



How Hot Is It?

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Mankind has often been concerned with sultriness of his environment. For some this is a mere curiosity or a comfort factor. For others it can be life threatening.

In order to determine the actual degree of sultriness in a quantifiable manner several temperature indexes have been developed. Perhaps the most common one is "Humidex". Its technical name is "Apparent Temperature". This index measures the effects of humidity and temperature combined into one value to give a rough impression of how hot it feels or the sultriness. This index does have shortcomings, in that it does not include the effect of wind. The little known "Corrected Effective Temperature Index" included a wind speed factor.

There is another index, which includes the effects of humidity, air speed, air temperature and the radiant heating factor (from the sun). This index was developed by the U.S. Military in the 1950's and has become widely accepted across the globe for industrial temperature measurements to protect employees. It's called the "wet Bulb Globe Temperature Index". It can be measured with a 6" black sphere containing a thermometer, a naturally ventilated wet thermometer, called a Wet Bulb and a regular air temperature thermometer called a Dry Bulb. There are also instruments available which measure this temperature index directly combining the three factors and their appropriate weighting values.

So, the questions of "How Hot Is It?" is not a trivial question. The questions might be, "How Hot Does It Feel?" or "How Sultry Is It?" The WBGT Index (Wet Bulb Globe Temperature Index) provides a definitive numerical answer. Unfortunately the WBGT Index is not reported by radio and weather stations, and is generally not well known, even though it has been in use for over forty years.

Another contributing factor to its relative non fame, it that the measurement technique is non standard. (The 6" globe which is required for WBGT measurements is not commonly available and weather stations typically use an aspirated wet bulb for purposes of relative humidity and dew point). Weather stations can broadcast "Humidex" because they get the humidity and dry bulb measurements on a hourly basis. The Wet Bulb Globe Temperature thermometers that would be required by weather stations would be an additional tax payer burden.

Workers need to be protected from excessively sultry environments. This must be done using the WBGT Index as the Humidex is insufficient for a safety application.

The Humidex was developed to give a measure of how hot it feels to the general populace using the information which was readily available. The Wet Bulb Globe Temperature Index was developed for human safety considerations.

The two indexes are not comparable since they do not use the same basic parameters. One is used as a comfort factor, while the other as a safety factor. An environment which reads high on the humidex may read cooler on the WBGT index if there is a strong wind, because humidex does not consider the wind factor. The WBGT index rely heavily on the wind factor.

As safety professionals, we need to encourage our local media and government to consider these aspects of worker safety.