

Preventing Barn Fire: Tips for Horse Owners

Fernanda Camargo, Animal and Food Sciences, and Essie Rogers, Kentucky Horse Council

Every year, close to 200 horses are reported to have died in barn fires in the United States. Although less frequent than house fires, barn fires are more common than we would like. Many barn fires could be prevented by good barn design/construction, strict personnel policies, and clear directives about how the barn and equipment should be maintained.

Horse stables should be well ventilated. Hay, straw, shavings, cobwebs, and wood are highly flammable. Add a bit of heat or a spark to that highly flammable, well-ventilated material, and a barn fire can easily happen.

Common reasons these barn fires start include smoking inside the barn (bedding materials, wooden structures, and hay are all fuel for fire), spontaneous combustion of hay improperly cured before storage, lightning, sparks from live electrical wires, and circuit breaker sparks during or after storms.

In case of barn fire, horses ideally will be outside the barn, but that does not always happen. So, it is important to learn how to fireproof your barn. Be proactive and start implementing new routines before a fire happens.

The following are suggestions for fire prevention and emergency management. They may not cover every situation, so it's highly recommended that you seek advice from a fire safety expert as you develop your fire safety plan.

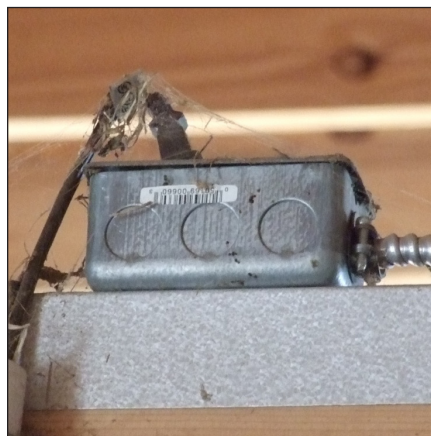
Have a Plan

- Post fire and emergency numbers in prominent locations in the barn or by the barn phone.
- Post, in prominent locations in the barn or next to the barn phone, the barn's physical address and any special driving directions that emergency responders might need.
- Post other emergency contact information in a convenient, prominent location.



Barn aisles should be kept uncluttered.

- Designate paddocks away from the barn (several hundred feet or more) where horses can be temporarily housed in case of fire or any other emergency stable evacuations.
- Teach your family and employees the fire procedure for your facility.
- Make sure every stabled horse has a halter (that fits!) hanging on the stall door with lead rope attached. Leather is preferable; a nylon halter will melt in heat. Consider marking each halter with glow-in-the-dark paint or reflectors.



Electric outlets should be kept clean of cobweb and other debris.



Light bulbs should be caged to prevent fire.



If possible, do not store hay in the barn loft. It makes cleaning more difficult and provides excellent fuel for spreading fires.



When hay is stored in the barn loft, pieces of hay may accumulate on the trusses and may fall inside the electric outlet, creating a spark and possible fire.

- Put reflectors on stall door latches.
- Human safety is top priority: in all fire situations, ensure your safety and that of others before taking care of the animals.

Other Steps You Can Take

Here are other precautions that can help protect your horse barn in fires and other emergency situations:

No Smoking—There is no place for smoking in or near a barn. Post “no smoking” signs, and enforce a strict no-smoking policy.

Fire Extinguishers—Your barn should have fire extinguishers next to each exit, next to the electrical utility box, and at roughly 30-40 foot intervals throughout. There are different types of extinguishers designed for a variety of fire types (electrical, ordinary combustible, liquid combustible). Experts recommend ABC (general purpose) extinguishers for stables.

Extinguishers need to be inspected yearly and recharged by a licensed professional. If you and your barn help do not know how to use a fire extinguisher, you should be trained on how to do so. Check with your local fire department for course offerings near you.

Firefighters must have a water supply outside the barn. Installing water hydrants at one end of the stable by a door is highly recommended.

Regular Cleaning—A cluttered, unkempt barn is fire friendly. Cobwebs, excess baling twine, dangling hay, and the haphazard storage of combustibles create an environment that encourages the spread of fire. By maintaining a neat, clean barn and regularly sweeping cobwebs and loose hay from your barn and stall walls, aisles, and rooms, you help eliminate ways for fire to spread.

Many barns have large nails strategically placed for hanging old baling twine. Over time a nail becomes covered with such a deep mat of twine that it is no longer visible. Hanging or draping fabric is a good means of spreading fire and should be removed. Regularly dispose of unused baling twine.

Barn doors should always be accessible, even those that are not often used. All doors should open fully either by sliding or opening out (rather than in).

Electrical Devices—All electrical wiring should be professionally installed and inspected. Electric wiring throughout the barn should be encased in conduit. The circuit breaker box should be installed away from the barn exits. All barn lights should be caged and designed for barn use. Electrical equipment should be unplugged and properly stored when not in use. Fans, clippers, blowers, and other electric equipment should be cleaned regularly with compressed air to remove dust and debris.

Inspect water heaters to ensure they

are working properly. Water bucket heaters create fire risk because they heat as long as they are turned on. Once the water bucket is empty, the water heater will continue heating and could melt plastic water buckets and ignite stall bedding and hay.

Hay and Bedding—Hay and bedding should be stored in a separate storage facility well away from the stable and where equipment is stored. In the event that hay must be stored in the stable, ground storage is best provided the hay is stored in a separate area enclosed with fire retardant walls and ceiling. The other option is storing hay in a loft but still separated by fire retardant materials.

When fresh hay is harvested and put up in storage, there is a potential for the core of the hay bale to become heated, especially if the hay was not allowed to dry properly and was put up with high moisture content. It can take as long as six weeks for hay to finish curing, especially if the region in which the hay was harvested and cured is humid. In such cases, the internal temperature of bales may reach 150 degrees or higher and self-combustion could occur.

Check the internal temperature of curing hay by poking a thermometer into the middle of the haystack. If that temperature reaches 150 degrees, it should be monitored every four hours. If it reaches 175 degrees, contact the fire department.



Fire extinguishers should be properly maintained and annually tested.

Under the fire department's supervision, remove the hay from the barn. If any fires ignite as a result of exposing the smoldering hay to oxygen, the fire department can put them out.

Tractors and Equipment—Tractors, equipment, machinery, fuel, and petroleum products should be stored in a separate facility well away from the stable and hay storage area. Grass, hay, leaves, manure, and other easily flammable materials should be removed from equipment before storage.

Stable Construction and Design—If you are building a new stable, consult fire safety experts to identify the best design and materials to use to retard and prevent fire. Consider the use of fire-retardant materials and coatings in construction, lightning protection, layout, exit plans (remembering that all doors should slide or open out), water sources, storage areas, and accessibility for emergency personnel. When choosing a professional to install fire prevention devices, you should first verify credentials. For example, a lightning rod installer should be certified by the Lightning Protection Institute.

In Case of Fire

If fire does break out, do not panic, as your skills and reasoning will be diminished. Your priorities in case of fire are the following:

1. Call 911 or the fire department.
2. Get people out of your barn before attending the animals. Human safety is top priority; ensure your safety and that of others in all fire situations.
3. When removing horses during a fire:
 - a. Get your horses out only if you can do so without risking human lives.
 - b. Follow the instructions of the fire department.
 - c. If it is safe for you to enter the barn, do the following:
 - Remove the horses closest to the exit first.
 - Handle horses one at a time.
 - Lead the horses from the barn into the pre-arranged paddock.
 - Maintain control of all horses until they are secured in the designated holding area (do not let them run loose!).
 - Keep horses together: a lone, stressed horse could create another set of risks.
4. Use fire extinguishers and/or hoses, but only if you can do so safely.
5. Step aside when the fire crew arrives and let the professionals handle it.

These recommendations for fire safety can be a starting point for fire prevention planning but are not a substitute for the exercise of reasonable care and may not be appropriate for all situations. Farm owners must comply with all applicable government regulations, should always purchase fire insurance, and should follow all protocols required by their insurance carriers. For more information, contact your fire department, which may send a representative out to do a checkup of your barn and offer you more recommendations. The fire department may also offer fire training for you and your staff.

The Kentucky Horse Council and the University of Kentucky assume no responsibility for injuries to horses and their handlers.

Fireproofing Tips: A Quick Guide

- Make sure your barn is well ventilated.
- Clear a 50-foot firebreak around your barn. Remove brush, trees, tall grass, and debris.
- Install a grounded lightning rod system to protect your barn in electrical storms or thunderstorms.
- Have a water supply installed outside your barn.
- Consider installing smoke detectors: they can save critical time if a fire does start.
 - a. Make sure you check smoke detectors regularly (at least twice a year).
 - b. You may also wish to connect the smoke detectors with a loud, external siren or alarm that will sound so they can be heard if no one is in the barn.
- Store hay and combustibles (such as shavings and straw) in a separate building at least 150 feet from your barn.
- Make sure stored hay is cured properly, even if stored in a separate building.
- Use only industrial-grade extension cords, and don't overload them. Periodically check electrical cords for damage, and replace them as needed—do not repair them with electrical tape. Do not let horses step on cords or chew them, as this will damage them.
- Place general purpose (ABC) fire extinguishers within reach. Make sure they are charged and protected from freezing. See the separate section on fire extinguishers for more information.
- Keep your barn clean. Dust, cobwebs, oily rags, paper towels, etc., are fire hazards.
- Ban smoking in and around the barn.
- Consider installing a sprinkler system, which may be especially applicable if you board horses or own expensive performance horses. While the initial investment may be high, check with your insurance agent to see if discounts are offered for barns with sprinklers. You may need a heated barn in order to keep pipes from freezing in winter.
- Ask your local fire department for a walk-through of your barn to point out other fire-prevention recommendations.