

Humidity



Essential Standard 2.5

Understand the structure of and processes within our atmosphere.

Learning Objective 2.5.4

Predict the weather using available weather maps and data including surface and upper atmospheric winds, and satellite imagery.

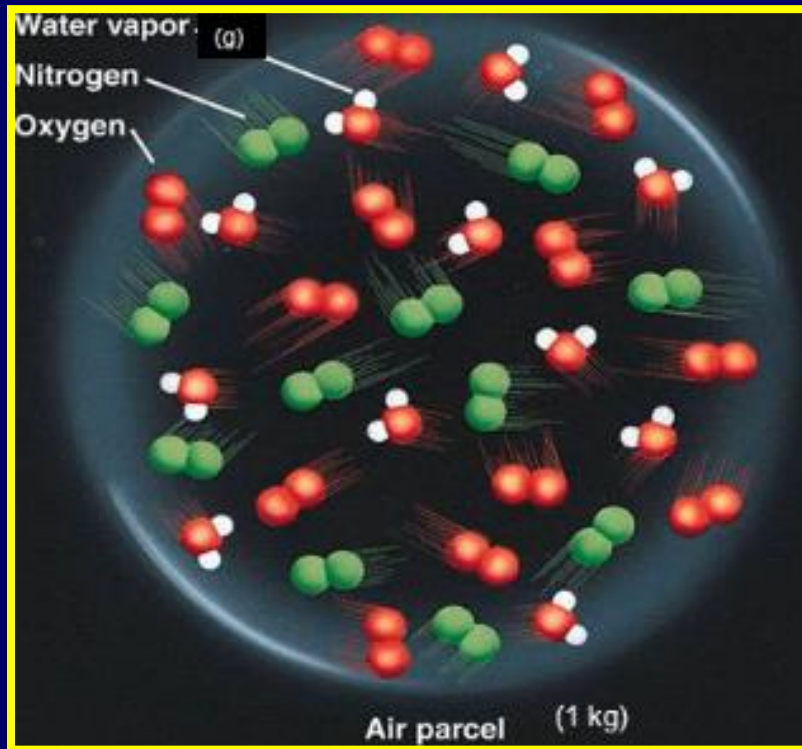
I Can Statements

At the end of this lesson, you should be able to say, with confidence:

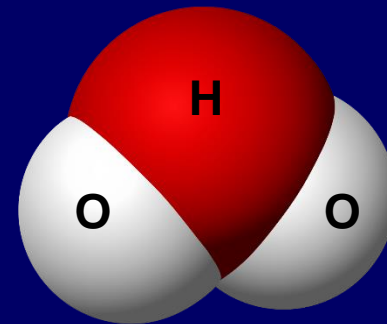
- I can distinguish between humidity and relative humidity.
- I can explain the effects that temperature plays on relative humidity.
- I can explain when and why condensation occurs, in relation to relative humidity.

Humidity

Humidity refers to the amount of water vapor present in the air.

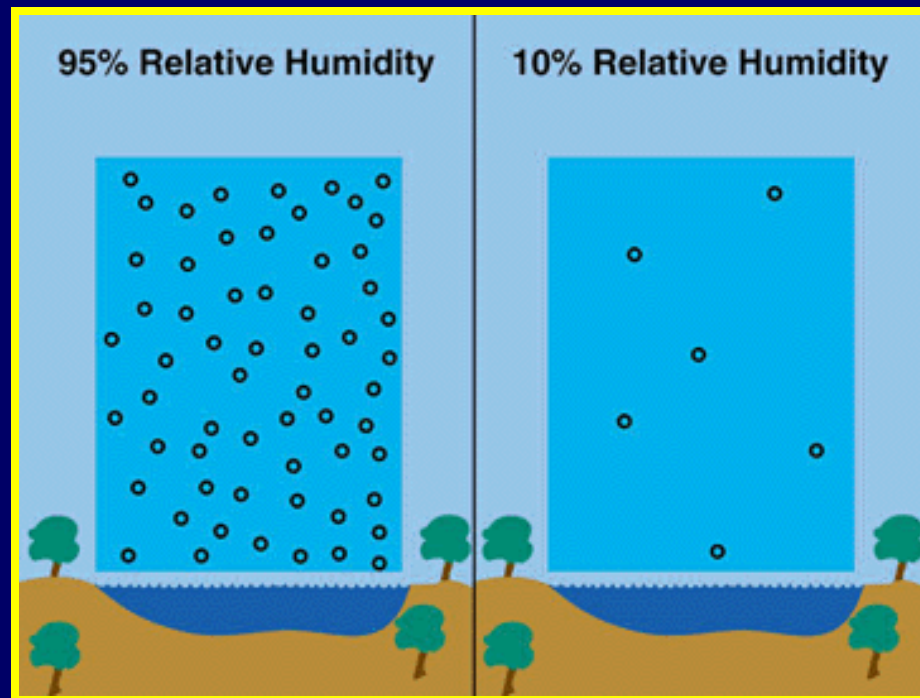


Water vapor consists of water molecules, H₂O, in the gas state.



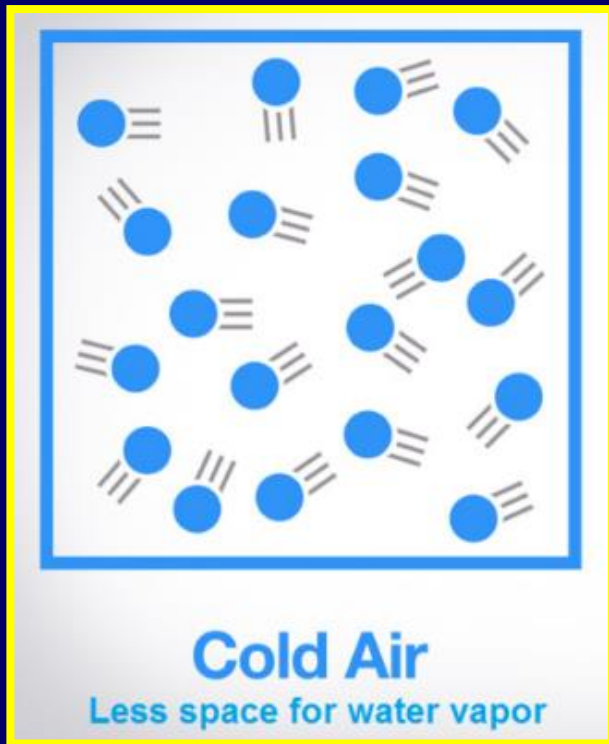
Relative Humidity

Relative humidity refers to how much water vapor is present in the air compared to how much water vapor the air is capable of holding.



Temperature and Humidity

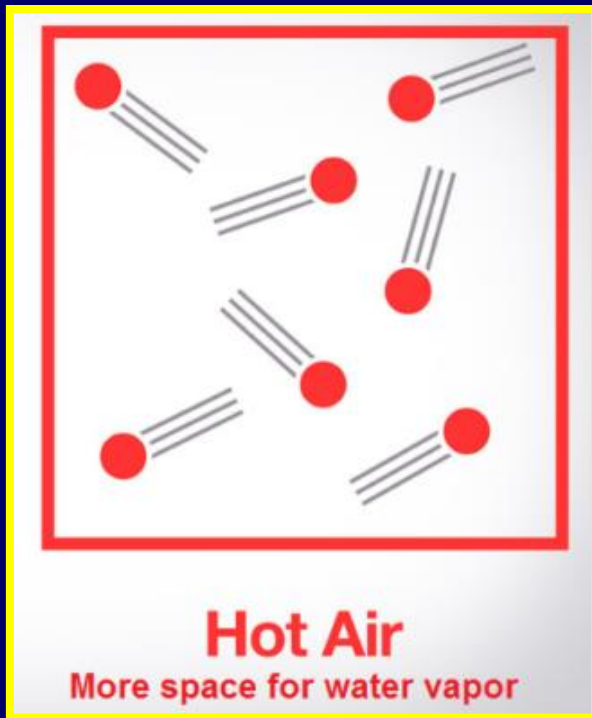
Because cold air molecules are more condensed, there is less space for water vapor.



Cold air cannot hold much water vapor and is often very dry.

Temperature and Humidity

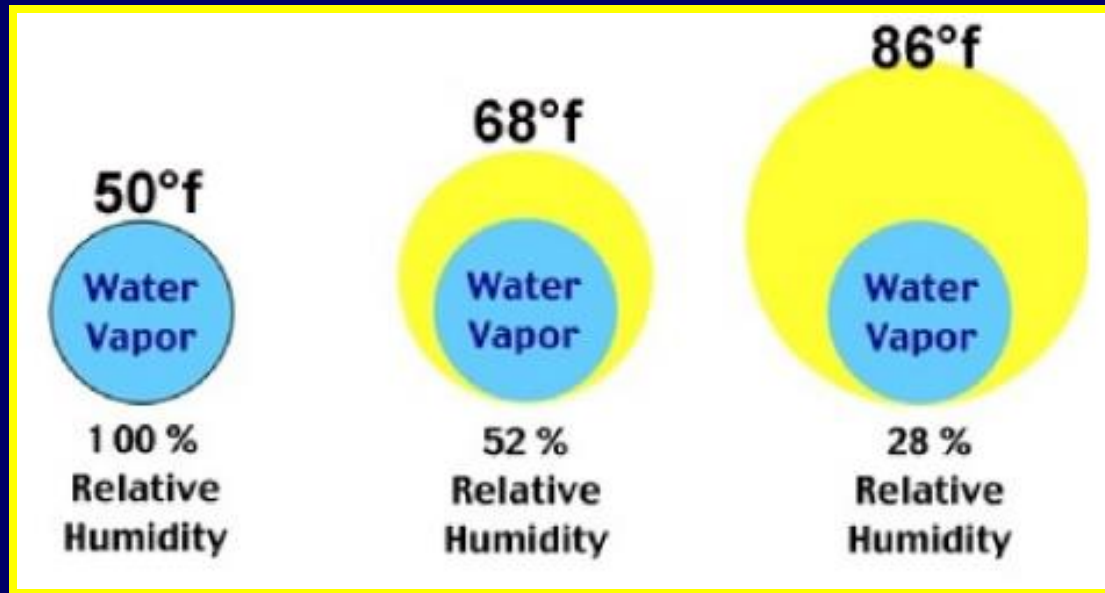
In hot air, the air molecules expand and spread out creating a lot more space for water vapor.



Hot air can hold a lot of water vapor and is often very humid.

Relative Humidity

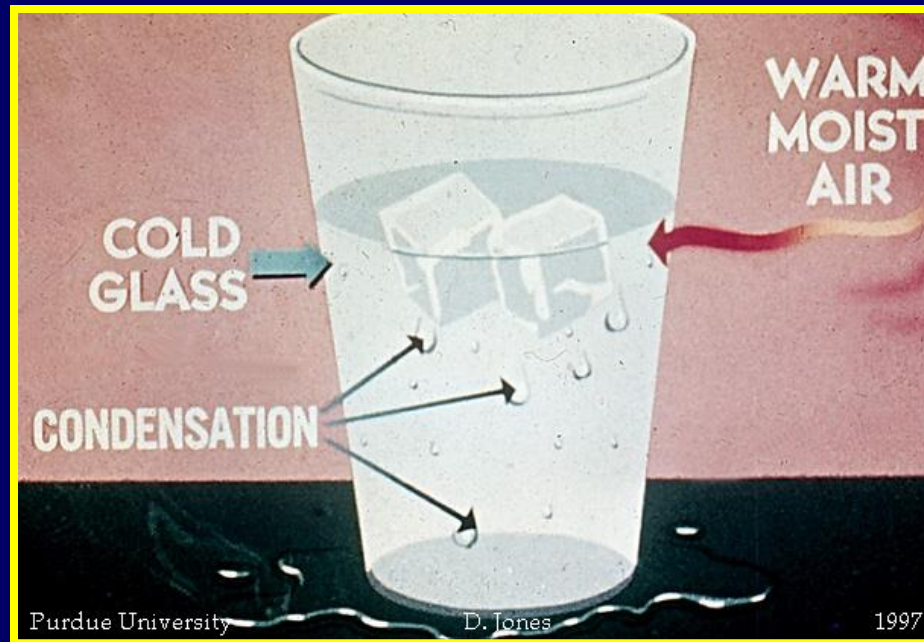
When the air holds as much water vapor as possible, relative humidity reaches 100%.



Because cold air holds less water vapor, relative humidity reaches 100% in cold air much faster than it does in warm air.

Condensation

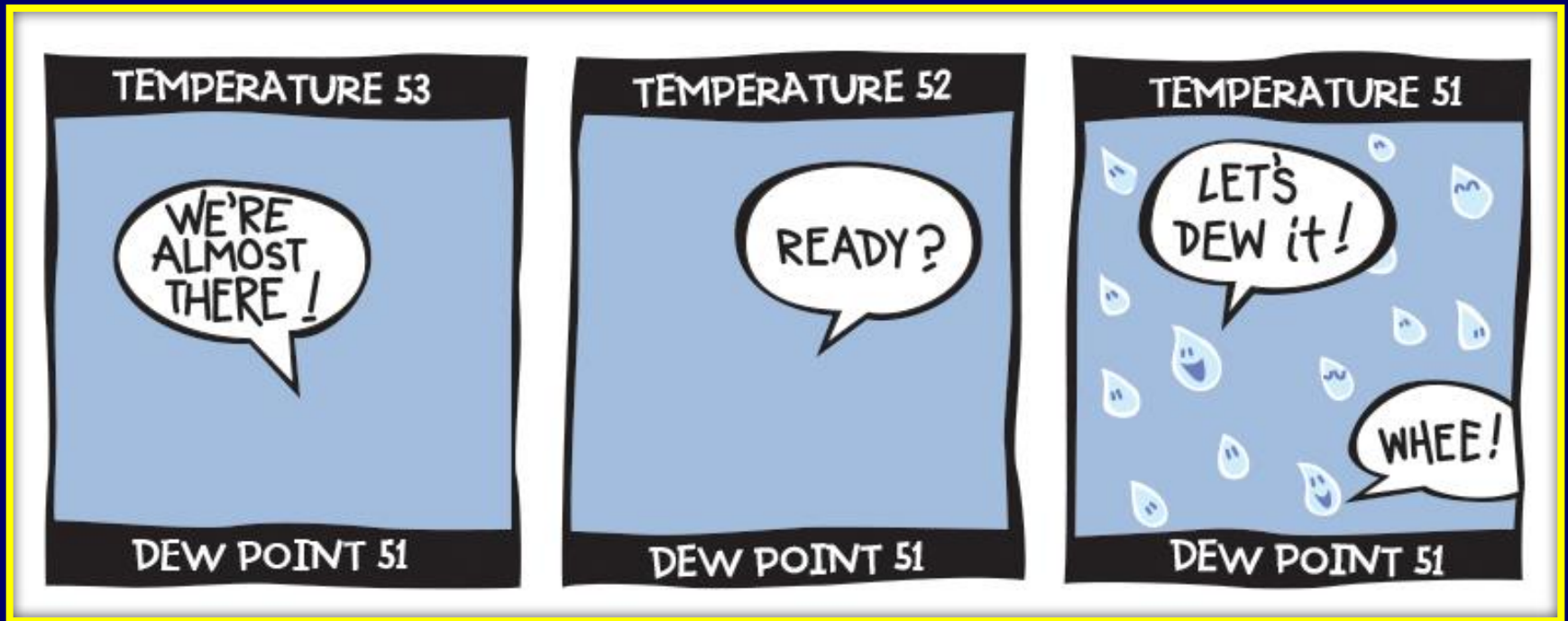
Condensation occurs when air cools down and water vapor turns into water droplets.



Condensation will only occur when the relative humidity reaches 100%.

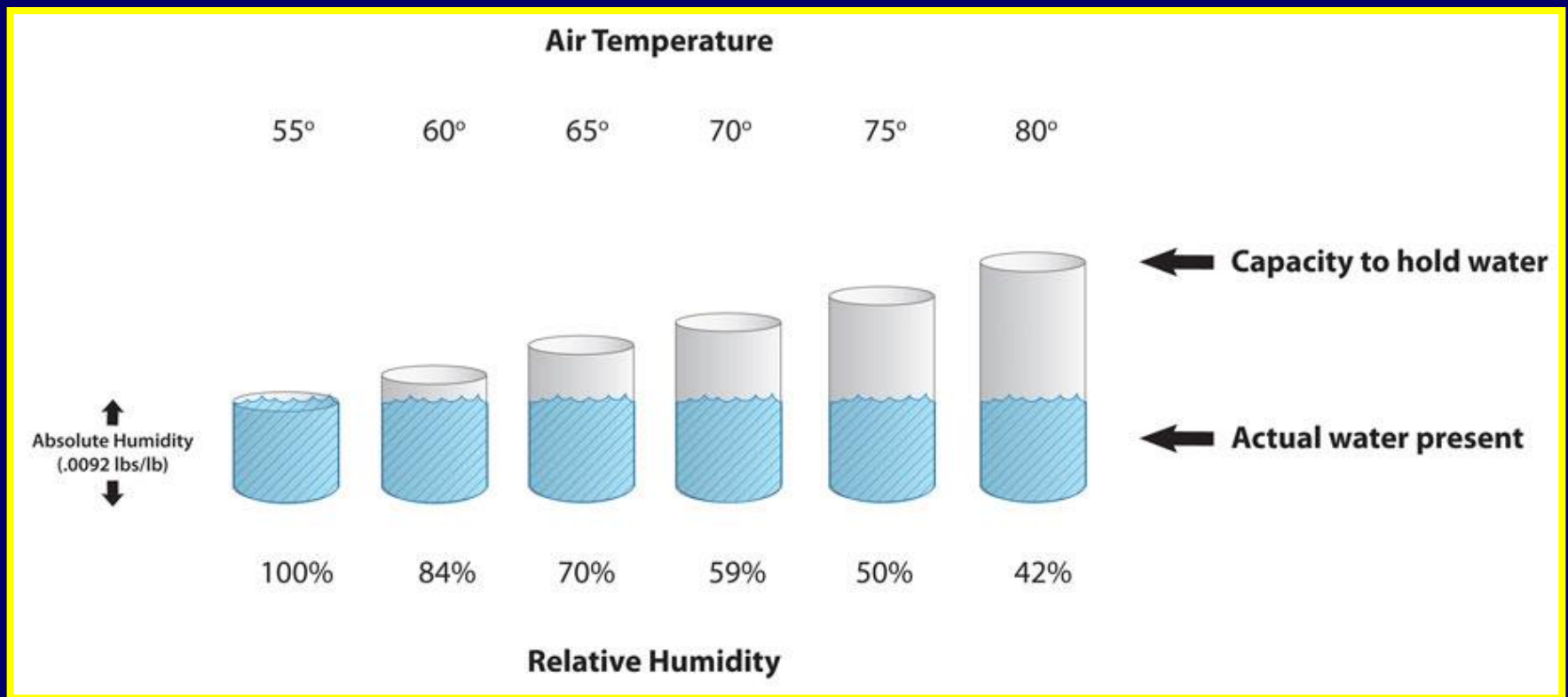
Dew Point

The Dew Point is the temperature to which air must be cooled in order to reach 100% humidity so that condensation can occur.



Dew Point and Temperature

Because the relative humidity can vary with temperature, the dew point can also vary with temperature.



Dew Point

If the dew point is above freezing, condensation will occur as water or dew.



If the dew point is below freezing, condensation will occur as frost.

Humidity and You

On hot days, you sweat.

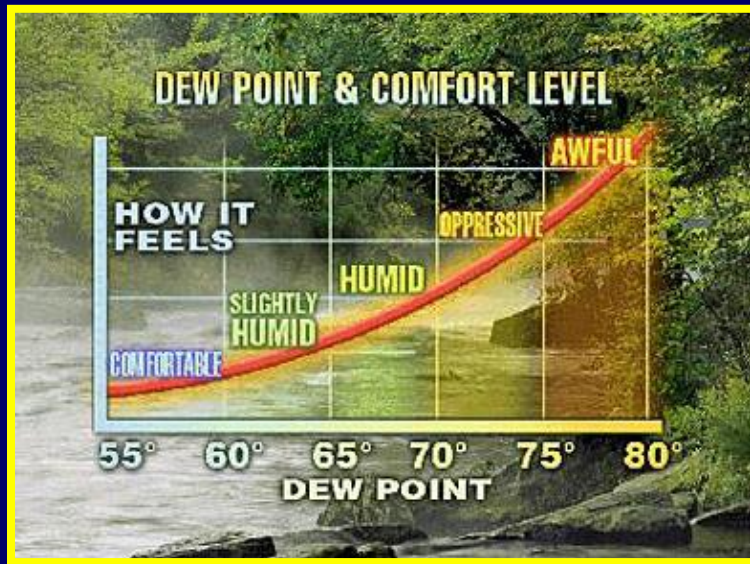


Body heat is used to evaporate the water from your skin.

The loss of body heat lowers your body temperature, making you feel much cooler.

Humidity and You

Air in which the dew point is very high contains a high amount of water and feels very humid.



On days like this, the air can't hold any more water.

Sweat does not evaporate and you do not feel cooler, just sticky, hot, and miserable.

The End

