletries, etc.) are permitted in bunkhouses, so that fences would be needed only around the areas where the attractants are kept (kitchen, washhouse, etc).

While the targeted fencing technique prevents bears from accessing attractants, it does not prevent bears from wandering through the unfenced portions of the camp so



An electric fence surrounds a wall tent.

there is potential for bear-human encounters. Targeted fencing may minimize the inconvenience of frequently opening gates in camps with a lot of vehicle traffic.

B Hardened Camp

Hardened camp structures are most effective for storing attractants and for accommodations. Metal shipping containers are most effective at keeping bears out. Sturdy wood-frame, metal clad structures may be considered hardened structures provided they are adequately built and maintained so that a bear cannot breach them under normal circumstances.

Exterior doors should be mounted so that they open out of the building – this prevents a bear from easily pushing even a latched, locked door open to gain access to the structure. Cover the windows (typically with plywood) when structures are not in use to prevent bears from breaking in.

Camper trailers and modular (Atco-type) trailers are not considered hardened structures – experience has shown that bears need little effort to gain access through doors, windows or walls.



A metal waste storage container prevents access by wildlife.

C Bear proof containers for attractants

Appropriate containers depend on the quantity of attractants involved. For larger amounts, consider:

- Metal food storage lockers with latches that a bear cannot operate
- Bear-proof garbage containers
- Bear-proof sheds
- Steel shipping containers
- Steel drums with locking lids

Protect smaller amounts of attractants from bears by using bear resistant containers or hanging food (3 m above ground and 1.5 m from vertical support).

Consider handling lunches for workers as follows:

- Pack and transport food/drinks in airtight containers
- Return all garbage in airtight containers to the refuse facility at camp

It is acceptable to store food in a locked truck but it is best to also have food in airtight containers.

Although bear-proof containers keep bears from gaining access to an attractant, bears will still be attracted to them. You may have worker safety issues from bears that enter camps and workplaces to check out attractants in bear-proof containers.

3 Administrative controls

Four types of administrative controls can be useful in minimizing the chance of human-bear encounters, particularly when combined with engineering controls:

- Attractant management plan (to prevent encounters)
- Effective waste management practices
- Prohibition on food outside of the kitchen, and
- Education.

Education is critical: The employer must provide training in bear awareness when employees are working in remote areas. *The Occupational Health and Safety Regulations* (section 1.04) requires employers to review job processes annually and to develop safe work procedures.

Administrative controls will be the most difficult to put into effect and maintain at a camp. For example, frequent incineration of refuse is an administrative control. While a camp may require that refuse be burned every X hours, a shift change or change in activities may result in less frequent burn times. This means that the attractant has a longer time to sit around to attract bears to the camp.

Food restrictions are difficult to maintain over time, as things tend to get more relaxed and personnel tend to bend the rules more than they did when they arrived at camp. At first, staff are careful to not take food outside the kitchen, but as time passes some will take a small bit of food and then a bit more and a bit more until the rule “No food outside of the kitchen” is not adhered to at all, with attractants found throughout the camp.

If administrative controls are not regularly checked and adhered to, what start out as safe work practices can become unsafe. Maintaining effective administrative controls is the most difficult measure to accomplish over an extended period of time at a camp. It requires constant monitoring of the attractant management plan.

4 Personal protective equipment

Personal protective equipment (PPE) will be used for on-the-job encounters with bears and for encounters in camps. PPE and training on the proper use of this equipment is a key component in ensuring worker safety and minimizing bear mortalities that result from human-bear encounters. PPE can include the following:

- Bear spray
- Bear bangers
- Air horns
- Radios
- Firearms
- Properly trained dogs

Camp jobs involve remote work sites for workers, and even where there are several workers on a

task, a single worker may be isolated and, in doing so, be at risk of encountering a bear on his/her own.

Education (an administrative control) combined with PPE provides effective worker safety.

Bear spray is an effective deterrent and should be readily accessible.



Summary

This guide has set out briefly the key steps to follow in assessing risk and mitigating human-bear interactions in the field and at camps. Here is the approach to follow to ensure YWCHSB requirements are met:

- 1 Assess the risks and the hazards they pose
- 2 Decide on the controls to use
- 3 Develop your mitigation plan
- 4 Provide the appropriate equipment and PPE
- 5 Train and retrain all staff
- 6 Review any bear-human incidents and make necessary changes
- 7 Review and adjust your plans at least annually, and
- 8 Ensure management regularly checks compliance with mitigation plans.

YUKON GOVERNMENT CONTACT INFORMATION

Conservation Officer TIPP line for more information: 1-800-661-0525

Mineral Resources Branch:
Toll Free (*in Yukon*) 1-800-661-0408
867-633-7952

Mining Inspectors Offices:
Dawson 867-993-7300
Mayo 867-996-2568
Watson Lake & Whitehorse 867-456-3845

Yukon Workers' Compensation Health and Safety Board:
1-800-661-0443, ext. 5450 or 867-667-5450

ADDITIONAL INFORMATION

Bear information for home and work:
www.env.gov.yk.ca/bears

This page includes links to *Guidelines for Industrial Activity in Bear Country* and *How to Stay Safe in Bear Country*.

Prepared May 2012
Photos: Yukon Government