

Deploying bear spray against a highly agitated, charging bear



Johnny Johnson photo

Learn the four scenarios in which an agitated bear might charge, and how to stop its charge or reduce the severity and length of contact. This guide is based on the University of Montana's research and development of bear spray. The results showed the importance of a spray distance of **30 or more feet** and a spray duration of at least **7 seconds**.

History of Bear Spray

During the mid-1980s graduate student Carrie Hunt conducted experiments to see what may stop a charging grizzly bear. Her work led to the development of bear spray.

When pepper defense spray and law enforcement/military sprays were tested, there was potential, but also obstacles to overcome for use on bears. Pepper spray was unreliable and inconsistent; it had a short, narrow spray stream and unknown ingredients that seemed weak and ineffective. This required the bear to be close and to aim for the bear's face. It was clear the bear would be moving too fast and too close for the spray to work in time to stop contact.

Bill Pounds, a volunteer to the project, successfully went to work to develop a concentrated formulation that was well-atomized and able to be dispersed in a powerful, expanding cone-shaped cloud that did not require aiming. The bear spray could discharge for more than seven seconds, and spray 30+ feet. It can now be deployed by simply directing the **spray downward at the front of the charging bear.**

When sprayed correctly, the charging bear deeply inhales the active ingredients, Capsaicin and related Capsaicinoids as it enters



Carrie Hunt

the spray cloud. The inflammatory and irritating chemicals affect the charging bear's mouth, throat, nose, nasal passages, lungs, eyes, and ears which disables the charging bear.

Carrie's research led to an understanding of what bear spray should be and its results in different charging bear scenarios. These results were a breakthrough that began the bear spray industry; and has saved the lives people and bears.

- They created an effective, non-lethal means of protection.

- They determined that Capsaicin and related Capsaicinoids were the

active ingredients that caused the inflammatory and irritating reaction needed to stop and deter a charging bear. Oleoresin Capsicum is what the active ingredients are derived from.

- They eliminated the need to aim at the bear's face. Bear spray produces a powerful, expanding cone-shaped cloud and the specialized nozzle quickly and effectively puts a wide barrier in front of the bear.

- They created a well-atomized spray formula, so that the active ingredients do not separate from the solvent and propellant and fall to the ground.

- They developed a bear spray that quickly travels 30 plus feet so that **when a bear is charging from 60 feet away, it meets the cloud at 30 feet.** This provides valuable time to affect the bear's senses and ability to breathe deeply to continue its charge.

- In extreme situations where a bear is charging from within 30 feet, and especially from 15 feet, the bear spray might not have time to stop contact but will lessen the length and severity of the attack.

- They successfully created a spray duration of seven plus seconds to compensate for strong wind, cold, rain, or more than one charge.

Original Recommendations of University of Montana Research:

1) Bear spray should be capable of spraying for a distance of at least 30 or more feet. This provides valuable time for the spray to affect the bear's mouth, throat, nose, nasal passages lungs, eyes, and ears, disabling it from charging and attacking.

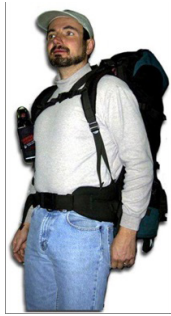
2) Bear spray should spray for at least 7 seconds. Longer spray durations allow you to compensate for weather variables, multiple charges, or an encounter with more than one bear.

3) The spray needs to disperse in a powerful and expanding cone-shaped cloud that does not require aiming. Aiming takes too long. Instead, spontaneously spray downward at the front of the charging bear and continue spraying until the bear diverts its charge.

How to Deploy Bear Spray

It is crucial that if you need to deploy your bear spray that you are prepared to spray spontaneously. Highly agitated charging bears can run upward of 30 miles per hour. Spray downward at the front of the bear. You must be able to quickly spray downward toward the bear without any hesitation. As you do this, thrust your arm out toward the bear while hollering NO as loud as you can. Bears can detect facial expressions, body language, and tone and know you are prepared to fight.

Step 1: Know how to carry your spray



Know how to carry your bear spray in a readily accessible fashion; on your hip, in a chest holster, in a waistband holster, or an outer winter coat pocket. Practice taking it out quickly and removing the safety clip. Never place your bear spray inside of your back-pack or some other place that will take time to get to it.

Step 2: Know how to take the safety clip off



Place your thumb **in front of the curled lip** and pull back. Practice!

Always hold the can firmly so it does not tip up and spray over the bear. Remove the safety clip by placing your thumb in front of the curled lip and pull back. Unfortunately, many instructions just tell the public to pull back with their thumb. This results in people putting their thumb flat on top of the clip and this does not work. Practice makes perfect. Practice removing the bear spray cannister from its holster and placing your thumb in front of the curled lip to pull the safety clip back. This will help you immensely in a charging bear situation.

Step 3: Do not aim - spray spontaneously downward in front of the charging bear to create a cloud that will billow up in front of the bear



Bear spray is dispersed in a powerful, expanding cone-shaped cloud. Do not attempt to aim your bear spray. Do not wait until the bear is close enough to spray its eyes and nose. Just spray. **Quickly direct the bear spray downward at the front of the charging bear and spray.** It expands into a cloud that the bear must pass through to reach you. Keep your spray directed at the front of the charging bear, adjust if the bear veers to the right or left. Stop spraying when the bear diverts its charge and retreats. Please do not do a short burst when an agitated charging bear is coming at you. It may not form a sufficient barrier for the bear to feel the full effects of the bear spray's inflammatory and irritating protection.

Scenario 1: Bear charge from a distance

Start spraying once an agitated charging bear is within 60 feet. The charging bear and the bear spray cloud will meet at about 30 feet.



A charging bear within 60 feet: Bear spray has a high success rate of stopping charging bears before contact when the bear spray is deployed when the charging bear is just within 60 feet. Spray downward to a point approximately 30 feet in front of you. The spray will billow up expanding into a wall between you and the bear. At this distance, there is enough time for the bear to feel the full effects of the bear spray and divert its charge before making contact. If the bear veers its charge to the right or left, redirect your bear spray toward the bear's new path.

How Bear Spray Impacts a Charging Bear

Charging bears inhale and exhale deeply as they run. When a charging bear meets the bear spray cloud, they breathe in the Capsaicin and related Capsaicinoids (the active ingredients in bear spray) which causes an inflammatory response that irritates and distracts the bear from its charge.

Bear spray effects the bear's mouth, throat, nose, nasal passages, lungs, eyes, and ears almost immediately. The bear's mouth will salivate and its throat becomes irritated causing the bear to cough and choke in response. The bear's nasal passages swell and narrow, disabling its sense of smell and limiting air flow to the lungs. The bears eyes become watery and blurred and its ears begin to ring reducing both sight and hearing.

All of the effects of bear spray are temporary; and are meant to cause the bear to divert its charge or stop its contact. There have been no reports of a bear becoming more aggressive after being sprayed.

Scenario #2: Bear Charge from Within 30 Feet

If a bear charges from within 30 feet, start spraying immediately. Ideally the charging bear will meet the bear spray cloud at 15 feet.



Most charges take place with the bear charging from approximately 30 feet. This often happens when a bear is at a berry patch, or, near a trail and is surprised by hikers. Immediately deploy your bear spray downward directly at the front of the bear. Continue spraying until the bear either diverts its charge, or appears that it is going to make contact before it fully feels the effects of the bear spray.

If you think the bear is going to make contact, pivot around and drop face down, protecting the back of your neck by clasping your fingers together while still holding the bear spray in one hand. Keep spraying upward, putting yourself and the bear in a cloud of bear spray. The bear will not want to stay in that cloud and will stop its attack and leave. This situation often results in the bear slapping or biting the person on the ground. If you are wearing a backpack, the pack often takes the brunt of the attack.

If you are hiking with friends, they should also spray the bear at the point of contact. However, they need to be prepared for the bear to charge at them next.

How to avoid very close encounters:

Always pause when the trail enters thick brush, especially near berry patches and streams. Stop, look around, smell the air to determine if there is a pungent smell of dead animal or a

bear that's been rolling in one. Call out in a non-threatening middle tone voice to let bears know you are there. Sometimes a bear will stand up to identify you, make itself seen, charge, or just leave the area. Proceed cautiously on a trail

that goes through thick brush or when you approach the berry patch to pick your berries. In these situations, have your bear spray out with the safety clip off to be prepared for a sudden, unexpected encounter or charge.

Scenario 3: Sudden Impact

An agitated bear charges from less than 15 feet away.



Sometimes without warning bears in thick brush or concealed in a day bed will charge and often make contact before you even have a chance to remove bear spray from the holster. In these cases, as soon as you can, get your bear spray out and start spraying the area you and the bear are in. If you can, direct the bear spray toward the mouth, nose, eyes, and ears of the bear.

The attacking bear may be shaking you or dragging you. If you can, try to get face down to protect the back of your neck, face and other vital organs. Clasp your hands behind your head, holding the bear spray can, and spray, further putting the bear and you under a cloud of bear spray. If the bear rolls you over, continue rolling until you are on your stomach again. Continuously spray until the bear diverts its attack and leaves the area.

Scenario 4: Hiking Partner and Contact with Bear

When hiking with a friend and a charging bear suddenly takes one of you down, there is no time to hesitate. You need to immediately start spraying both the person and the bear. Continue spraying until the bear stops its attack.

Be prepared for the bear to change its attack to the person spraying. Continue spraying downward at the front of the bear until it diverts its charge.

This is one of the reasons we recommend at least seven seconds of spray duration and 30 feet or more of spray distance.

Bear Spray Myths and Bad Advice

Myth: Measure wind direction before spraying

Fact: In most situations, a bear can reach you in less than 2 seconds if charging full speed. There is no time to measure the wind. Spray spontaneously, directly downward at the front of the bear.

Myth: Spray a short burst in a zigzag pattern

Fact: A short burst may not stop an agitated, aggressive charging bear. You want a wall of spray between you and the bear. Spray directly at the bear until it diverts its charge.

Myth: You should aim toward the bear's face

Fact: Aiming takes too much time and is not needed. If the bear is charging within 60 feet, spray to a point 30

Correct Spray (so it billows up):



Incorrect Spray (shoots above):



feet in front of you. If the bear is charging at a closer distance, spray downward directly at the front of the charging bear and continue spraying until the bear diverts its charge.

Myth: Pepper spray and bear spray are the same

Fact: No, pepper spray is NOT bear spray. Bear spray is required to be registered with the Environmental Protection Agency. Pepper spray is not. Bear spray labels must clearly state: it is for deterring or repelling bears or for use on bears; the active ingredients as 1-2% Capsaicin and related Capsaicinoids which is derived from Oleoresin Capsicum; and show the EPA registration and manufacturer numbers. Pepper sprays may have less than 1% of the active ingredients and may spray a short narrow stream that must be aimed directly at the face. The confusion between bear spray and pepper spray has resulted in people being mauled because they were using a personal defense spray. Quality bear sprays do work when used correctly; but pepper sprays may not.

First Aid for Exposure to Bear Spray

- 1) If Inhaled:** Move away from the spray area to where you can get fresh air.
- 2) In the Eyes:** Hold eyes open and rinse slowly with cold water for 15 to 20 minutes. If you wear contact lenses, rinse for 5 minutes before removing and then continue rinsing. If water is not available, blink eyes repeatedly and do not rub.
- 3) On Skin or Clothing:** Remove contaminated clothing and rinse skin with cold water for 15 to 20 minutes. A non-oil based mild soap or detergent can be used to remove bear spray from skin. Pat dry with a towel; do not rub.
- 4) If Ingested:** Do not induce vomiting.
- 5) Post Exposure Monitoring:** It will take about 45 minutes for the effects to dissipate. Asthmatics should seek immediate medical attention.



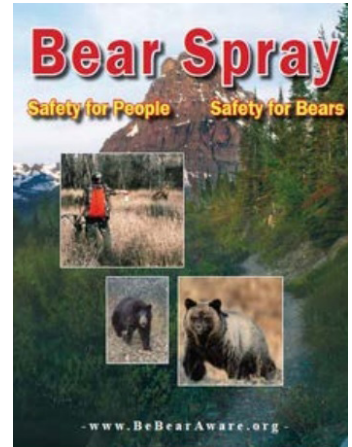
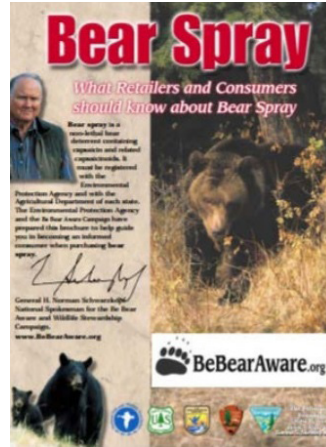
Be Bear Aware Campaign

P.O. Box 7487 • Missoula, Montana 59807 • 406-239-2315 • Email: bearinfo@cfwi.org

Products and Resources Available

Bear Spray Brochure

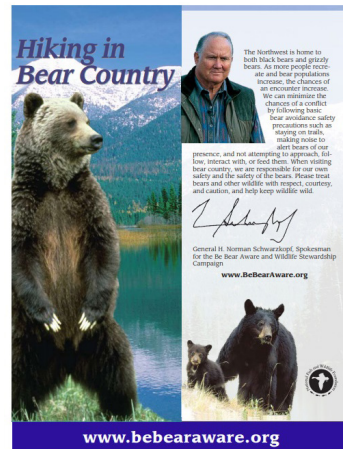
Instructor's Guide



Programs: The Be Bear Aware Campaign conducts bear avoidance and bear spray training presentations for youth groups, wildlife and land management agencies, outfitting and guiding, and hunting and fishing organizations. We also participate in community events, campground education programs, and work with school teachers and school systems on bear safety and wildlife stewardship.

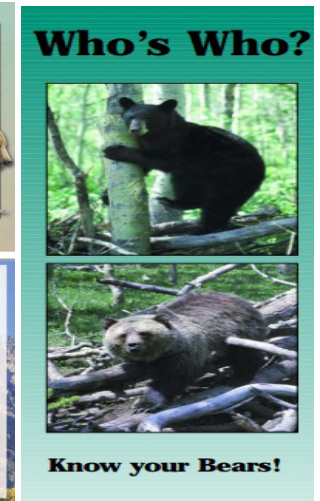
Hiking Brochure

Bear Spray Poster



Black Bear/ Grizzly Identification Cards

Bear I.D. brochure



Book us for a program or visit us online for more resources, including a bear spray Powerpoint !

BeBearAware.org

www.facebook.com/bebearaware

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