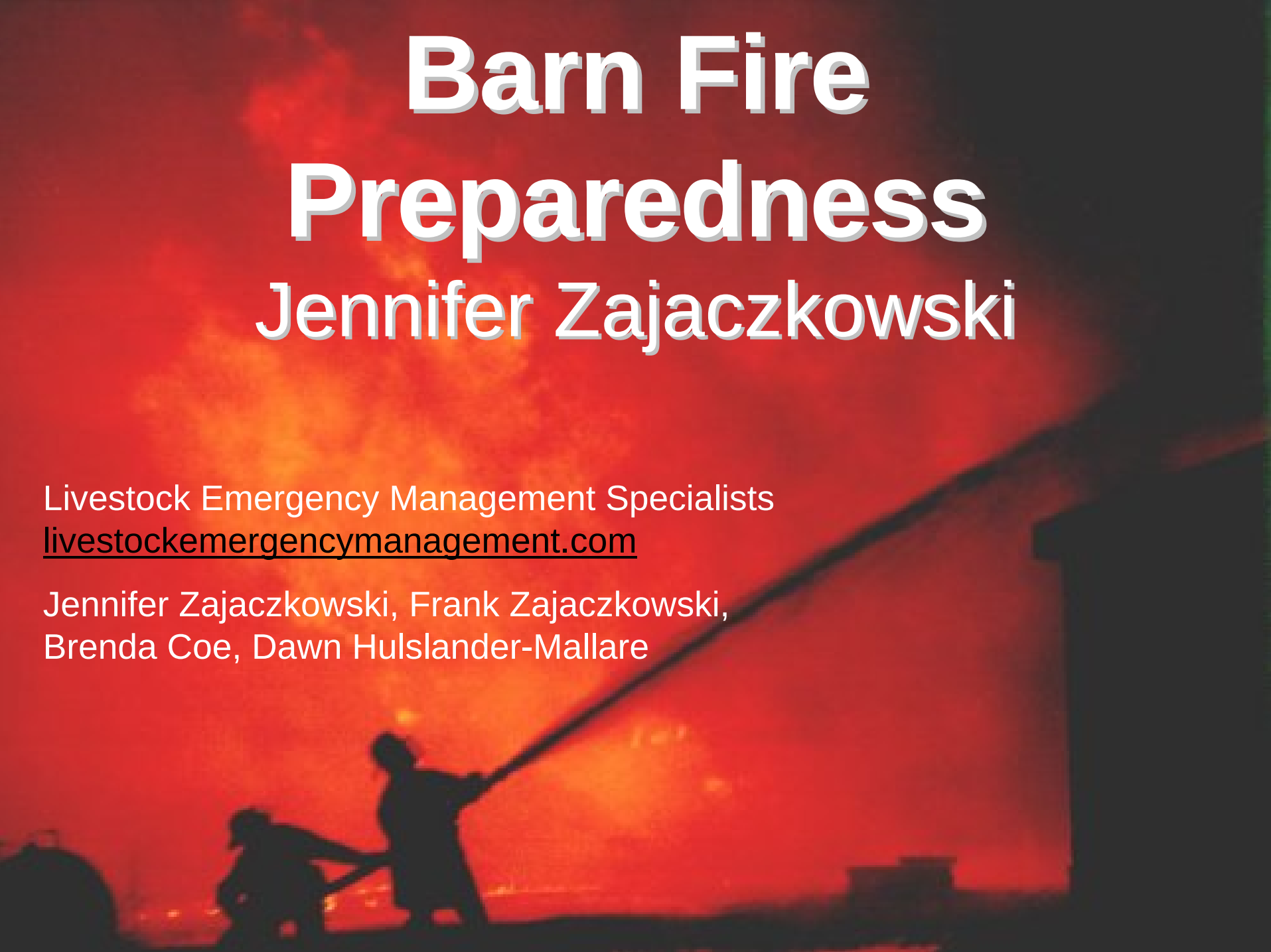
“One dark night, when people were in bed,
Mrs. O’ Leary lit a lantern in her shed,
The cow kicked it over, winked its eye, and said,
There'll be a hot time in the old town tonight."

Historians agree that on Sunday evening, October 8, 1871, the Chicago Fire did indeed start in the barn of Mr. and Mrs. Patrick and Catherine O’Leary. While the blaze ironically spared the O'Leary home, located on the city's West Side at 137 De Koven Street, much of the rest of Chicago was not so fortunate. Before the fire died out in the early morning of Tuesday, October 10, it had cut a swath through Chicago approximately three and one-third square miles in size. Property valued at $192,000,000 was destroyed, 100,000 people were left homeless, and 300 people lost their lives.

http://www.thechicagofire.com/



Barn Fire Preparedness

Jennifer Zajaczkowski

Livestock Emergency Management Specialists
livestockemergencymanagement.com

Jennifer Zajaczkowski, Frank Zajaczkowski,
Brenda Coe, Dawn Hulslander-Mallare

Sponsored by:

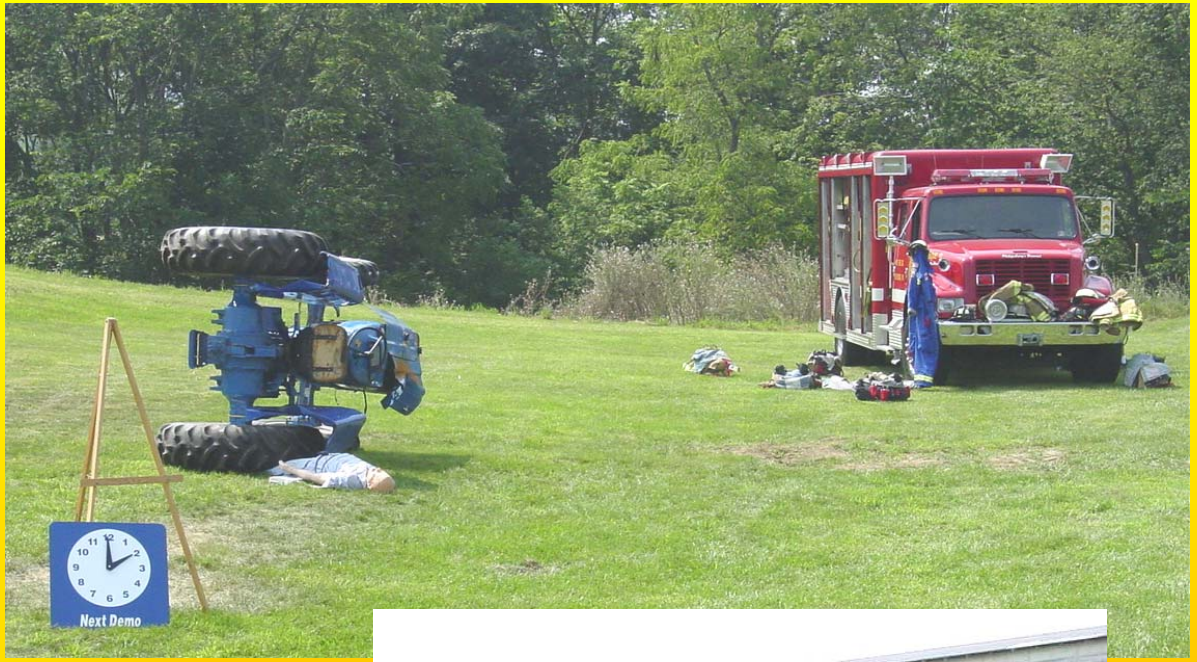
Pennsylvania Department of Agriculture Grants

Smith Property Services, Carlisle, PA

Who We Are

Horse People

Facility Designers



Agricultural Safety Advocates

What We Do


24
24

It CAN Happen to YOU!

- *It is estimated that over 5000 Barn Fires occur each year.*
- *That is more than 14 Barn Fires – PER DAY!*
- *Barn fires kill more horses than all natural disasters combined.*

Source: National Equine Safety Association (NESA)

SURVEY THE SCENE!

NEVER
Enter A Burning Building Unless
YOU
Are a
TRAINED FIREMAN
And
HAVE THE PROPER EQUIPMENT!

Smoke, Heat and Fire Kill

Turnout or Bunker Gear

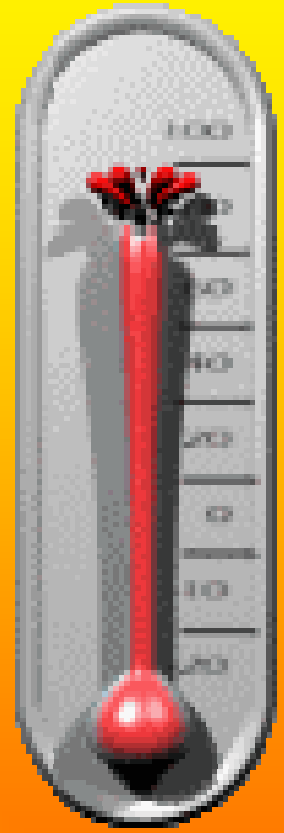
- Fire-Dex® Assault Gear™ PBI® Fire Coat $849.99
- Fire-Dex® Assault Gear PBI® Fire Pants $649.99
- Ranger® Lightweight Bunker Boots $179.99
- Proximity Gear Gloves $124.99
- SCBA $2400.00
- Super Pass® II Motion/Temperature Detector $239.99

Total: $4444.95

www.galls.com

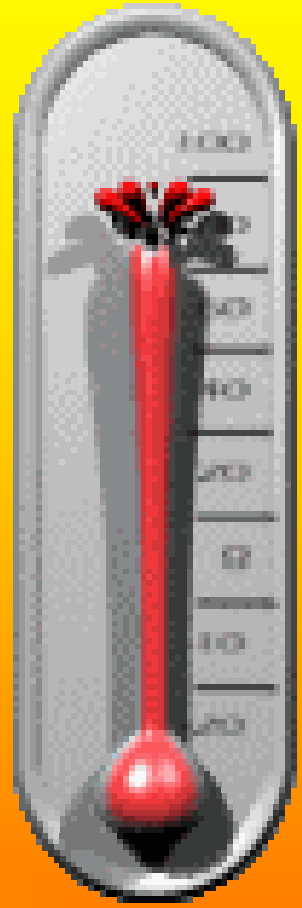
How Much Time Do You Have to Save Your Horses?

- ***Straw reaches a burning temperature of 300^{o}F in one to five minutes.***
- ***It is a material that develops as much heat at the same rate as gasoline.***
- ***It takes two to three minutes for a straw fire to burn an area 10-feet in diameter.***



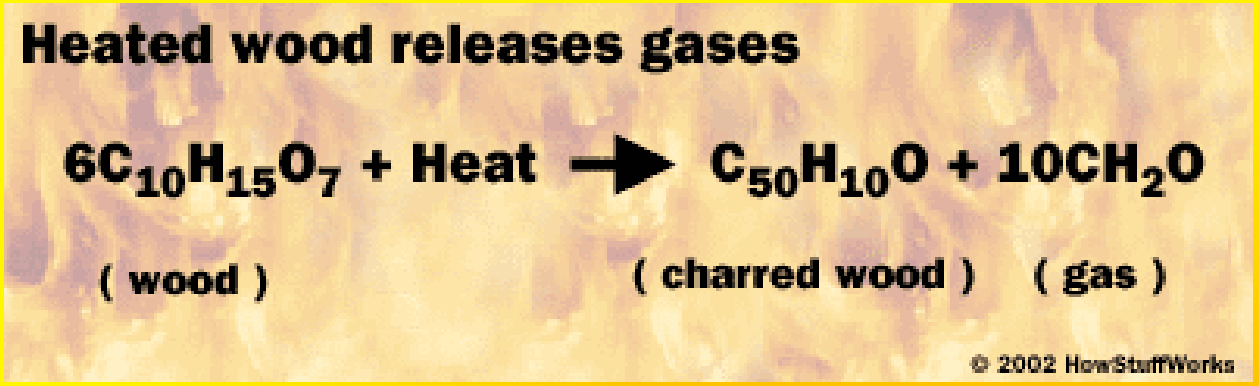
How Fast Will Fire Injure Your Horse?

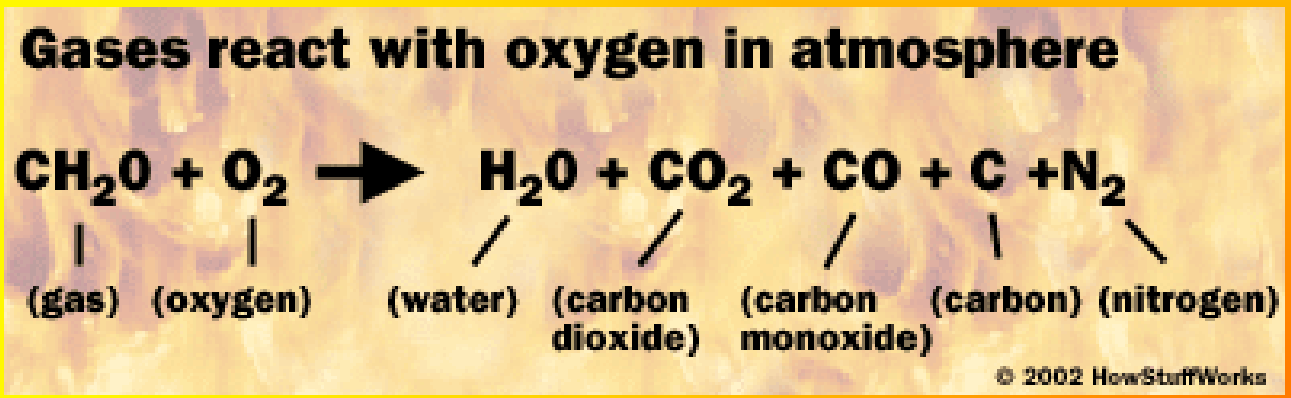
- ***At only 4-feet in diameter, most horses are injured.***
- ***By 6-foot diameter the lungs are seared.***
- ***By 8-foot diameter the horse will start to suffocate.***
- ***By 10-feet diameter, the horse is dead.***



All of this occurs in two to three minutes. If the horse is to survive, he must be removed from the stall within 30-seconds.

What is Fire?


Heated wood releases gases
$6C_{10}H_{15}O_7$ + Heat → $C_{50}H_{10}O$ + $10CH_2O$
(wood)
(charred wood)
(gas)
© 2002 HowStuffWorks


Gases react with oxygen in atmosphere
CH_2O + O_2 → H_2O + CO_2 + CO + C + N_2
(gas)
(oxygen)
(water)
(carbon dioxide)
(carbon monoxide)
(carbon)
(nitrogen)
© 2002 HowStuffWorks

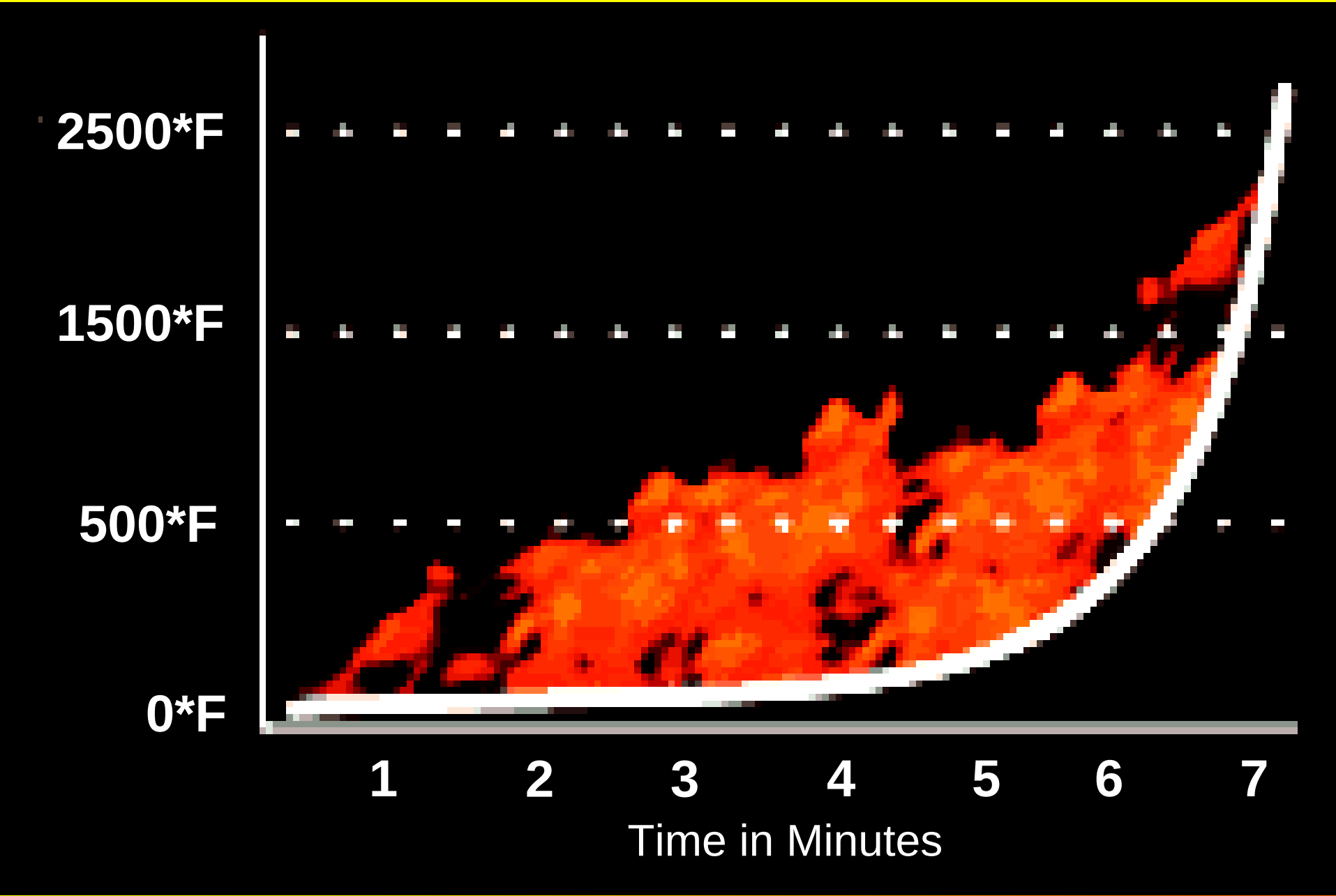
Stages of Fire

- Smoldering or Incipient Phase
  - Variable is length (minutes to hours)
  - Greatest chance of being controlled

Stages of Fire

- Flame Eruption
  - EXTREMELY DANGEROUS
  - EXTREMELY UNPREDICTABLE
  - Rapid Growth
  - Intense Heat Production

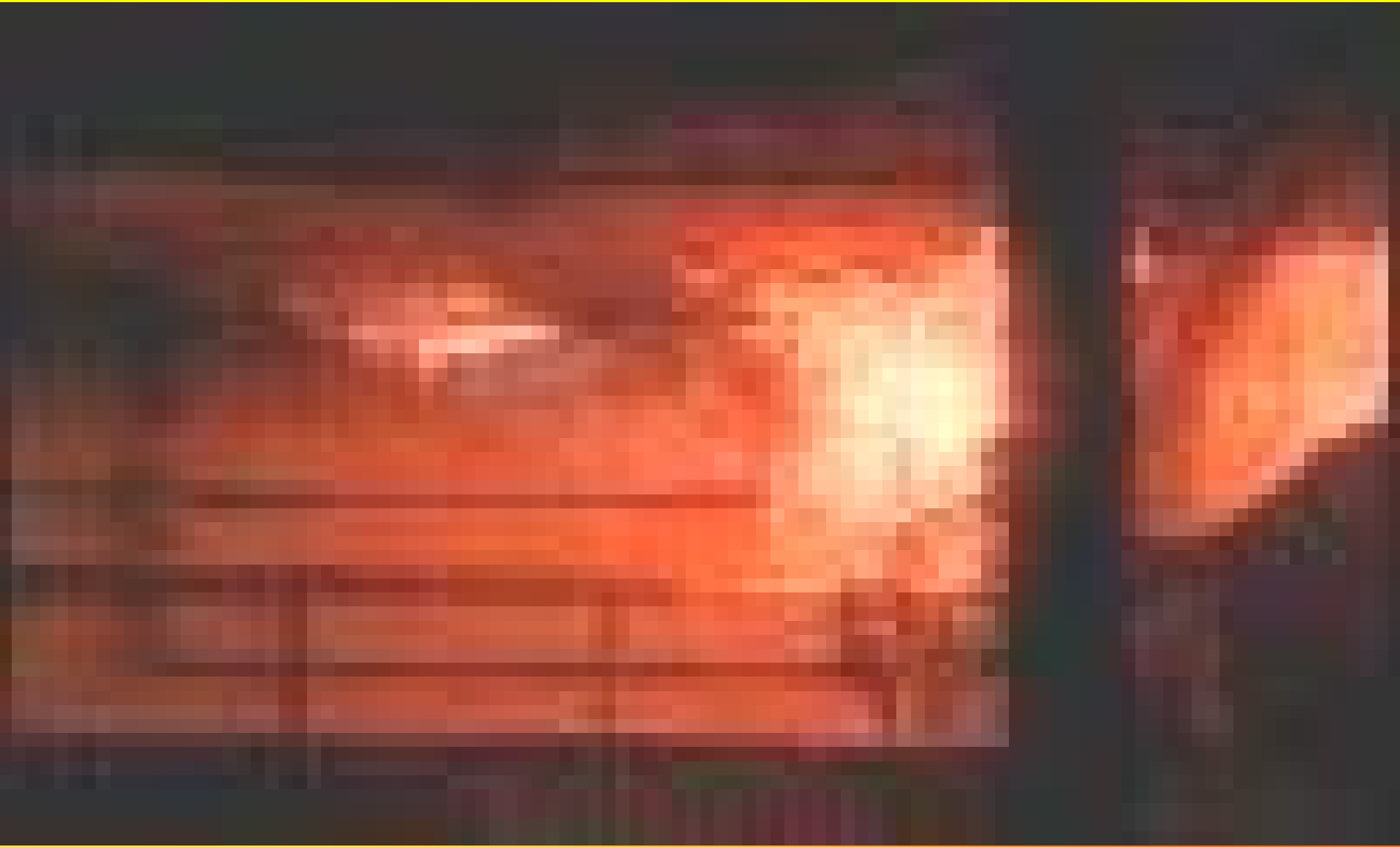
It only takes a few minutes after flame eruption for ceiling temperatures to exceed 1800^{o}F


2500*F
1500*F
500*F
0*F
1
2
3
4
5
6
7
Time in Minutes

Stages of Fire

- Flash Point
  - Often can occur in 3- to 5-minutes
  - Hot air temperatures simultaneously ignite all combustibles within the space
  - Building structure most likely destroyed

<u>Survivability</u> within the structure has been <u>lost</u>



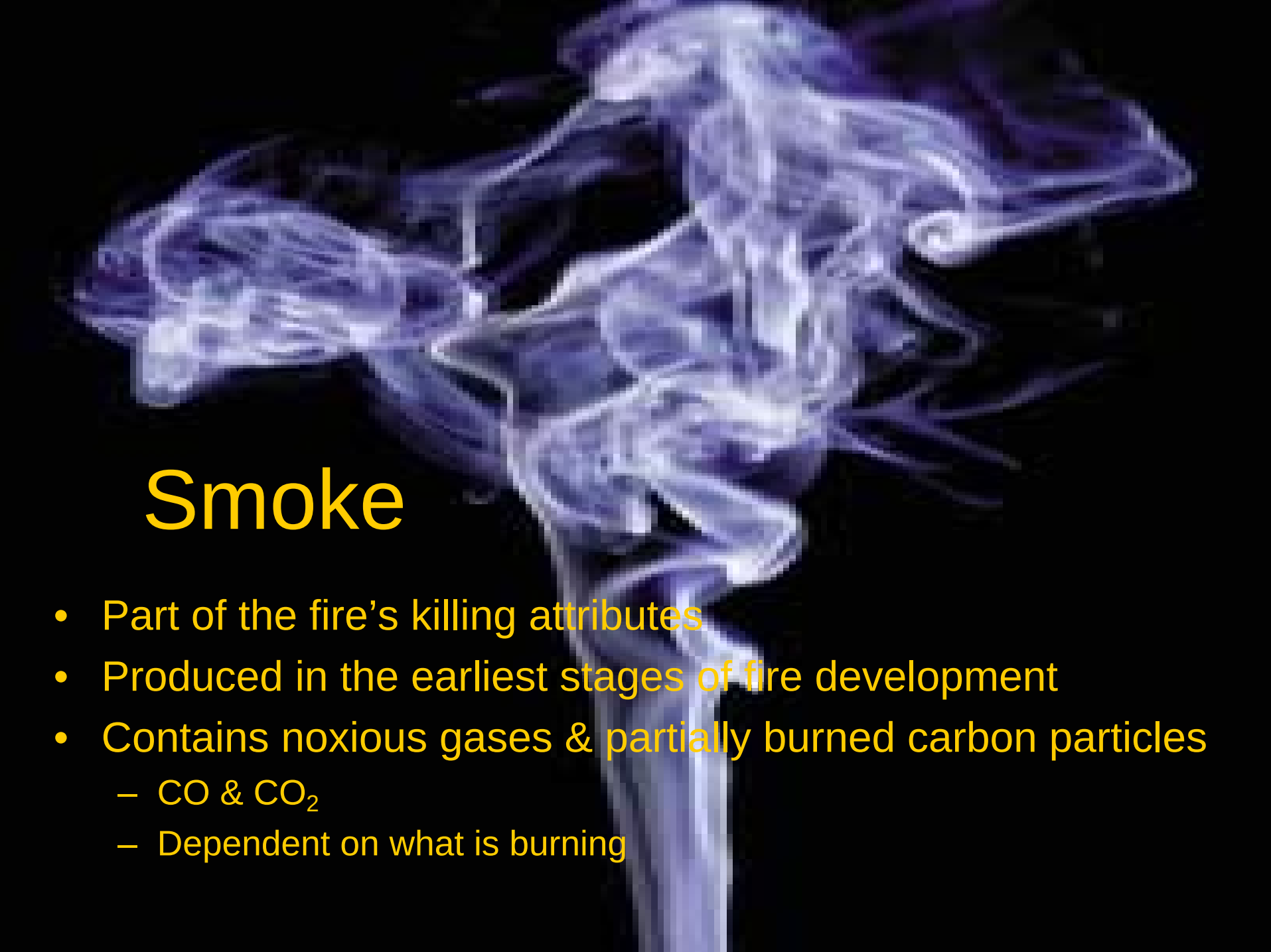
www.fire-uk.org

Westernwakefirerescue.com

Stages of Fire

- Burn Out
  - All fuel sources have been exploited
  - BUT not all fuel sources have been burned
- Re-Kindle
  - Impervious fuel sources can remain unburned and continue to smolder
  - Another visit from the fire company

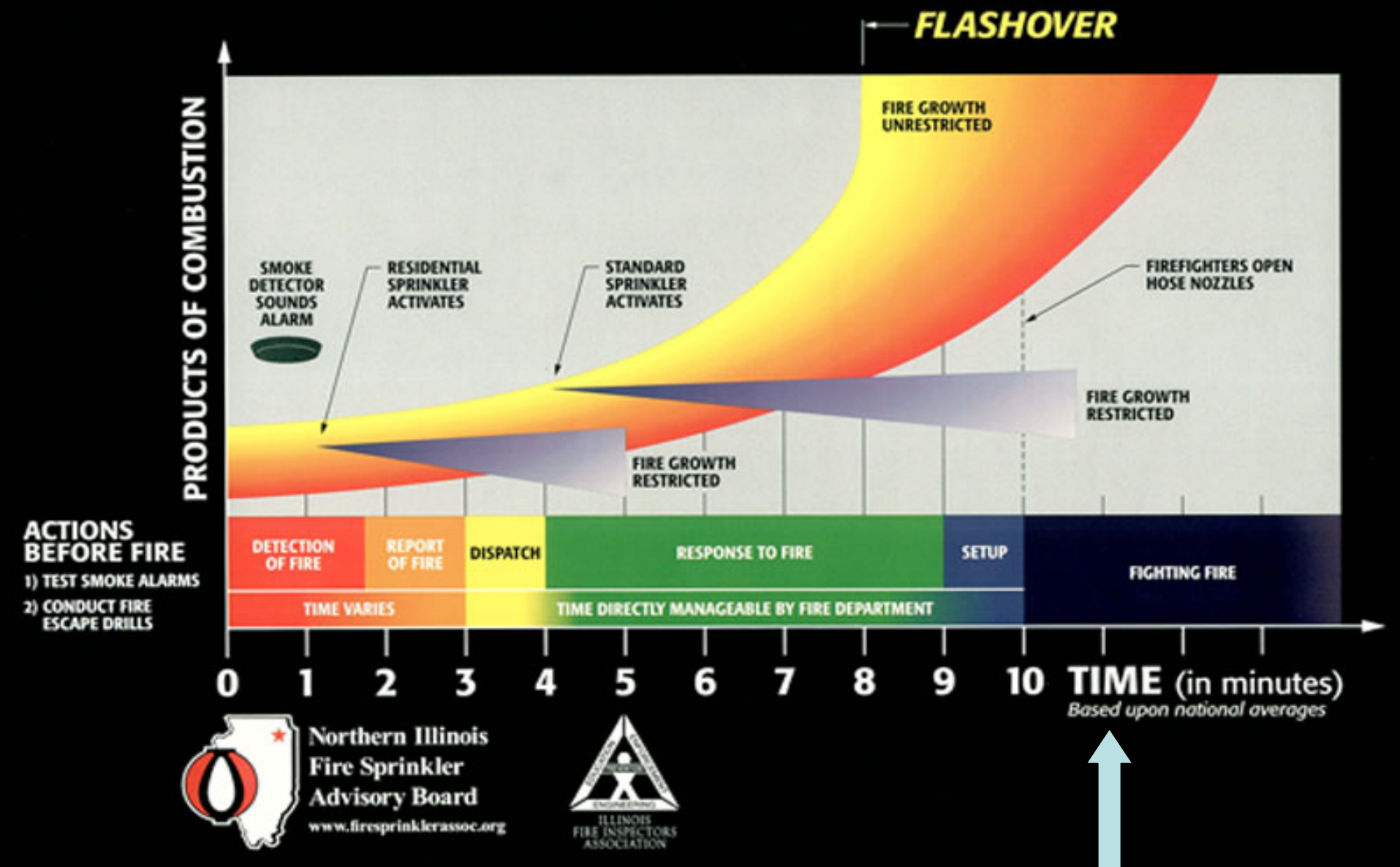

salfordfire.co.uk



Smoke

- Part of the fire's killing attributes
- Produced in the earliest stages of fire development
- Contains noxious gases & partially burned carbon particles
  - CO & CO_2
  - Dependent on what is burning

TIME vs. PRODUCTS of COMBUSTION



ACTIONS BEFORE FIRE

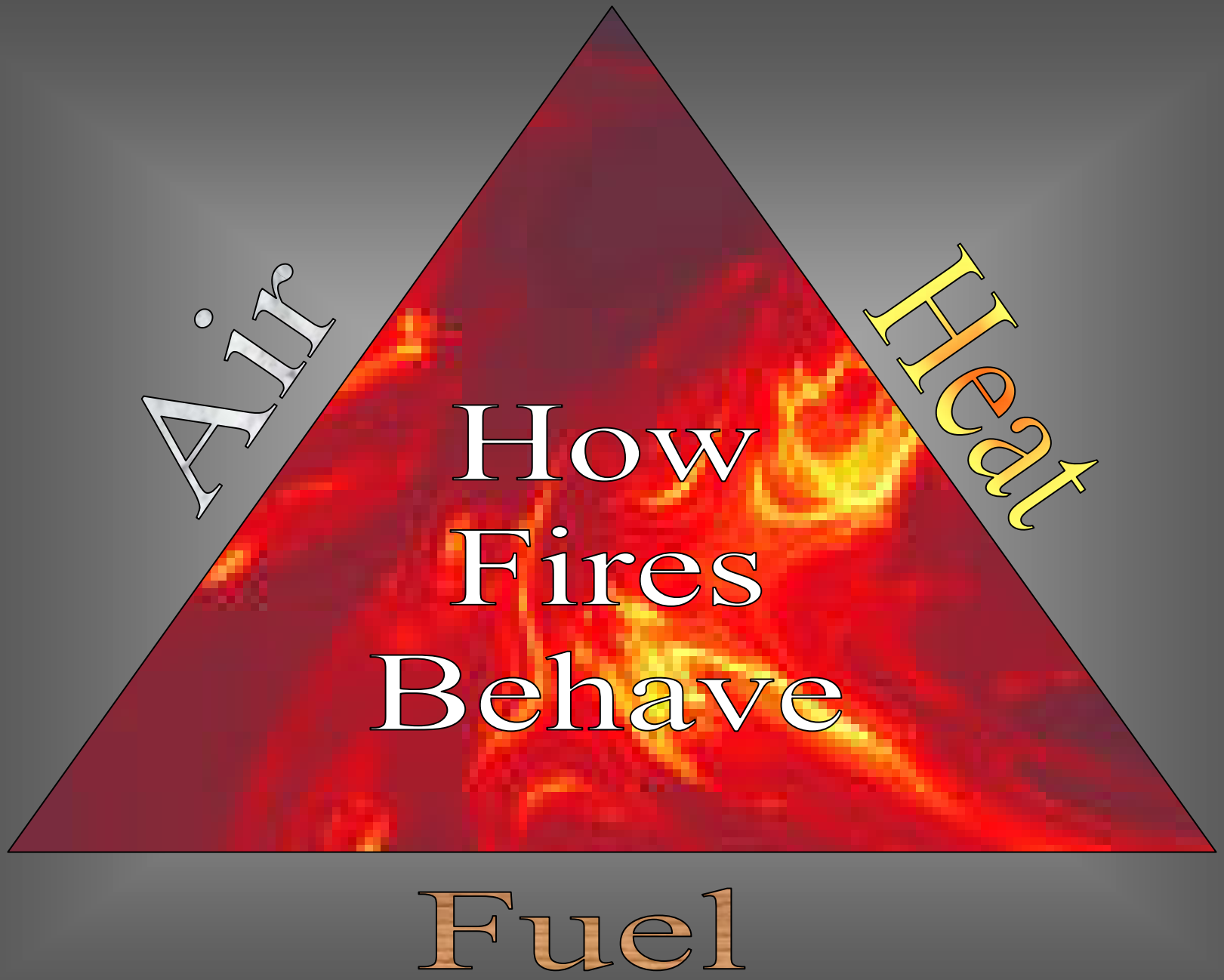
1) TEST SMOKE ALARMS
2) CONDUCT FIRE ESCAPE DRILLS

Northern Illinois Fire Sprinkler Advisory Board
www.firesprinklerassoc.org

ILLINOIS FIRE INSPECTORS ASSOCIATION

Fire's Killing Attributes

- Smoke
  - CO binds faster in blood Hemoglobin than 0_2
  - Suffocation even if sufficient 0_2 is present
- Heat
  - Air contains super-heated mass of gases
  - What happens when inhaled?
  - Sears respiratory tract

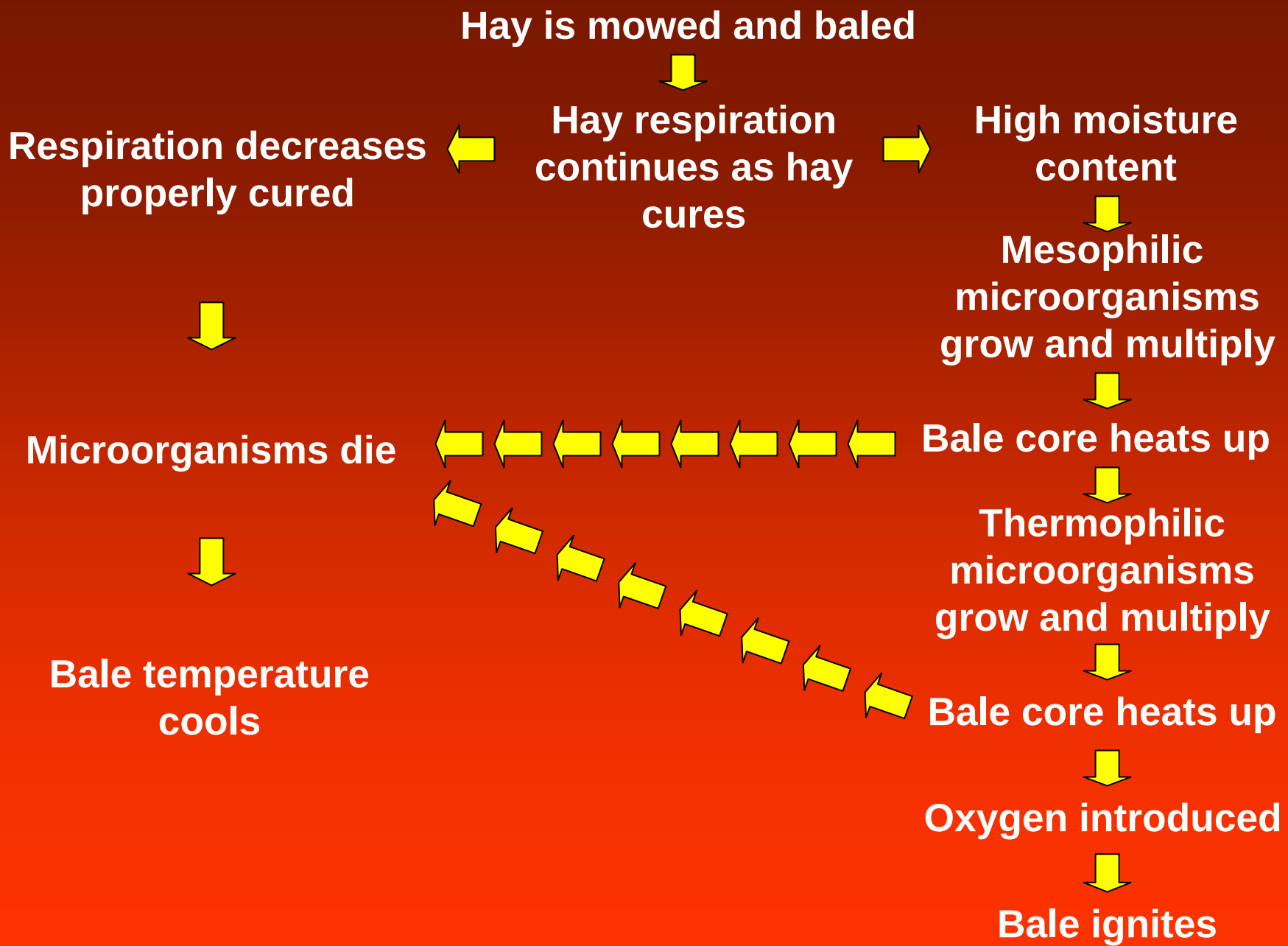

Air
Heat
How
Fires
Behave
Fuel

The Majority of Components in Stables are Highly Flammable

Hay Fires

- Unique to the agricultural industry
- Ideal bale moisture 15 to 18%
- Wetter bales encourage microbe growth
- Hay is baled tightly and prohibits water penetration

Photo courtesy of Scott Volunteer Fire Department, Inc., Louisiana

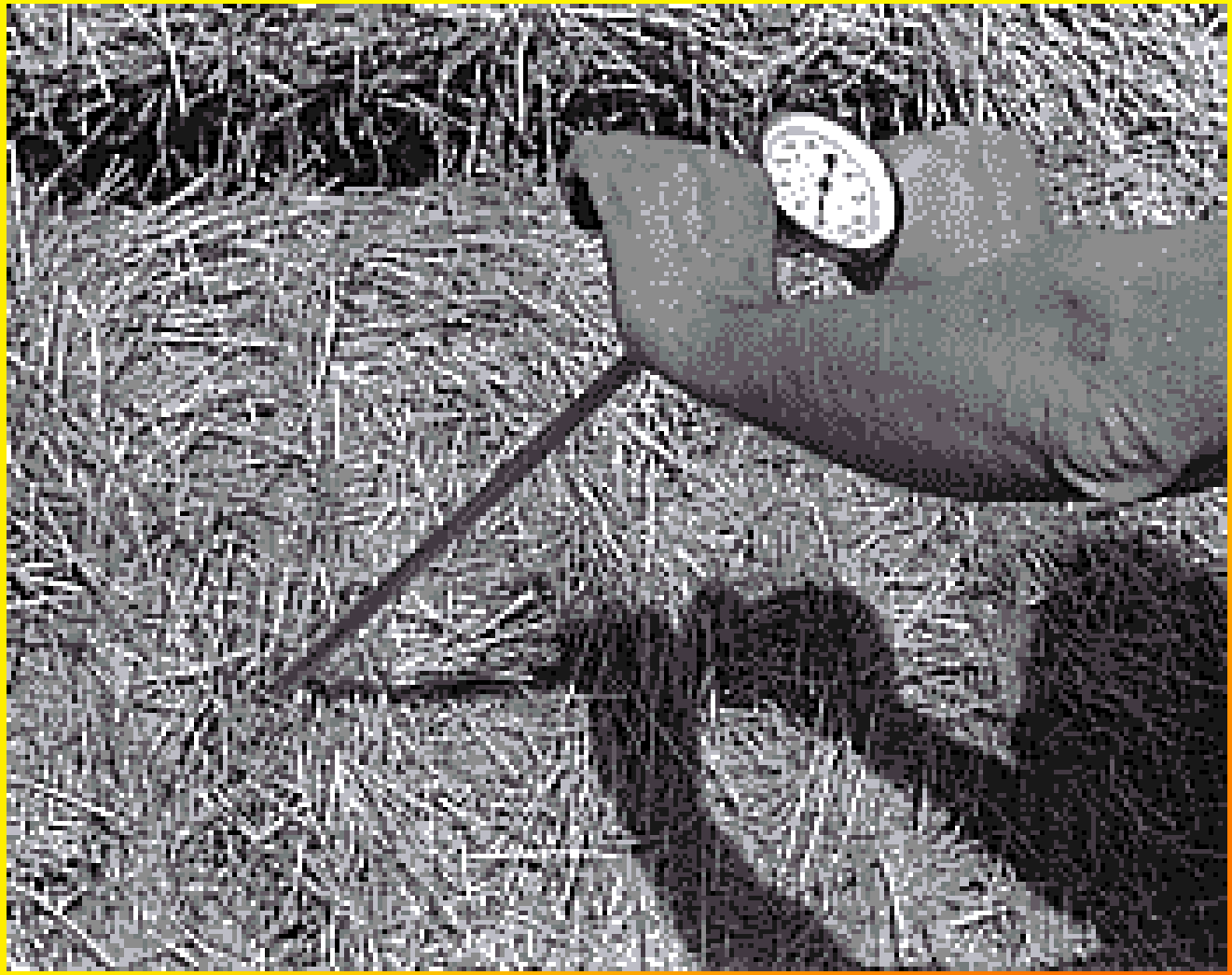

Hay is mowed and baled
Hay respiration continues as hay cures
Respiration decreases properly cured
High moisture content
Mesophilic microorganisms grow and multiply
Bale core heats up
Thermophilic microorganisms grow and multiply
Bale core heats up
Oxygen introduced
Bale ignites
Microorganisms die
Bale temperature cools

Below 130ºF	No problem.
130 to 140ºF	No problem yet. Temperature may go up or down.
150ºF	Temperature will most likely continue to climb.
175 to 190ºF	Fire is imminent or may be present a short distance from the probe.
200ºF	Fire is present at or near the probe.

Ogburn, C.B. Sept. 1995. *Guarding Against Hay Fires,* ANR-964. Alabama Cooperative Extension Service, Agricultural Engineering, Auburn University, Auburn, AL.

- **www.agriculture.com/machinery**

  #8142 hay temperature probe sells for $139.95 plus postage



Why are Hay Fires So **Dangerous?**

- *Chemically preserved hay can produce dangerous gases like HCN when burned!*
- *Bales may collapse under weight.*
- *It takes 40 gallons of water PER bale to extinguish hay fires!*

Pre-Plan Considerations

- Facility design

Structural Solutions

- Building materials

Rating systems for building materials

Comparison of material to standards (concrete & red oak)

Flame spread

- Lower rating, longer it will take flames to spread the fire

Smoke development

- Lower rating improves visibility, decreases noxious gases, decreases fire progression through smoke particles and hot gases

Fire rating

- How long (minutes) material contains fire
- Longer the progression, the greater chance rescue and fire suppression efforts will have at being successful

Is Metal Better?

Untreated Metal Fails Faster

Wood Chars, forming a protective insulation

Structural Solutions

- Building materials
- Compartmentalization

Compartmentalization

Structural Solutions

- Building materials
- Compartmentalization
- Fire Ventilation/Building Ventilation

Structural Solutions

- Building materials
- Compartmentalization
- Fire Ventilation/Building Ventilation
- Fire Detection Devices

Unless your horses live in your home

- Fire detection devices were not designed for animal environments

- Dust will cause residential smoke detectors to go off!

Do Not Use Residential Smoke Detectors in Stables

Structural Solutions

- Building materials
- Compartmentalization
- Fire Ventilation/Building Ventilation
- Fire Detection Devices
- Fire Suppression Devices

Fire Suppression Devices Range in Price

The cheapest device is to be sure your barn has a charged ABC fire extinguisher accessible

Pre-Plan Considerations

- Facility design
- Facility access

Accessibility

- Branches
- Bridges
- Lane width
- Turn around

Pre-Plan Considerations

- Facility design
- Facility access
- Seasonal weather patterns


Prevailing Winds
Emergency Accessibility??
nmhschool.com

Pre-Plan Considerations

- Facility design
- Facility access
- Seasonal weather patterns
- Species, numbers, genders and identification

Types of Horses

Heavy Draft Breeds
or “Cold Bloods”

Miniatures or “Mini’s”
(Under 34 inches tall)

Gender


5

Orphan Foals

Pre-Plan Considerations

- Facility design
- Facility access
- Seasonal weather patterns
- Species, numbers, genders and identification
- Individual Assessment

T tic

Horses are fast, reactionary and strong

Animal Triage

Emotional or Financial Value Assessment

Animal Temperament

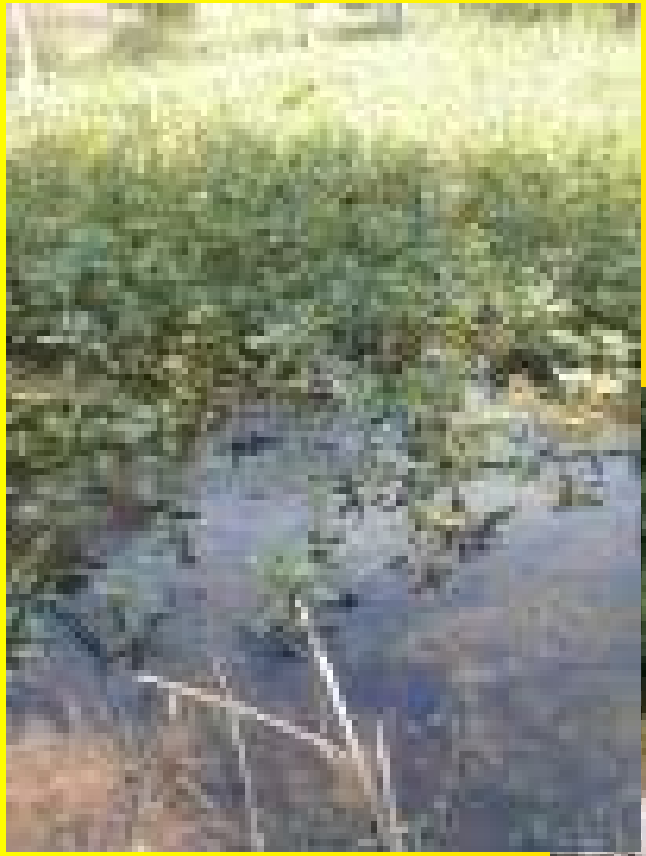
Price Tag of Life

- **PennDOT $3,000,000**
- **FAA $150,000**

Pre-Plan Considerations

- Facility design
- Facility access
- Seasonal weather patterns
- Species, numbers, genders and identification
- Individual Assessment
- Resources

Where Will Water Come From?



Dry Hydrants

Develop an Emergency Box

- Halters (adjustable or correct size), Ropes, Chain
- Duct Tape
- Towel or Large Saddle Pad
- Humane Twitch
- Scat-Bat
- Ear Plugs or Nylons & Quilt Batting
- Vicks, Blindfold
- Feed
- Cow Marker or Spray Paint
- Health Papers???
- Flashlights & Batteries
- Gloves, Safety Vests
- Glow Sticks
- Permanent/Indelible Marker
- Knife
- Diapers
- Turkey Baster
- Basic First Aid Supplies
- Walkie-talkie, Radios
- Directions to Farm, Written Animal Inventory
- Important Phone Numbers
- Written Pre-Plan, Farm Layout

Pre-Plan Considerations

- Facility design
- Facility access
- Seasonal weather patterns
- Species, numbers, genders and identification
- Individual Assessment
- Resources
- Evacuation plan

Loose Animals are Dangerous

Never Turn Animals Loose


Plan
Practice
Act
Now
Train

Plan for Emergencies
Practice Your Plan

Animals Do Not Understand Fire Train Them During Drills

What you see

What the horse sees

Critique

Train

Critique

Practice

Critique

Plan

Give Everyone a Job

Tracie Sillanpaa, left, and Klorissa Fitzpatrick, right, comfort horse owner Susan Gannon after Marquet Special died.
[Times photos: Brendan Fitterer]

Protect Your Emergency Service Personnel

Catch, Contain and Secure your Pets

ESPECIALLY DOGS, GOATS and PIGS!

These animals may get in the way or bite people who have come to help you.

Pre-Plan Considerations

- Facility design
- Facility access
- Seasonal weather patterns
- Species, numbers, genders and identification
- Individual Assessment
- Resources
- Evacuation plan
- Biosecurity, emergency care costs and authority

Euthanasia

Who is willing to respond?

Who decides?

Who is competent enough to decide?

What is the most humane method?

Who is liable?

Who pays the bill?

Simple Solutions To Minimize Risk

- Keep grass around facility mowed. Use gravel instead of mulch around buildings

Simple Solutions To Minimize Risk

- Keep grass around facility mowed. Use gravel instead of mulch around buildings
- Store hay and bedding away from stable

Photo courtesy of Sherrie Grady

Simple Solutions To Minimize Risk

- Keep grass around facility mowed. Use gravel instead of mulch around buildings
- Store hay and bedding away from stable
- Store combustibles properly and away from stable


AGWAY
PROPANE

Simple Solutions To Minimize Risk

- Keep grass around facility mowed. Use gravel instead of mulch around buildings
- Store hay and bedding away from stable
- Store combustibles properly and away from stable
- Remove ignition sources from stable (dryers, heaters, machinery, heat tape)

Post and Enforce a No Smoking Policy

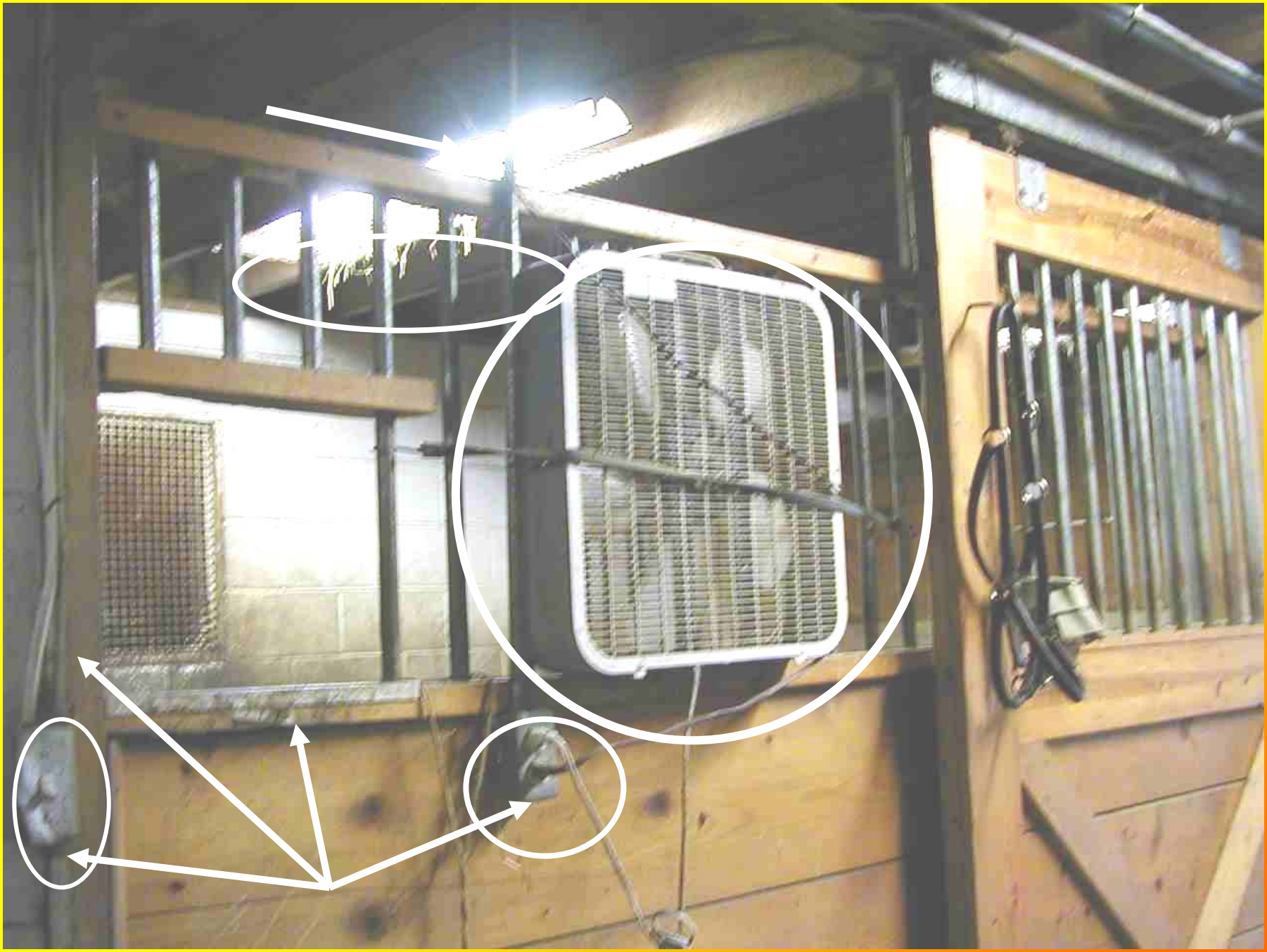
Simple Solutions To Minimize Risk

- Keep the barn clean and aisles clear

Be Clean!
Can you find the Fire Extinguisher?

Simple Solutions To Minimize Risk

- Keep the barn clean and aisles clear
- Check all walls and remove protruding objects



Simple Solutions To Minimize Risk

- Keep the barn clean and aisles clear
- Check all walls and remove protruding objects
- Keep all exits clear

Keep All Exits Clear

Simple Solutions To Minimize Risk

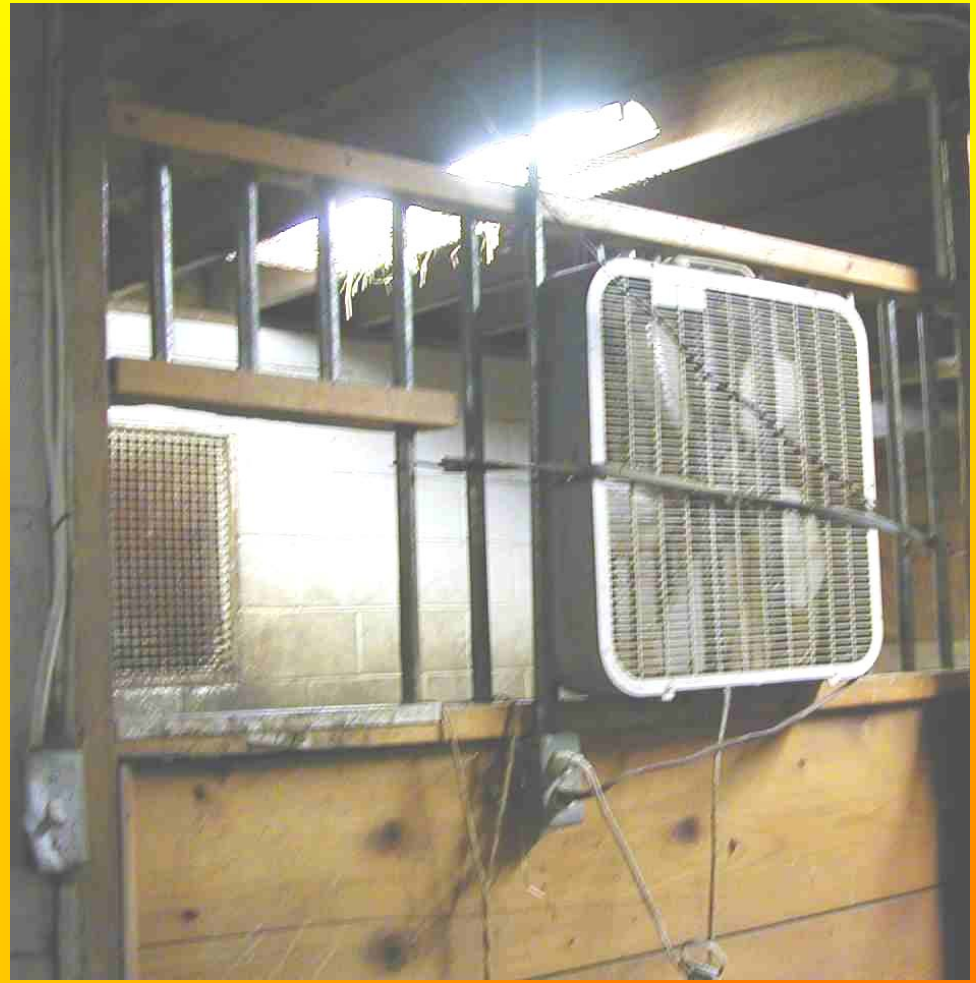
- Keep the clean neat and aisles clear
- Check all walls and remove protruding objects
- Keep all exits clear
- Keep all hardware in working order

Stall Hardware can Save Time

If it is in good repair and working order!

Simple Solutions To Minimize Risk

- Keep the barn clean and aisles clear
- Check all walls and remove protruding objects
- Keep all exits clear
- Keep all hardware in working order
- Use agricultural grade wiring and fixtures



Simple Solutions To Minimize Risk

- Keep the clean neat and aisles clear
- Check all walls and remove protruding objects
- Keep all exits clear
- Keep all hardware in working order
- Remove bird nests on light fixtures

Simple Solutions To Minimize Risk

- Keep the clean neat and aisles clear
- Check all walls and remove protruding objects
- Keep all exits clear
- Keep all hardware in working order
- Remove bird nests on light fixtures
- Have air terminals installed and checked

All Barns Should Have Lightning Protection

Have Air Terminals (Lightning Rods) Installed & Checked Annually!

To find a certified installer in your area contact:

Lightning Protection Institute
3335 N. Arlington Hts. Rd.
Arlington Heights, IL 60004
1-800-488-6864
www.lightning.org

Responding to an Incident

SURVEY THE SCENE!

NEVER
Enter A Burning Building
Unless you are a
TRAINED FIREMAN
And
HAVE THE PROPER EQUIPMENT!

Smoke, Heat and Fire Kill


Wind Direction


First Fireman on the Scene is the
Boss
By
LAW

R.A.C.E.

- **R**escue if Safe
- **A**lert 911
- **C**ontain the Fire
- **E**xtinguish the Fire

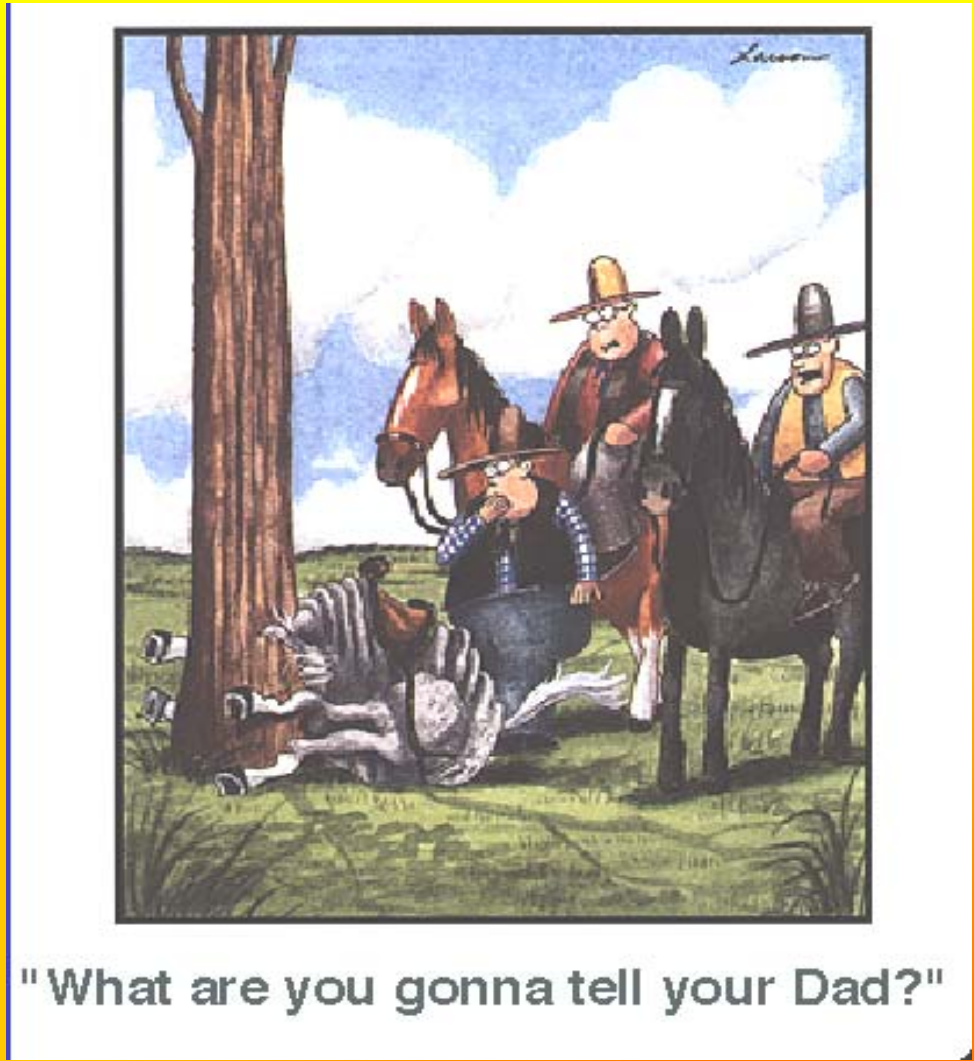
Keep your facility accessible

Photo courtesy of Dawn Hulslander-Mallare

- Regularly inspect premises for hazards and take prompt corrective measures.
- Keep your barn and equipment in good maintenance and clean.

- **Develop an emergency box and keep it handy.**
- **Develop a disaster plan and practice it regularly.**
- **Train your horse for disasters.**

- Make a list of important phone numbers and information
- Put copies in your emergency box and by EACH phone
- Learn first aid and CPR




Is there any more we can feed you?