

## Agricultural Safety – Hay Fire

**Fact:** A hay fire can devastate a farming operation. The risk of physical injury, damage to livestock and equipment, and loss of income can all be reduced by learning more about how to safeguard your property.

### Hay Fire Information and Prevention

Spontaneous combustion is a word we don't want you to hear from the local fire department. If hay with high moisture is stored, a fire could ensue within one-to-six weeks of storage. If you believe you may have stored your hay with high moisture content (20 percent or greater for small rectangular bales and 16 percent for large rectangular or round bales), monitor the temperatures to avoid a hot bale of hay.<sup>1</sup>

New hay stacked in the field or placed in a barn should be checked frequently for possible heating. Check in the morning and afternoon. If no signs of abnormal heating are found, the intervals may be lengthened. If the temperature reaches 130°F, move the hay to allow increased air circulation and cooling.

Even after storage, moisture from a rain or leak can also lead to excessive heating. Hay stored outdoors and left uncovered (big round bales and stacks) should be formed into the tightest packages possible to resist penetration by rain. Do not place unprotected bales or stacks tightly against each other. Instead, place the bales where air can circulate freely. Protect the bales from ground moisture and runoff by placing them on a bed of gravel, old tires, poles or pallets. Plastic or other waterproof covers will protect bales by shedding precipitation. If storing hay inside, be sure the barn roof and any plumbing does not leak and allow for adequate ventilation and spacing. Likewise, provide adequate drainage so water will not enter the barn during storms.

### Measuring Hay Temperatures with a Probe

Hay moisture meters and temperature testing can help you monitor your hay. Alternatively, you can use a probe and thermometer to measure temperature. The probe is pushed or driven into the stack and the thermometer is lowered to the end of the probe on a light wire. If the probe is horizontal, use a heavier wire to push the thermometer into the probe. After 10-15 minutes, retrieve the thermometer and read the temperature. To check the temperature without a probe and thermometer, push or drive a 3/8 to 1/2-inch diameter metal rod into the hay and leave it there for 10-15 minutes. Pull the rod out and test its temperature with your bare hand. If you can hold the rod in your hand comfortably, the temperature is below 130°F. If you can hold it, but it is uncomfortable, the temperature is in the 130° - 160°F range. If the rod is just too hot to hold in your bare hand, the temperature is over 160°F and a fire is imminent.

### Restricted Areas

Store rooms present the potential for a wide range of injuries, ranging from minor to catastrophic. All restricted areas, including private offices, should have signs posted that read "Employees Only" or "Authorized Personnel Only". In addition, there should be adequate controls in place to monitor these areas and escort unauthorized individuals who enter these areas back to an unrestricted location.

**CAUTION:** If you see or smell smoke coming from the hay, place boards or plywood on the hay before walking on top of it. This will spread your weight over a larger area to prevent falling into burned out cavities. A lifeline is also recommended in this case.

## Hay Recommended Moisture Contents for Baling Hay<sup>2</sup>

Baling Method	Hay Moisture Content <sup>3</sup>	
Large packages (round bale, stack)	15-18%	Maximum moisture contents are for grass and legume hays. Consult label recommendations and your Extension agent before using preservatives or drying agents.  If you are unsure about practices regarding moisture testing or hay storage, please contact your local agricultural extension.
Conventional square bale	20-25%	
Using inoculant-based preservative	20-25%	
Using acid-based preservative	20-30%	

<sup>1</sup> Hall, Marvin. (2006, May). What to do with wet hay? Penn State Field Crop News, May 17, 2006 Vol. 6:04. Retrieved May 1, 2009, Updated July 29, 2014 Beware of the Dangers of Hot Hay from <http://fcn.agronomy.psu.edu/2006/fcn0604.cfm>.

<sup>2</sup> Prather, Timothy G. Hay, University of Tennessee Extension, NASD, Fires: Prevention and Control, (<http://nasdonline.org/915/d000758/hay-fires-prevention-and-control.html>).

<sup>3</sup> Maximum moisture contents are for grass and legume hays.



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