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Protect Your Horses From Fire

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As heaters get turned on and as barns fill up with hay for the winter, it is a good time for horse owners to review a few key barn fire safety tips. Horse owners who maintain stables and other buildings for horses should seek out expertise to protect their animals, property, and workers. At the end of this document, you will find several important references including the Horse Facilities Handbook published by the Midwest Plan Service, a consortium of university-based technical authors with research and engineering expertise in various animal housing issues.

A fire in a stable or adjoining facilities can be devastating, both economically and emotionally. There are many in your community who have an interest to help you prevent and protect against fires that cause millions of dollars in damage in horse facilities every year. Local "experts" include insurance agents, inspectors, loss control inspectors, underwriters as well as local fire department personnel and Extension Agriculture Engineers. These groups will often provide consultation and may be willing to conduct a walkthrough inspection with you to locate and correct fire safety hazards.

Fire is caused when any type of "fuel" meets an ignition source. Table 1 indicates some of the most common ignition and fuel sources in barn fires. Obviously, it is difficult to eliminate fuel sources entirely, as most horse barns are constructed with wood framing. Hay, bedding materials, and other potentially flammable materials are found throughout horse facilities. The key is to minimize the potential for fuel and ignition sources coming together. Often, this is a matter of basic housekeeping. And, it's important to have a plan in place IF a fire DOES occur.

Table 1. Common ignition and fuel sources in barn fires

Ignition Sources	**Fuel Sources**
Smoking (matches, smoking materials)	Hay
Faulty electrical wiring (including extension cords)	Bedding materials (straw, etc.)
Heaters, heat lamps, and lights	Wood for building framework
Sparks from motors	Stall walls
Truck or machinery exhaust and friction from worn mechanical components	Blankets, cloth, cleaning rags
Improperly cured baled hay	Liquid fuels (gasoline, kerosene, etc.)

Here are some tips to help reduce your chance of a barn fire. Again, check with local experts and with other documents cited at the end of this fact sheet for more detailed information.

1. **Identify ALL potential ignition sources**, and take steps to eliminate them. For example, smoking should never be allowed on a property with horse. Electrical wiring must be done by a qualified electrician and inspected by a local building inspector or insurance expert. Wiring should meet the requirements of the most recent national electrical codes (NFPA #70). Lightning protection systems must be installed to code and maintained. Do not use extension cords except for short-term uses such as powering a tool. Make sure heating systems are properly installed and maintained. Store hay only at the correct moisture level and check its condition frequently.
2. **Take a close look at all potential ignition and fuel sources** and how they might come together to start a fire. Draw a picture of the barn and label all sources found. Take specific actions to separate

these hazards. An example is a heat lamp located over bedding materials or any type of flammable surface. Buildings also need appropriate separation distances. Liquid fuels should be stored in protected locations.

3. **Look for immediate steps** you can take. Things like no smoking signs posted in barns and hay storage areas are not expensive and are effective if enforced. Never put hay into storage unless it is dried to a safe moisture content.
4. **Check wiring for obvious problems**. Make sure no bare wires are exposed. Look for marks on the wire that indicate heating or arcing. DO NOT overload circuits. If you blow breakers or fuses, investigate and correct the problem. Do not use extension cords to replace fixed electrical wiring. Extension cords are a major fire hazard and can lead to an electrocuted animal or person. Make sure electrical motors on ventilation fans, heaters, and other equipment are well-maintained.
5. **Separate hay and bedding from the livestock**. Most insurance companies will only allow a small amount of hay to be stored in the same building as animals. Separating hay from your valued animals may not prevent a fire, but it will minimize risk to the animals. It also buys you extra time to move your horses to safety if a fire breaks out. Make sure that the areas around barns and other outbuildings are kept clear of brush, shrubs, woodpiles, and other materials that could feed a fire.
6. **Install and frequently inspect fire extinguishers**. Your insurer can advise you on the best type of portable fire extinguishers or fire sprinkling systems to install. Some situations may also require fire detection and alarm systems. For general use, several 10-pound ABC dry chemical fire extinguishers strategically located throughout your facilities will work well with many types of fires. Fires in hay or in wood structures will require large amounts of water.
7. **Develop an emergency plan and post it in the barn**. Your family and those who work in your facilities need a plan. Everyone must know how and when to evacuate the barn, how the animals will be removed, and who does what. Go over this plan with everyone including family members, employees, and boarders. Make sure everyone knows where phones are located. All buildings must have multiple unblocked exits that people and animals can get out of quickly from a fire. Have phone numbers for local veterinarians posted near the phone and make sure to have a first aid kit.
8. **Check local building codes and fire safety regulations**. For more information about specific structural issues, building separation distances, or internal structures and materials to slow the spread of a fire within a building or between buildings, contact your local city hall and visit with a city/township building inspector who can provide additional resources**.**
9. **Consider installing emergency lighting and lit exit signs.** This will help people find their way out if the power is out or if there is a fire. Such lighting may be more important for commercial facilities.

For more information or questions, contact Betsy Gilkerson at 612-596-1175 or eliza003@umn.edu or visit www.extension.umn.edu.

Sources of important additional information:

- **Horse Facilities Handbook**, MWPS-60. ISBN 0-89373-098-X. Many research-based guidelines provided by expert authors from around the U.S. www.mwps.org
- **National Electrical Code - Article 547** - Published by the National Fire Protection Association (NFPA). Article 547 of this document is key to any safe electrical installation in any area where animals are housed. http://www.nfpa.org/catalog/product.asp?pid=7005SB&order_src=A172
- **OSHA's Fire Safety Resource site**. Additional important requirements to help protect workers and assure regulatory compliance. http://www.osha.gov/SLTC/firesafety/index.html
- **Fire Safety in Horse Stables** – A publication from Penn State College of Agriculture Sciences, Agricultural Research and Cooperative Extension, available online at http://pubs.cas.psu.edu/freepubs/pdfs/ub034.pdf
- **Extension's "Horse Quest" website**. A new national resource hosted by the national eXtension Network and authored by equine experts nationwide. www.extension.org/horses