



Emergency Preparedness & Response News



What is an Avalanche?

Technically, an avalanche is any amount of snow sliding down a mountainside. It can be compared to a landslide, only with snow instead of earth. Another common term for avalanche is "snowslide." As an avalanche becomes nearer to the bottom of the slope, it gains speed and power, which can cause even the smallest of snowslides to be a major disaster.

There are two common types of avalanches... a **Surface Avalanche** that occurs when a layer of snow with different properties slides over another layer of snow. For example, when a layer of dry loosely packed snow slides over a dense layer of wet snow. The other common avalanche is known as a **Full-Depth Avalanche** which, as its name would lead you to believe, occurs when an entire snow cover, from the earth to the surface, slides over the ground.

An avalanche can be composed of many different kinds of snow depending on the region, temperature, and weather. It could be composed of loosely packed light fluffy snow, which can still be very dangerous even though it may not appear threatening. It could also consist of a thick "slab" which is an area of tightly packed together snow that separates itself from the surroundings.

Why Do Avalanches Happen?

The snow packed down on the surface cannot support itself with all the weight. When another factor is introduced, such as a person's step, this helps to loosen the snow and an avalanche occurs. Major temperature changes, rapid wind speed, and man-made influences are the main causes of why avalanches occur.

Most avalanches begin within weak layers of snow, which evolve within the snowpack or form on top of the snow and become buried. Eventually these weak layers can no longer hold up the weight on the overlying snow and will give way causing the snow above them to break free and slide downhill.



Emergency Preparedness & Response News



10 Facts About Avalanches...

1. Loose snow avalanches account for only a small percentage of deaths and property damage. "Slab" avalanches (the most lethal) are cohesive plates of snow sliding as a unit.
2. Each year avalanches kill more than 150 people worldwide.
3. In 90 percent of avalanche accidents, the victim or someone in the victim's party causes the snowslide.
4. The human body is 3x denser than avalanche debris and will sink quickly. When the slide slows, clear air space to breathe, then punch your hand skyward. Once the avalanche stops, it settles like concrete.
5. Unlike its portrayal in movies, noise does not trigger avalanches. Avalanches are caused by four factors: a steep slope, snow cover, a weak layer in the snow cover and a trigger.
6. An avalanche is often triggered when a person's body weight provides just enough extra stress to collapse the weaker layer below.
7. Avalanche risk is at its greatest 24 hours following a snowfall of 12 inches or more.
8. These moving masses can reach speeds of 80 miles per hour within about 5 seconds.
9. Any slope capable of producing an avalanche eventually will. Cracks and whooping sounds are good warnings of a pending avalanche.



10. The primary cause of death among all people completely buried by an avalanche is asphyxiation (aka severe lack of oxygen to the body).

Emergency Preparedness & Response News

The Facts and Figures of Avalanche Fatalities...

Overall, 94 percent of fatal avalanches are triggered by the victim or someone in their party. Avalanches rarely kill uninvolved bystanders.

In the United States, 284 people died in avalanches over the last 10 winters, and an average of 179 people per year were caught in them. The records paint a picture of the typical avalanche victim: ninety percent are men, with most of them aged 25-29 years old. Women account for ten percent of the fatalities.



Most strikingly, the majority of avalanche victims are competent and experienced winter travelers. Three-fourths of them have some type of formal avalanche education. We know that education saves lives, yet it also has a nasty edge by falsely boosting self-confidence. It takes a humble, self-reflective person to keep his or her hubris in check. Accident investigations reveal that peoples' training lag behind their activity skill levels. In other words, their hunger for steep lines and deep powder exceeded their knowledge of avalanches.

The Specifics...



Avalanche accidents happen mostly in the backcountry. In the U.S. there's a growing trend to access the backcountry through developed ski resorts. An astonishing 52 percent of skiing and snowboarding accidents happen within two miles of these developed areas, although it's unclear how many were using lifts at the resort. Regardless, side-country terrain has concentrated tracks from heavy use. Ease of access and limited gear (no skins or touring bindings) seduces folks lacking the necessary backcountry travel skills into serious avalanche terrain.

Ninety-five percent of fatal avalanches are slab avalanches, which have a tendency to fracture once a person is well onto the slope. Slabs break like a pane of glass, all at once, offering limited or no chance of escape. Most fatal slides are small to medium size, with 53 percent of the fatalities from slides less than 20 feet wide and 1,000 feet vertical.

The survival of someone completely buried in an avalanche is far from guaranteed, even with a beacon. Time is the enemy. Within 15 minutes, a victim who is uninjured has a 90 percent chance of surviving, but the chances plummet fast. By 30 minutes the victim's probability of living are 50 percent — no better odds than a coin toss, and at 45 minutes they drop to 25 percent.

Emergency Preparedness & Response News

Both skiers and snowmobilers need faith in their partners' skill at using an avalanche beacon, but even the newest and simplest models require practice. A study of recreational skiers found that if two people are buried, one with a beacon and the other without, the person with the beacon only has a 10 percent greater chance of surviving because the average time to find someone was more than 30 minutes. A beacon in the hands of an avalanche professional and others who regularly practice, was definitely better but far from encouraging.



In addition to suffocation, avalanches can cause life threatening and fatal injuries by hitting trees, rocks and falling off cliffs. Approximately 25 percent of avalanche deaths stemmed from massive injuries.

Conclusions...



Avalanche victims usually trigger the avalanche that kills them. Of those completely buried, more die than live. Only 34 percent will ultimately survive. But partners who know how to use a beacon, practice with it and carry a sturdy shovel and probe can push the chance of living to over 50 percent.

Even more important than gear is avalanche education. With education and practice we can learn more about avoiding dangerous terrain. Avalanches are all about timing, so evaluating when it's safe to ski or snowmobile a particular slope is essential. Yet we need to be careful since a little knowledge can fool us into thinking we're smarter than we really are.

For More Information...

Colorado Avalanche Information Center — <http://avalanche.state.co.us/>

Avalanche.org — <http://www.avalanche.org/>

