

# Preparedness Alert

Colorado Division of Homeland Security and Emergency Management

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& Emergency Management  
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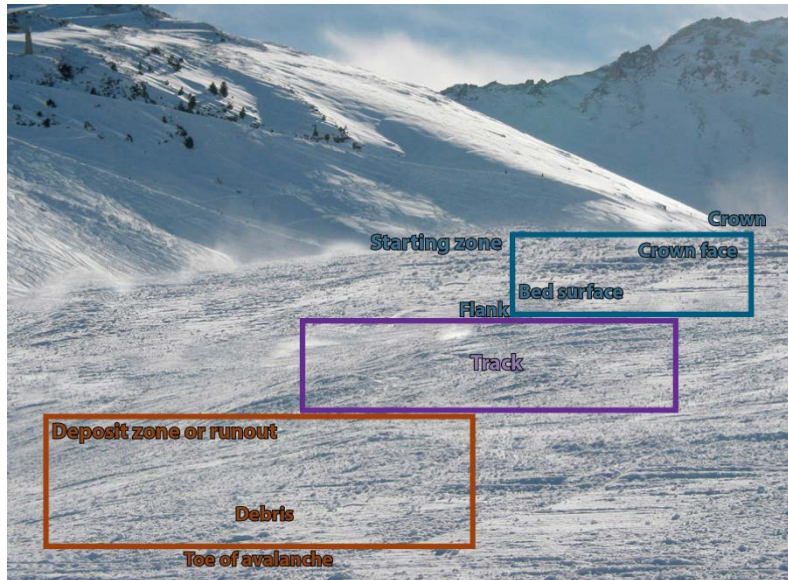
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**Mission**  
Provide leadership and  
support to Colorado  
communities to prevent,  
protect, mitigate, respond  
and recover from all-  
hazard events including  
acts of terrorism.

DHSEM.state.co.us  
READYColorado.com

## Be prepared for avalanches

The ability to participate in a large variety of winter sports is one of the best perks of living in Colorado. With winter sports, however, come dangers, especially in the backcountry. One danger common in backcountry



Anatomy of a slab avalanche

mountain terrain is avalanches. According to the Colorado Avalanche Information Center (CAIC), Since October 2010, 10 people have been killed in the Colorado backcountry by avalanches, with many more needing to be rescued. The following tips can help you avoid or survive this danger.

### Danger signs

- Avalanches only occur in terrain with more than a 30 degree slope (think the angle between the two and three on an analog clock). Most avalanches occur on slopes greater than 35 degrees.
- The snowpack must be unstable in order for an avalanche to occur. This generally happens when a hard, strong layer of snow is resting on a softer, weaker layer of snow.
- An avalanche will not occur without a trigger. This trigger could be weight from additional snow or weight from a person traveling on the snow.
- Avalanches are more likely to occur after a heavy snowfall as this increases snow instability.



- Wet avalanches are likely to occur in warmer temperatures. Melting snow brings additional moisture which weakens the bonds between snow layers.
- Recent avalanche activity in the same area is an indicator of snow instability and a sign that more avalanches are likely to occur.
- Wind can create dangerous snow slabs. If there has recently been high wind, an avalanche is more likely to occur.
- Cracks in the snow surface and/or “whooping” sounds mean that a weak layer is collapsing and snowpack is unstable.

### Safety tools

According to the Forest Service National Avalanche Center, the following tools should be carried when going into the backcountry:

#### General tools

- Snow saw
- Probes
- Slope meter
- Monocular (can magnify up close and far away)
- Walkie talkies
- Bivy Sack (a small, waterproof shelter)
- Climbing skins (allow skis to climb on a slope)
- Avalanche Beacon
- Shovel
- Backpack
- Spare Strap
- Snow science kit
- Avalung or an Air Bag System
- Helmet
- Headlamp
- Water bottle
- Stove and fuel
- Tool kit
- Map and compass

#### First Aid kit

- Tape
- Butterfly bandages
- Gauze rolls - 2
- Bandages
- Variety sterile dressing
- Blister treatments
- Antibiotic ointment
- Sunscreen
- Pain medication
- Safety pins
- Strong scissors
- Pocket mask
- Nitrile gloves

### Avalanche preparedness tools

- **Avalanche beacon** – emits a signal over a distance of 60 to 100 feet. Always ski with an avalanche beacon in transmit mode. If searching for an avalanche victim, switch to receive mode.
- **Avalung** – a sling or backpack-style air pack that can allow the user to breathe for approximately one hour if no other air is available.
- **Air bag pack** – Deployable pack designed to keep an avalanche victim closer to the surface. Also helps to increase body volume, giving the victim more free space within the avalanche
- **Helmet** – Nearly 30 percent of avalanche fatalities are caused by trauma. A helmet can reduce this risk.



### Repair/survival kit

- Extra food and water
- Extra clothes such as gloves, hat, socks, insulated coat and pants
- Headlamp
- Extra binding parts
- Pocket tool with Pozidriv screwdriver
- Wire, duct tape
- Epoxy, strip screw inserts, steel wool
- Candle/matches/lighter
- Emergency thermal blanket
- Chemical hand warmers
- Knife
- Extra beacon & headlamp batteries
- Consider carrying a light gas stove to melt snow (they weigh about the same as a liter of water).

### If you get caught by an avalanche

The following tips are from the Forest Service National Avalanche Center:

- Try to ski or board off the avalanche slab by maintaining momentum and angling to edge of slide.
- Discard poles (never ski in the backcountry with your pole straps on).
- If you have releasable bindings and your skis or board comes off, roll on to your back with your feet downhill. Swim hard up stream to try to get to the rear of the avalanche.
- Dig into the surface to slow yourself down and let as much debris as possible go past.
- Grab a tree if you can
- FIGHT!
- As the avalanche slows, try to thrust your hand or some part of your body above the surface and then stick a hand in front of your face to make an air space around your mouth.
- If completely buried, try to remain calm -hopefully your partners have practiced rescue techniques and they will quickly find you.

### For more information

- General preparedness information – [www.readycolorado.com](http://www.readycolorado.com)
- Forest Service National Avalanche Center - [http://bit.ly/fs\\_avalanche](http://bit.ly/fs_avalanche)
- Colorado Avalanche Information Center (CAIC) - [http://bit.ly/CO\\_CAIC](http://bit.ly/CO_CAIC)

### Types of avalanches

- **Slab avalanche** – Occurs when a harder layer of snow sets on top of a softer, more instable layer of snow. Involves large volumes of fast-moving snow. This is the most dangerous type of avalanche.
- **Sluff or loose snow avalanche** – A cold snow powdery surface slide. Typically the least dangerous type of avalanche.
- **Wet avalanche** – Occurs when warm weather melts surface snow layers and saturates them with water. The water weakens the bonds between snow layers, causing an avalanche. Typically slow moving, but still very dangerous.