Fire Safety Tips from Smokey and His Friends at the Texas Forest Service!

The Keetch-Byram (kech **bi** rum) Drought Index, or KBDI, is a mathematical system developed to help people understand how likely a wildfire is to occur. The KBDI rates current and expected weather conditions and places them on a numbered scale, from 0 to 800. Here are what the numbers mean:

1. 0-200: Soil and fuel moisture content are high. Most fuels will not readily ignite. There is not much danger of wildfire.
2. 200-400: Fires will more readily burn, but heavier fuels will not ignite readily.
3. 400-600: Fires will readily burn in all directions. In some places, all of the fuel on the ground will burn away. Larger fuels may smolder for many days, possibly creating problems with smoke.
4. 600-800: Fires will burn all of the fuels off of the ground. Fires will burn throughout the night and heavier fuels will actively burn, increasing the intensity of the fire.

Discovery FACTivity

The best time to do this FACTivity is when the temperature is high. It is best if the temperature is over 85 °F (or 29 ° C). In this FACTivity, you will determine the air's dew point temperature. Dew point is the point at which the air, at a given temperature, can hold no more moisture. The question you will answer is: What happens when the air can hold no more moisture? For this activity, you will need a cleaned-out vegetable can, filled three-quarters high with water, a thermometer, a spoon, ice, paper, and a pencil. The method you will use to answer this question is: Let the vegetable can filled with water sit for a few hours outside in the shade. It should reach air temperature before you continue. Using the thermometer, measure the air temperature in the shade and record the air temperature. Hold the thermometer against the outside of the can so you can measure the temperature of the air immediately outside of the can. Put some ice into the water and stir. The dew point of the air surrounding the can is the temperature registered on the thermometer when the first sign of moisture appears on the outside surface of the can. Record the temperature at dew point. What has happened? The ice has caused the air immediately surrounding the can to cool. As the air cools, it absorbs moisture which you cannot see until it can hold no more moisture. Now calculate the dew point depression. (See "Methods" to learn how to do this.) If the air temperature and the dew point are far apart, the air is dry and the relative humidity is low. Weather reports often give the air's dew point temperature. Knowing the dew point will help you to determine whether dew or fog is likely to occur.

Activity from: Bosak, S. V. (2000). *Science is...: A source book of fascinating facts, projects, and activities*, Ontario, Canada: Scholastic Canada, Ltd., p. 446.

From Potter, Brian E. (1996). Atmospheric properties associated with large wildfires. *International Journal of Wildland Fire*, 6(2): 71-76.