Winter Weather Awareness Day
November 8, 2012

Each year, exposure to cold, vehicle accidents caused by wintry roads, and fires caused by the improper use of heaters injure and kill hundreds of people in America. Add these to other winter weather hazards and you have a significant threat to human health and safety.

Winter storms can range from a moderate snow over a few hours to a blizzard with blinding, wind-driven snow that lasts for several days. Some winter storms are large enough to affect several states, while others affect only a single community.

A major winter storm can last for several days and can include high winds, freezing rain or sleet, heavy snowfall, and dangerously cold temperatures. People can become marooned at home without utilities or other services. Heavy snowfall and blizzards can trap motorists in their vehicles and make walking to find help a deadly effort. Storm effects, such as severely cold temperatures and heavy snow, can cause hazardous conditions and hidden problems. The aftermath of a winter storm can impact a community or region for days, weeks, or even months, including steep economic costs.

Source: American Red Cross

WHAT TO LISTEN FOR:

Winter Weather Advisory

Accumulations of snow, freezing rain and/or sleet which may cause significant inconveniences and, if caution is not exercised, could lead to life-threatening situations are expected.

Winter Storm Watch:

Winter storm conditions are possible in the next 12 to 48 hours.

Winter Storm Warning:

Issued when hazardous winter weather in the form of heavy snow, heavy freezing rain and/or heavy sleet is occurring or expected to occur within the next 36 hours.

Wind Chill

The wind chill temperature is not the actual air temperature, it is a “feels like” temperature; the temperature it feels like outside based on the rate of heat loss from exposed skin caused by the effects of wind and cold. As the wind increases, heat is carried away from the body at an accelerated rate, driving down the body temperature. Animals are also affected by wind chill; however, cars and other inanimate objects are not affected by wind chill since they cannot cool below the actual air temperature. The wind chill chart was developed based on joint U.S.-Canadian research. The chart includes a frostbite indicator, showing the points where temperature, wind speed and exposure time will produce frostbite on humans. Each shaded area shows how long a person can be exposed before frostbite develops.

Wind (mph)	Temperature (°F)																	
Calm	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
5	36	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63
10	34	27	21	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72
15	32	25	19	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51	-58	-64	-71	-77
20	30	24	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81
25	29	23	16	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58	-64	-71	-78	-84
30	28	22	15	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-73	-80	-87
35	28	21	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-82	-89
40	27	20	13	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91
45	26	19	12	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93
50	26	19	12	4	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81	-88	-95
55	25	18	11	4	-3	-11	-18	-25	-32	-39	-46	-54	-61	-68	-75	-82	-89	-97
60	25	17	10	3	-4	-11	-19	-26	-33	-40	-48	-55	-62	-69	-76	-84	-91	-98

Frostbite Times: 30 minutes, 10 minutes, 5 minutes

$$\text{Wind Chill (°F)} = 35.74 + 0.6215T - 35.75(V^{0.16}) + 0.4275T(V^{0.16})$$

Where, T= Air Temperature (°F) V= Wind Speed (mph)

Effective 11/01/01

What to Listen For:

Wind Chill Advisory:

Wind chill values between -20°F and -29°F are expected to occur within the next 36 hours.

Wind Chill Watch:

Wind chill values of -30°F or lower are possible within the next 12 to 48 hours.

Wind Chill Warning:

Wind chill values of -30°F or lower are expected to occur within the next 36 hours.

Photo by Michael Dwyer, AP

Frozen Precipitation

Winter precipitation comes in many forms, including snow, sleet, rain and freezing rain, all with very different impacts. All types of winter precipitation fall from clouds as frozen precipitation, however, rain, freezing rain and sleet encounter warm air as they fall, causing melting, if the precipitation does not refreeze, it will fall as rain. A colder layer of air may exist near the ground causing the precipitation to refreeze. Depending on how deep this layer is, the precipitation could be freezing rain or sleet. These subtle differences make it very challenging for meteorologists to determine what form of precipitation is going to fall where, and how much will fall.

Rain	Freezing Rain	Sleet	Snow
Frozen precipitation falls through warm air and melts into rain.	Frozen precipitation falls through warm air and melts into rain which falls and freezes on cold surfaces, coating them in ice.	Frozen precipitation falls through warm air and melts, it then falls through another cold layer, refreezing into sleet before hitting the ground.	Snow falling through only cold air never melts.

What to Listen For:

Freezing Rain Advisory:

Accrual of less than ¼ inch of ice is expected due to freezing rain within the next 36 hours.

Ice Storm Warning:

Accrual of ¼ to one inch or more of ice is expected due to freezing rain within the next 36 hours.

COLD RELATED EMERGENCIES

Severe cold can cause much harm; for example, it can damage crops and other vegetation and freeze pipes causing them to burst. Unusually cold temperatures are especially dangerous in areas not accustomed to them because residents are generally unprepared and may not realize the danger severe cold presents. Exposure to cold can cause frostbite and life-threatening hypothermia. Always remember to wear light, dry, loose fitting layers, mittens or gloves (mittens are warmer than gloves) and a hat to prevent the loss of body heat. Cover your mouth to protect your lungs from frigid air.

Frostbite is damage to body tissue caused by extreme cold. Signals of frostbite include a loss of feeling in the affected area and skin that appears waxy, is cold to the touch or is discolored (flushed, white, grey, yellow or blue). Frostbite is most likely to affect extremities first, such as fingers, toes, ear lobes, or the tip of the nose.

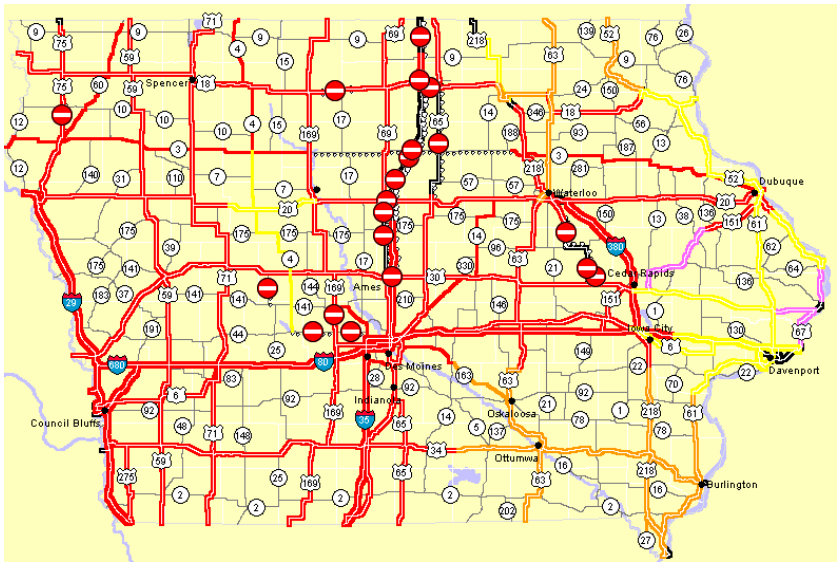
First Aid: Seek professional medical help immediately. Move the person to a warm place, handle the area gently and never rub the affected area. Warm gently by soaking the affected area in warm water (100-105°F) until it appears red and feels warm. Loosely bandage the area with dry, sterile dressings. If the person's fingers or toes are frostbitten, place dry, sterile gauze between them to keep them separated. Avoid breaking any blisters and do not allow the affected area to refreeze.

Hypothermia is an abnormally low body temperature and begins to occur when a person's body temperature drops to 3°F below its normal temperature, usually below 96°F, and can be deadly. Warning signs of hypothermia include uncontrollable shivering, numbness, glassy stare, incoherence, slurred speech, weakness, or loss of consciousness.

First Aid: Call 911 immediately. Gently move the person to a warm place. Give rescue breathing and CPR as needed. Remove any wet clothing and dry the person. Warm the person slowly by wrapping him or her in blankets or putting on warm clothing. Hot water bottles or hot packs may be used to help warm, but must be wrapped in a towel or blanket before applying. Warm the core first (trunk, abdomen), not the extremities (hands, feet). Warming extremities first could cause shock, or drive cold blood towards the heart, causing heart failure. **Do not** warm the person too quickly, such as immersing him or her in warm water, as this could lead to dangerous heart arrhythmias.

Driving and Winter Weather

Driving in the wintertime can be extremely treacherous, especially during winter storms. Before heading out in the wintertime it is important to check the weather forecast to know what to expect for your drive. Weather conditions can change quickly in the wintertime. Forecasts can also change significantly as a storm nears. Road conditions can be checked by using the Department of Transportation website. Iowa road conditions can be found at www.511ia.org. Road conditions are also available by phone by dialing 511 or 1-800-288-1047. The National Weather Service is separate from the Department of Transportation and is not who you should contact about road conditions.



Iowa Road Conditions from Iowa 511. January 2010

Know Before You Go:

- Have your vehicle winterized before the winter storm season.
- Keep the gas tank full so you are ready in case of an emergency and to prevent the gas line from freezing.
- Take a fully charged cell phone or two-way radio with you.
- Plan to travel during the daylight and, if possible, take at least one other person with you.
- Let someone know your route, and when you expect to arrive.
- Be sure to check the weather before leaving.
- Avoid travel after a winter storm as roads may still be blocked or snow may still be blowing, reducing visibilities.

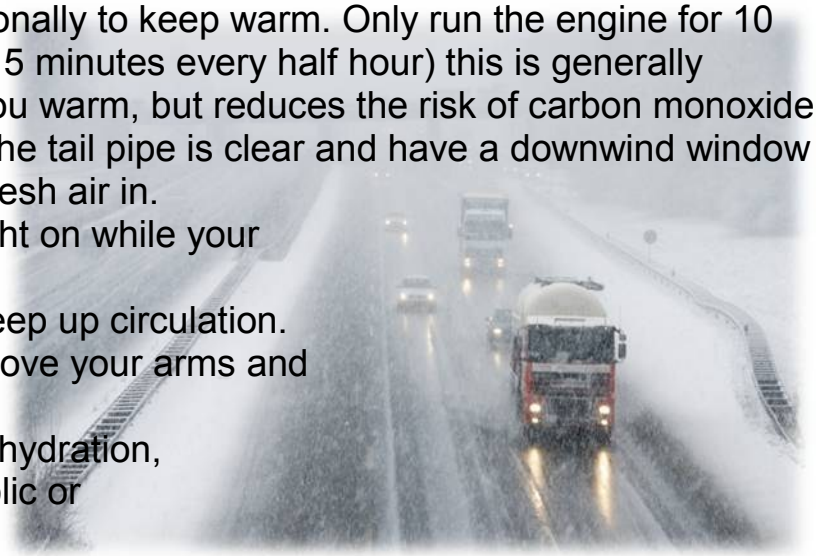
Driving and Winter Weather

Prepare Your Vehicle

In case you become stranded always keep in your vehicle during winter:

- Blankets or sleeping bags
- Rain gear, extra dry clothes including mittens, socks and hats
- Newspapers for insulation
- Plastic bags for sanitation
- Canned fruit, nuts and other high-energy foods. Include a nonelectric can opener if needed.
- Windshield scrapper with a brush
- Sand or non-clumping kitty litter for traction
- Waterproof matches
- Metal can for melting snow. Eating snow will reduce your body temperature so snow should be melted.
- Brightly colored cloth (ideally red) to tie to antenna or put out window.

What to Do

If you do become stranded in your vehicle, here are a few tips on what you should do to stay safe and warm:

- It is better to stay in the vehicle and wait for help. Only leave in search of help if you can see help within 100 yards. You can quickly become disoriented in blowing snow.
- Display a trouble sign to indicate you need help: hang a brightly colored (preferably red) flag or piece of fabric from the antenna or from a window.
- Raise the hood after the snow stops falling.
- Run the engine occasionally to keep warm. Only run the engine for 10 minutes every hour (or 5 minutes every half hour) this is generally enough time to keep you warm, but reduces the risk of carbon monoxide poisoning. Make sure the tail pipe is clear and have a downwind window open slightly to allow fresh air in.
- Leave the overhead light on while your car is running.
- Do light exercises to keep up circulation. Clap your hands and move your arms and legs occasionally.
- Drink fluids to avoid dehydration, but do not drink alcoholic or caffeinated beverages.