Winter Weather:
What it is and how to stay safe

Winter is a fun and beautiful time of year for many. Skiing, sledding, ice skating, snowball fights, etc. are events that many residents of Iowa look forward to. The first snowfall of each year is often greatly anticipated by both new and old Minnesota residents. With all the fun and excitement people often forget about the other side of winter. While winter storms can be beautiful they can also be deadly. They can include blizzards, freezing rain and often dangerous combinations of temperatures and wind. Winter storms can also be deceiving. Even a small amount of precipitation can cause problems in areas where snow is an unusual occurrence. For example, in the United States during 1995, severe winter weather caused 17 fatalities, 167 injuries requiring hospitalization, and $110.5 million in damages.

Winter Precipitation & Other Terminology

Do you know the differences between types of winter precipitation, such as freezing rain and sleet? The type of precipitation that falls with a winter storm often depends upon the storm's path. Since cold air is usually found on the north side of a storm and milder air on the south side, wintry precipitation generally falls in areas north of the track of the storm's center.

Freezing Rain or Glaze Ice: Freezing rain is caused by rain droplets that freeze on contact with the ground or objects near the ground, leaving a frozen glaze. The temperature of the ground must be below freezing, and the rain droplets must exist in a liquid state at temperatures below freezing for freezing rain to occur. Freezing rain can glaze roadways with ice causing extremely hazardous driving conditions. Bridges and overpasses typically freeze more quickly than other surfaces and are particularly dangerous. Freezing rain can also accumulate on trees and power lines, snapping branches and knocking out power if air temperatures remain below freezing for any length of time.

Sleet: Sleet falls to earth as ice pellets. These ice pellets are formed as snowflakes, melt into raindrops as they pass through a thin layer of above-freezing air. The rain drops than refreeze into particles of ice as they pass through a sub-freezing layer of air near the ground. They can often be seen bouncing off objects, and they can accumulate on the ground, much like snow.

Snow: Snow is frozen precipitation in the form of six-side crystals. Snow is produced when water vapor is deposited directly into airborne particles as ice crystals, which remain frozen as they fall. When temperatures remain below freezing from the cloud to the ground, snow results. Blowing Snow can be snow that has already fallen and is blown from the ground by the wind, or snow that is blown as it falls. *Heavy Snow* is snow that is falling and reducing visibility to a quarter of a mile or less. *Blizzards* are when blowing snow and/or falling snow combines with sustained winds of 35 miles per hour or greater, reducing visibility to a quarter of a mile or less for at least 3 hours.

Alberta clippers: When upper-level jet stream winds are howling from the northwest, be on the lookout for these fast-moving storms. They zip along at forty miles an hour, preceded by a couple of inches of light, powdery snow and followed by violent winds capable of reaching forty to sixty miles an hour! This often results in severe blowing and drifting, causing blizzard conditions and "white-out" conditions..

Snow squalls: Brief, intense snowfalls accompanied by gusty winds (similar to summertime thunderstorms). They are most likely to be found along or behind a cold front, under an upper air disturbance, a puddle of unusually cold air aloft.

Snow flurries: Used to describe intermittent light snow with little or no accumulation.

Ground blizzard Every bit as dangerous as a blizzard, ground blizzards usually lack falling snow, but they make up for this with gusty, swirling, turbulent winds that can whip snow already on the ground into a flaky frenzy, and drop visibility to near zero. The risk of a ground blizzard is greatest in hilly terrain, immediately behind an Alberta clipper, especially when the snow on the ground is light and fluffy.

Winter Storms

Do you know what a Winter Storm Warning means? Individual National Weather Service Forecast Centers issue Winter Storm Watches, Warnings, and Advisories. The actual criteria depends on geography and topography.

Winter Storm Watch – significant winter weather (ie. heavy snow, heavy sleet, significant freezing rain, or a combination of events) **is expected, but not imminent**, for the watch area; provides 12 to 36 hours notice of the possibility of severe winter weather.

Winter Storm Warning – a significant winter storm or hazardous winter weather **is occurring, imminent, or likely**, and is a threat to life and property.

Blizzard Warning – a significant winter storm with winds that are at least 35 mph or greater, blowing snow that will frequently reduce visibility to 1/4 mile or less for a duration of at least 3 hours, and dangerous wind chills are expected in the warning area.

Winter Weather Advisory – when a significant winter storm or hazardous winter weather is occurring, imminent, and is an inconvenience.

Wind Chill Index – is the calculation of temperature that takes into consideration the effects of wind and temperature on the human body. This is **not** the actual air temperature. Estimate the current wind chill by checking out the table below.

Current Winter Storm Information
For current information on severe winter weather watch your local television channels, listen to local radio stations or check out the local weather conditions through the internet. Check www.weatherchannel.com for up to date weather information.

Wind Chill Index

The wind chill is the "perceived" temperature to the human body, based on both air temperature and wind velocity. This is often referred to as the “Wind Chill Factor”. On a cold, windy day, you body loses more heat than it does on a cold, still day. Heat is literally blown away from your body, causing you to feel colder.

- Examples of wind chill:
  With a temperature of -15°F and winds blowing at 35 mph, the wind chill index would be -48°F and would cause frostbite on exposed skin in approximately 10 minutes and make outdoor activities dangerous
- With the temperature of 15°F and winds blowing at 35 mph, the wind chill index would be -7°F, which would likely cause frostbite on exposed skin in abut 30 minutes.

See the Apparent Wind Chill Table to estimate the current Wind Chill. The horizontal axis is temperature and the vertical axis is wind speed.