

WINTER

A CHANGE IN THE CHILL

Joe Goudsward

The Wind Chill Index continues to be one of the most watched and most popular winter weather indicators. The American Meteorological Society defines wind chill as "The portion of the cooling of a human body caused by air motion. Air motion accelerates the rate of heat transfer from a human body to the surrounding atmosphere, especially when temperatures are below about 45F."



This upcoming winter season will be the third consecutive year that a new wind chill temperature index will be used. The new index is a vast improvement over the old which often misrepresented the effect of the wind and temperature on exposed flesh. This new index provides a more accurate, understandable and useful formula for calculating the potential danger from the combination of wind and cold temperatures.

The new wind chill index:

1. Uses the calculated wind speed at an average of five feet, which is the typical height of an adult human face.
2. Is based on the human face model.

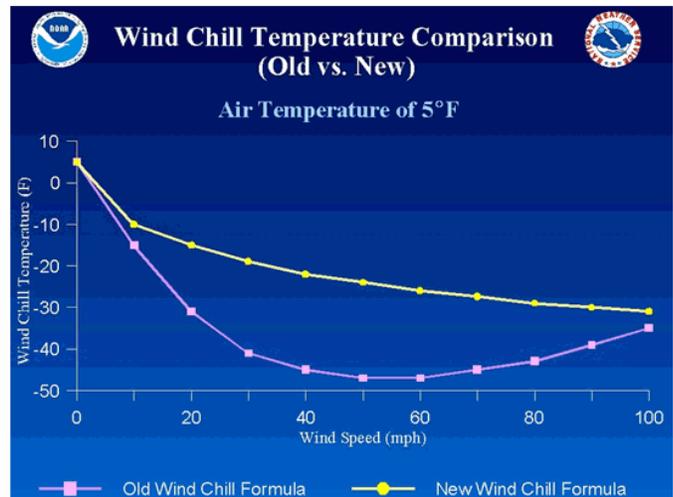
3. Incorporates modern heat transfer theory which takes into account the heat loss from the body to its surroundings during cold and windy or breezy days.
4. Lowers the calm wind threshold from four miles per hour to three miles per hour.
5. Uses a consistent standard for skin tissue resistance.
6. Assumes no impact from the sun.

The scientific equation used to calculate the new wind chill index is

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

Where, T = Air Temperature ($^{\circ}\text{F}$) and V = Wind Speed (mph)

A comparison of the old wind chill index versus the new values can be seen in the graph below. As you can see, the change can be significant.



The following page contains the new wind chill chart that you may cut out and use this season and remember to bundle up!