

PHILLIPS COUNTY KS

EMERGENCY MANAGEMENT



JANUARY 2026



Fire & Humidity

What is the relationship between fire and relative humidity (RH)? Higher humidity lowers fire risk because moist air prevents fuel's from drying out and makes ignition harder.

Fuels absorb moisture from the air. Dry grasses, leaves, and crop residue naturally take in moisture when humidity is high. More moisture in the fuel means it takes more heat to ignite, flames spread more slowly, and embers are less likely to start spot fires.

Moist air cools and slows evaporation. When humidity is high, water evaporates more slowly from fuels and soil. This means that fuel's stay damp longer and fine fuels don't become brittle or tinder-like.

Heat energy gets "used up" evaporating moisture. Before a fire can ignite and spread, the heat must first evaporate the moisture inside the fuel. If humidity is high, fuels contain more moisture, so fire must work harder to get started.

Flames and embers are less stable. High humidity makes burning less efficient by reducing flame temperature, weakening embers, and making ember travel less effective.

Fire weather indices use RH as a key factor. Fire danger models (like the Grassland Fire Danger Index, Keetch–Byram Drought Index, and NFDRS) all treat low relative humidity as a **major fire risk multiplier** because it directly dries fuels and increases ignition probability.

Quick rule of thumb

- **RH below 25–30%** → fuels dry rapidly → high fire risk
- **RH 40–60%** → moderate drying → moderate fire risk
- **RH above 60%** → fuels retain moisture → lower fire risk

Fire Facts

High moisture in trees, when heated by fire, turns to steam, causing trees to explode.

Large wildfires can generate their own wind and even lightning.

A fire can double in size every 30-60 seconds, engulfing a room in minutes.

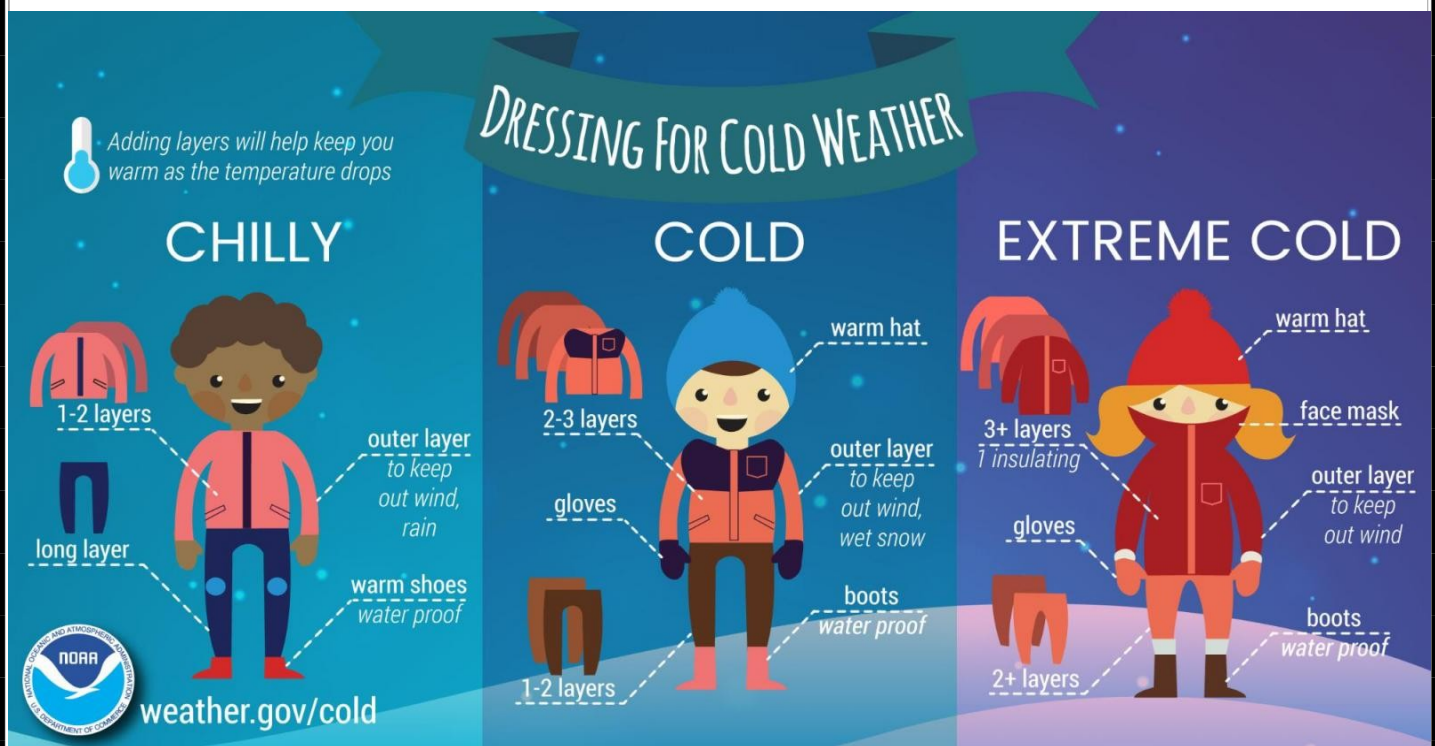
Room temperatures can exceed 600°F at eye level, scorching lungs and melting clothes.

A room's contents can ignite all at once, a phenomenon called "flashover".

The inventor of the fire hydrant is unknown because the patent was destroyed in a fire.

One of the interesting facts about oxygen and fire is that varying degrees of oxygen can change the color of a flame. A blue flame means lots of oxygen, while a yellow flame = low oxygen supply.





If you must drive during a storm, take the following precautions:

- **Slow down!** Even if the roads just look wet they could still be slick. More than 5,000 fatalities occur on the roadways each year due to weather conditions.
- Make sure your vehicle is completely clear of ice or snow before starting the trip. Flying snow from cars causes accidents.
- Let someone know where you are going and what route you will take. If something happens, this person will know where to start a search.
- Don't leave the house without the following a fully charged mobile phone, car charger and an emergency supplies kit in your car.
- If you are driving and begin to skid, remain calm, ease your foot off the gas and turn your wheels in the direction you want the front of the car to go. If you have an anti-lock braking system (ABS), apply steady pressure to the brake pedal. Never pump the brakes on an ABS equipped vehicle.
- If you are having trouble seeing due to weather conditions, pull over to the side of the road and stop your car until visibility improves. Turn off your lights and use your parking break when stopped so that another car won't mistakenly follow your tail/brake lights and end up hitting you.

If your car gets stuck during a storm:

- Stay in the vehicle!
- If you leave your vehicle, you will become disoriented quickly in wind-driven snow and cold.
- Run the motor about 10 minutes each hour for heat.
- While running the motor, open the window a little for fresh air to avoid carbon monoxide poisoning.
- Clear snow from the exhaust pipe to avoid gas poisoning.
- Be visible to rescuers.
- Turn on the dome light at night when running the engine.
- Tie a bright colored cloth, preferably red, to your antenna or door.
- After snow stops falling, raise the hood to indicate you need help.

