

## What is Wind Chill Temperature?

It is the temperature it "feels like" outside and is based on the rate of heat loss from exposed skin caused by the effects of wind and cold. As the wind increases, the body is cooled at a faster rate causing the skin temperature to drop. Wind Chill does not impact inanimate objects like car radiators and exposed water pipes, because these objects cannot cool below the actual air temperature.



## What does this mean to me?

The NWS will inform you when Wind Chill conditions reach critical thresholds. A **Wind Chill Warning** is issued when wind chill temperatures are life threatening. A **Wind Chill Advisory** is issued when wind chill temperatures are potentially hazardous.

## What is Frostbite?

Frostbite is an injury to the body caused by freezing body tissue. The most susceptible parts of the body are the extremities such as fingers, toes, ear lobes, or the tip of the nose. Symptoms include a loss of feeling in the extremity and a white or pale appearance. Medical attention is needed immediately for frostbite. The area should be SLOWLY re-warmed.

## What is Hypothermia?

Hypothermia is abnormally low body temperature (below 95 degrees Fahrenheit). Warning signs include uncontrollable shivering, memory loss, disorientation, incoherence, slurred speech, drowsiness, and apparent exhaustion. Medical attention is needed immediately. If it is not available, begin warming the body SLOWLY.

## How should I dress during cold weather?

- ✓ Wear layers of loose-fitting, lightweight, warm clothing. Trapped air between the layers will insulate you. Outer garments should be tightly woven, water repellent, and hooded.
- ✓ Wear a hat, because 40% of your body heat can be lost from your head.
- ✓ Cover your mouth to protect your lungs from extreme cold.
- ✓ Mittens, snug at the wrist, are better than gloves.
- ✓ Try to stay dry and out of the wind.

For more Information on cold-related health problems and outdoor safety visit the web site from the Centers for Disease Control and Prevention (CDC) at: <http://www.cdc.gov/nceh/hsb/extremecold>

Visit the National Weather Service Wind Chill web page at: <http://www.nws.noaa.gov/om/windchill/>

Visit Environment Canada's Wind Chill web page at: [http://www.msc.ec.gc.ca/windchill/index\\_e.cfm](http://www.msc.ec.gc.ca/windchill/index_e.cfm)

# New!

# Wind Chill Temperature Index



## National Weather Service

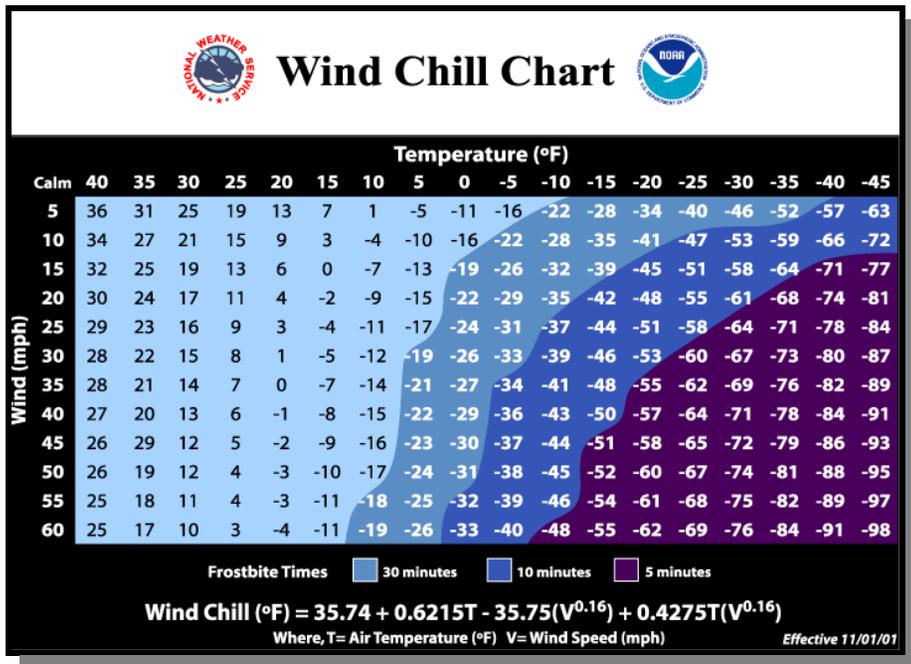


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# Wind Chill Temperature Index for Winter 2001-2002

On November 1, 2001, the National Weather Service implemented a new Wind Chill Temperature (WCT) index for the 2001/2002 winter season, designed to more accurately calculate how cold air feels on human skin. The former index used by the United States and Canada was based on 1945 research of Antarctic explorers Siple and Passel. They measured the cooling rate of water in a container hanging from a tall pole outside. A container of water will freeze faster than flesh. As a result, the previous wind chill index underestimated the time to freezing and overestimated the chilling effect of the wind. The new index is based on heat loss from exposed skin and was tested on human subjects.



For the first time, the new Wind Chill Chart includes a frostbite indicator, showing the points where temperature, wind speed and exposure time will produce frostbite on humans. The chart above includes three shaded areas of frostbite danger. Each shaded area shows how long (30,10 and 5 minutes) a person can be exposed before frostbite develops.

For example, a temperature of 0°F and a wind speed of 15 mph will produce a wind chill temperature of -19°F. Under these conditions, exposed skin can freeze in 30 minutes.

# Development of the new Wind Chill Temperature Index

During the fall of 2000, the Office of the Federal Coordinator for Meteorological Services and Supporting Research (OFCM) organized a joint U.S.–Canadian government-sponsored action group to develop, test and implement a new WCT Index. The group is called the Joint Action Group for Temperature Indices (JAG/TI). The goal of JAG/TI is to internationally upgrade and standardize the Wind Chill Index.



Early summer of 2001, Human trials were conducted at the Defence and Civil Institute of Environmental Medicine in Toronto, Canada. The trial results were used to improve the accuracy of the new formula and determine frostbite threshold values. During the human trials, twelve volunteers (six men and six women) were placed in a chilled wind tunnel and thermal transducers were stuck to their faces to measure heat flow from the cheeks, forehead,

nose and chin while walking 3 mph on a treadmill. Each Volunteer participated in four trials of 90 minutes each and was exposed to varying wind speeds and temperatures.

The new wind chill index is now being used in Canada and the United States. Specifically, the new WCT index:

- ▶ calculates wind speed at an average height of five feet (typical height of an adult human face) based on readings from the national standard height of 33 feet (height of an anemometer)
- ▶ is based on a human face model
- ▶ incorporates modern heat transfer theory
- ▶ lowers the calm wind threshold from 4 mph to 3 mph
- ▶ uses a consistent standard for skin tissue resistance
- ▶ assumes no impact from the sun (i.e. clear night sky).