

## **Barn Fire Hazards**

Our topics for this week are:

- Causes of barn fires
- Prevention of barn fires
- Responses to a barn fires

A barn is always a fire hazard due to the materials it contains and the need for good ventilation for the animals, which in turn can become good ventilation for a fire. Barn fires do not only destroy shelter and food for surviving animals, they also cause horrific injuries and death to entrapped animals. The national U.S. standard for fire control involving barns is the National Fire Protection Association (NFPA) 150 Standard on Fire and Life Safety in Animal Housing Facilities.

### **Smoking**

The most important rule in reducing the risk of barn fires is under no conditions, should smoking in or near barns ever be allowed. Service people or construction workers need to be personally warned because if they were not raised with or now own a barn, they are probably unaware of the extent of the risk. Prominent “No Smoking” signs; fire extinguishers; and a list of emergency numbers for police, fire, and hospitals should be located at all entrances.

### **Wiring and Electrical Fixtures**

Heat lamps are frequently a source of barn fires which most frequently occur in winter. All plug-ins should be GFIC receptacles and wiring should be rodent and moisture proof. Use of extension cords should be avoided and when necessary, only outdoor industrial grade extension cords should be used. Wiring should be protected by metal conduits to keep horses and rodents from chewing into wiring. Service boxes should be in dry dust free locations and mounted on fire resistant materials. Electrical appliances should be disconnected when not in use. Light bulbs should be encased in thick glass to prevent contact with cobwebs and being broken by animals in the barn.

Electric motors should be dust proof. Box fans do not have encased motors and are intended for low dust home environments. However, they are frequently used to cool stalls in barns. Box fan cords are not durable and when used in barns they are often attached to extension cords. Stall fans should have sealed ball bearings, a thermostatic shut-off switch to shut the fan off if overheating, and a UL 507 Certified Motor, safe for outdoor use. Extension cords should not be used.

### **Hay and Other Flammables**

Gases are produced in damp hay that are flammable on exposure to air. Barn fires from hay combustion is most likely to occur within the first two months after cutting and storing the hay, i.e. late fall or early winter. Legume hay is more likely to catch fire than grass hay. The risk of combustion is also increased by bale size (large round bales), tightly bound bales, or high

moisture content (more than 20%). Hay with an internal temperature of 150°F or higher is dangerous.

Hay should be well dried before storage. Square hay bales should be loosely stacked on their sides on top of pallets to facilitate exposure to air and staying dry. The roof over hay storage should be leak proof. Storage of hay and bedding material in another location than the barn containing animals is preferable. Other buildings should be at least 50 ft from a barn with animals. Hay lofts are particularly dangerous. In addition to quickly spreading a fire, hay storage in lofts above stalls also reduce air quality with dust and decrease ventilation. When in the same building as horses, hay should be surrounded with cinder or concrete blocks and a fireproof door to prevent drafts. Hot shoeing of horses should not be done near hay or bedding.

Electrical sparks can cause fires if dust from hay is dense. Hay dust in the air can be particularly bad if hay is stored in barn lofts. Cobwebs also burn easily and can quickly spread a fire throughout the ceilings. Space heaters can also ignite hay dust or cobwebs easily.

All gasoline motor vehicles produce sparks and should not be stored in a barn with animals. Gasoline powered equipment, gasoline and kerosene cans, paint, and fertilizers should be stored in another building. Small flammables, such as grooming aids and insecticides, should be stored in a fire-resistant box within the barn. Oily rags, especially those with linseed oil, should be removed immediately after use and placed in a metal can. Compost piles should be kept as far away from a barn as feasible since they can generate enough heat to ignite combustible materials. Lightning rods should be placed on animal barns.

### **Extinguishing Fires**

Sprinkler systems in barns are a highly effective means of controlling or extinguishing fires, but due to their expense, they are infrequently used in barns. Planning for the risk of fire should include easy access for fire trucks and adequate water source that is outside the barn. Fire extinguishers should be 10 lb, ABC or better. Fire extinguishers and flashlights are best placed at each entrance, the feed room, and the tack room.

### **Evacuation**

If a fire begins in a horse barn, a handler has less than 10 minutes to get horses out. Horses that escape could still have smoke inhalation permanent lung damage. Evacuation is easier if each stall has two exits, an inner isle door and a exterior door to a run or paddock.

If horses are present, non-nylon halters and lead lines should be kept in a prominent location with battery powered emergency lights or fluorescent markings for fire fighters to easily find. Nylon halters can catch fire, melt, and burn the horse's face.

All who have access to the barn should be aware of the appropriate actions in case of fire. Doors to the outside should slide easily and completely open or they should swing open to the outside. Halters with leads should be within easy reach of the stall door. If halters are not easily available, a handler should use anything that can be put around the horse's neck near its head to lead it out, such as a rope, belt, or electric cord. When stalls are connected to outside runs or pens, the runs or pens should have outside exit gates to permit rescue without going through a burning barn. If the horse freezes up, the handler should try to back it toward exit or create an improvised blindfold using a coat or shirt.

Once outside, rescued horses must be restrained by tying, holding the lead rope, or in a secure containment. They should never be turned loose and never left alone while the barn is

burning. Loose horses panicked by a barn fire may run back into the fire seeking security of its usual environment.

Occasional fire drills should be run to acquaint everyone with ideal procedures. Where to contain the animals if a barn is on fire and after it is gone, should be determined in advance. An outside enclosure should be designated to confine animals during a barn fire. Shelter from weather may be important since most barn fires occur in winter.

Now, let's recap the key points to remember from today's episode:

- The most common cause for barn fires in the U.S. is heating equipment and electrical wiring.
- The main cause of horse barn fires in summer months is inexpensive box fans.
- Microbes in damp hay can generate enough heat for spontaneous combustion.

More information on animal handling is available in my book, *Animal Handling and Physical Restraint* published by CRC Press. It is also available on Amazon and from many other fine book supply sources.

Additional information is available at [www.betteranimalhandling.com](http://www.betteranimalhandling.com)

Don't forget serious injury or death can result from handling and restraining some animals. Safe and effective handling and restraint requires experience and continual practice. Acquisition of the needed skills should be under the supervision of an experienced animal handler.