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Affects of Fire

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- Many agricultural producers will put themselves at great risk trying to protect their animals, facilities and equipment
- Consider the cost in terms of
 - Property loss
 - Business interruption
 - Lost opportunity costs
 - Livestock
 - Human Life



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Affects of a Fire

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- Some facilities may be difficult to egress during a fire
- Fire victims may suffer from burns, smoke inhalation, inhalation of toxic gases, heat stress, as well as physical and emotional trauma



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Fire Triangle

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- Enough **oxygen** to sustain combustion
- Enough **heat** to raise the material to it's ignition temperature
- Enough **fuel** or combustible material



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Types of Fires

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- Class A Ordinary Combustibles
 - Paper, wood, cloth, grain dust and feedstocks such as straw, silage and hay
- Class B Flammable Liquids
 - Gas, diesel, hydraulic fluid, grease, animal fat and oils
- Class C Energized Electrical Equipment
 - Breaker panels, transfer switches, motors and branch circuits

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Structural Fire

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- Most dangerous fires
- Many hazards present
- Construction materials
- Design elements
 - Production vs. safety
- Size of the structure
- Lack of standards

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Alternate Construction Methods

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- Steel Frame / Insulated Steel Panels
- Tilt-Up Concrete panels

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Special Considerations

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- Spray Insulation
 - Closed cell vs Open Cell Insulation
 - Does foam insulation capture methane
 - Intumescent Coating
 - Non Combustible layer

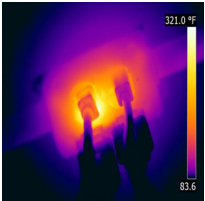
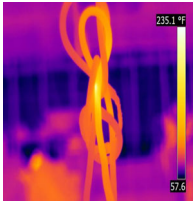
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Electrical Cords

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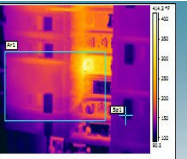
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Electrical Panels

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Type	10 amp breaker
Warm load	10
Actual load	6.7
Fault	3

LEW:	Value
Sp1	384.5 F
AFC Max	403.9 F
Atmospheric Temp	68.9 F
Difference A1 - Sp1	315.6 F
Load Connected Temp	174.7 F
Fault Rating	3

↑ This connection is loose
The temperature is 416°

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Electrical Panels

Keep panels

- Clean
- Dry
- Closed
- Located in a protected area, not in corrosive, damp, or hazardous atmospheres





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Flammable Gases / Fuels

- Flammable chemicals and fuels should be stored in flammable storage cabinets
- Fuel barrels and propane should be stored away from the building and protected
- Refer to the National Fire Protection Association Fuel Gas Code 54 for setback distances for liquid propane and fuel tanks


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Tractors Implements and Mobile Equipment

- Store tractors and equipment away from animal housing spaces
- Bock Heaters should be separate weather proof circuits






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Feedstock and Forage






- Hay and other forage crops can be highly flammable
- May spontaneously combust if out of condition or improperly stored
- Should be checked regularly

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Feedstock and Forage




- Hot Work standard operating procedures must always be used when working around feedstock and forage materials
- Smoking is never allowed within 50 feet
- Insure that equipment is well maintained to prevent overheated bearings or sparks

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Fire Suppression and Control



The effects of a fire in livestock and farm facilities are compounded by:

- Distance from fire service and EMS
- Available water supply
- materials used in barn construction
- Lack of containment measures
- Arrangement of barns, storage and production buildings may prevent access to the active fire scene


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Types of Fire Extinguishers

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- **CO2 = Flammable Liquids**
 - Appropriate for fuel storage and fueling areas
- **Dry Chemical = Electrical**
 - Electrical service areas or computer rooms
- **Multi Purpose = Ordinary Combustibles, Flammable Liquids or Electrical**
 - General purpose for Class A B C fire
- **Water / Water Air Pressure = Class A Fires only**
 - Hay balers and grinders, feedstock and forage areas



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Fire Hazard Assessment

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- ✓ Conduct an fire hazard assessment of your work area
- ✓ Look for hazards that exist
- ✓ Consider how to reduce or eliminate the Hazard
- ✓ If the hazard cannot be removed what methods can be used to limit the risk posed by the hazard
- ✓ Look at the “what if’s” then determine the “how to”

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Fire Exits


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Fire Emergency Egress




- ✓ Must have at least two exits as far apart as possible
- ✓ Must be clear and accessible at all times
- ✓ Must be able to be opened from the occupied side with out keys, tools or special knowledge
- ✓ Must lead to the outside not into another building or inaccessible areas
- ✓ Must be labeled as an exit

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Resources



- National Fire Protection Association
 - Fuel Gas Code 54
 - Fire and Life Safety in Animal Housing Facilities 150

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Thank you!

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