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Project 2

Fire Safety Education
Preventing Fires

Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture. Leo E. Lucas, Director of Cooperative Extension Service, University of Nebraska, Institute of Agriculture and Natural Resources.

The Cooperative Extension Service provides information and educational programs to all people without regard to race, color, national origin, sex or handicap.
GLOSSARY

CARBON MONOXIDE — A colorless and odorless poisonous gas given off during most fires.

DISPATCHER — A person who takes emergency calls for a certain area and notifies emergency response groups.

SHORT CIRCUIT — Refers to when some or all of the electrical current doesn’t flow in its normally intended path, ... when two electric wires touch.

FUSE — A device that shuts off electrical current to lights, applicances, or equipment if there is too much current for the size of the electrical wire or cord.

WIRING CODE — (NFPA No. 70-1987). These are the rules and regulations for handling electricity safely.

CIRCUITS — The path or paths by which electrical current flows.

MORTAR — The hard concrete like substance between bricks or blocks of a chimney.

CREOSOTE — Dark, sticky, tar-like substance that collects in stove pipes and chimneys.

EXCELSIOR — Finely curled wood shavings.

INCINERATOR — A closed container used for the burning of trash.

PILOT LIGHT — The small flame in gas and oil fired appliances. Used primarily with heating appliances.

MASTER LABEL — A brass plate developed by U.L. as a way of saying that materials and workmanship are acceptable for lightning rod installation.

DOWN CONDUCTORS — The cable or wire that connects all possible metal structures to the lightning protection system. Examples are protruding gutters and television antennas.

WATERSHED — The entire land area that naturally drains into a creek, river, or other body of water.
REPORTING A FIRE

After a fire stops smoldering and flames appear, the room containing the fire can become totally involved in less than five minutes — and the entire house a few minutes later. Therefore, it is important that firefighters arrive at the fire scene as soon as possible.

Providing good fire protection to a community is the responsibility of a three-way partnership — the people, their government, and the fire company.

You have the most important responsibility of all. Whenever you see a fire out of control report it immediately.

Reporting a fire at your home can be done very quickly and very easily. Why? Because you can learn the steps to follow in reporting a fire before it occurs, thus saving time during the fire emergency.

When a fire breaks out follow these steps:

1. Warn everyone in the building where the fire is located so they can get out.
2. Report the fire to the fire company.
3. Make sure that someone goes to the end of your lane or to the nearest intersection to help the fire company find your home.

Fire spreads very rapidly. Sometimes people are trapped in a burning building before they realize that it is on fire. It is therefore important to warn everyone very quickly.

The fire company will not know where you live. They may not know the quickest route to your home. They will depend on you for that information when you call. To insure that you will have all the information they will need, develop a script and keep it near all telephones that you might use to report a fire — including your neighbor's. Your script should include:

1. The fire company’s fire phone number. (If the company has a business phone, record that number elsewhere.)
2. Your name and your parents’ name (or name of the people who live at the house where the fire is located).
3. The address or location of the house or building.
4. Directions to house from the fire station. (Be sure to include route names or numbers, distances, and landmarks.)

Make certain that your script and information are posted near the phone and easily found. Practice it often — even memorize it. Excitement, lack of oxygen, or too much carbon monoxide caused by the fire can make you forget or unable to act normally.

When you call, talk to the fire company slowly and clearly:

“I wish to report a fire. My name is (name) and I live with (first name) (last name) at (room & bldg.). The fire is in the (room & bldg.). You can get to the fire by (directions to fire). I am calling from (phone number) and will stay here if you need to call back. (Name) will be at (location) to direct you to the fire.”

When you are away from home and discover a fire, you probably won’t know the fire company phone number, the exact location of the fire, or how to get there. It will be difficult for you to report a fire under these conditions. In some communities, community leaders have taken steps to help travelers and visitors from other towns to report a fire quickly.

In these special communities you simply dial the numbers 9-1-1 on the telephone. When the dispatcher answers the phone, tell him or her you wish to report a fire, where you are calling from, the phone number there, the highway number or street name at your location, and some prominent landmarks visible from your location. From this information the dispatcher with the help of maps, special information cards, and sometimes, a computer can locate your fire and alert the nearest fire company very quickly.

When you report a fire, either from your home or elsewhere, the dispatcher alerts the fire company quickly by radio and/or siren. After you give your fire report, the dispatcher will push a series of buttons. This will activate the fire company siren and allow him or her to transmit by radio the information in your report.

The firefighters, then, respond to the fire station and to the fire as quickly as possible. Paid fire companies will arrive sooner because they are already at the fire station. They do not have to leave their home or workplace and go to the fire station and then to the fire.

DID YOU LEARN
Answer the following questions about reporting a fire.

1. Why is it important to report a fire quickly and accurately?
2. Who is responsible for good fire protection in your community?
   a. 
   b. 
   c. 

3. When you first see a fire, what should you do?
   a. 
   b. 
   c. 

4. What information must you give a fire company?
   a. 
   b. 
   c. 

5. Why is it important to post information about reporting a fire near your phone? 

6. Why is it important to give directions to the fire to the dispatcher? 

7. How can dialing 911 when you are away from home help when reporting a fire? 

8. Can a paid fire company or a volunteer company arrive at a fire scene more quickly? Why?

THINGS TO DO
1. Set up mock demonstrations of the right and wrong ways to report a fire.
2. Take a field trip to a community dispatcher to see how various emergencies are handled.
3. Is there a 911 system in your community? If so, have someone tell your group about how it works. If not, find out if there are plans for one in the future.

HOME FIRE PREVENTION

The old adage, “an ounce of prevention is worth a pound of cure” is particularly true where home fires are concerned. Many fires are caused by careless actions of people, either through indifference or ignorance of hazards. Awareness of the following preventive measures can help eliminate many fire hazards that exist in the home.

Electrical Systems
In older homes, electrical wiring is often not heavy enough to handle modern household needs. If fuses burn out, the cause should be determined and corrected before replacing them. Blown fuses indicate an overloaded circuit or a short-circuit, either of which can cause a fire. Never install a fuse larger than the wiring code calls for, and never fill the fuse receptacle with a coin or wire as a temporary solution. Increased electrical loads placed on circuits by adding appliances and other electrical equipment may call for installation of additional circuits, especially in the kitchen. If in doubt, have a qualified electrician inspect your wiring.

An extension cord placed under the living room rug is
an invitation to disaster. As the cord is walked on, sooner or later the insulation will break down causing a short-circuit and possible fire. Hanging an extension cord over a nail or driving a nail through a cord are also hazardous practices. When the insulation on an extension cord becomes hard and cracked with age, replace the cord. Extension cords are designed only for temporary convenience. Avoid using them as permanent installations.

Appliance Checks
Although modern furnaces and appliances are built to meet rigid safety standards, these features are sometimes lost through the effects of age and neglect. To maintain safety and efficiency, all oil or gas-fired furnaces should be cleaned and checked by a competent serviceman before the start of each heating season. Other oil or gas-fired appliances should also be inspected annually.

Fireplaces and Chimneys
Fireplaces add charm and beauty to a home and provide a great deal of pleasure to the family. Be sure a good firescreen is in place when fires are burning — one that covers the opening completely so the embers cannot pop out onto the floor. Because of their fascination with fire, never leave small children alone in a room with the fireplace burning. When removing ashes from fireplaces or stoves, always put them in metal containers.

Check exposed sections of the chimney periodically for loose bricks, crumbling mortar, or other signs of deterioration or damage. Repair or replace chimneys that allow smoke or heat to escape through mortar joints. Accumulation of soot and creosote should be removed from the chimney regularly. One method of chimney cleaning is to place several stones in a burlap bag, then partly fill it with straw or excelsior, and lower it down the flue with a rope. Be sure the bag is not so full it could get stuck.

Storage
Good housekeeping habits can help keep your home safe from fire. Such simple actions as keeping rubbish, papers, boxes, and other debris from accumulating in basements, attics, and garages help prevent fires. Shelves and racks should be provided for items which must be stored so they can be found and inspected easily. Particularly hazardous are combustible materials which are allowed to accumulate near furnaces and water heaters.

Old magazines and newspapers should be stored in cartons or bundled and placed in cans or boxes for collection.

Kerosene, gasoline, paint thinner, varnish remover, and other volatile substances should be stored in metal cans, and never in the house. To prevent spontaneous combustion from occurring, store oily rags or cloths used for furniture polishing and waxing in tight metal cans. Better yet, dispose of such materials in outdoor garbage cans immediately after use.

Smoking and Matches
Among home fire losses and deaths attributed to human negligence, those caused by smoking and careless use of matches top the list. If matches must be kept in the house, keep them out of the reach of children.

Smoking in bed should be strictly forbidden, as should the practice of placing lighted cigarettes on furniture edges. Always put burnt matches and cigarette butts into ash trays, never into waste baskets. Do not smoke while pouring gasoline from a container into the fuel tank of a lawn mower, lantern, camp stove, or similar pieces of equipment, nor while using paint remover or other flammable liquids or aerosol sprays.
Incinerators
If you must burn trash or rubbish, be sure the incinerator is at least 50 feet from any building and that it is covered with a screen to prevent burning papers and embers from escaping. Keep an eye on the fire until it is completely out. Never burn on a windy day, and mow all grass and weeds around the incinerator, especially between the incinerator and the house.

Television
When checking your home for possible fire hazards, don't overlook the television set. To prevent overheating and the possibility of fire, be sure that air can circulate freely around the set. A television set built into a closed cubicle or pushed against a wall or into draperies can be hazardous.

Do not allow glasses of water or other open containers of liquid to be placed on the television. Spillage could cause an electrical short and fire.

If you own an "instant-on" television, part of the set is always "on" when it is plugged in. Unplug the set when you leave the house for a day or more. Disconnect the antenna, to prevent possible lightning damage and fire, if you plan to be away for an extended period.

DID YOU LEARN
1. Why is overloading electrical circuits a particularly big problem in older homes?

2. Explain the hazard involved if an extension cord is left under a rug and walked on.

3. True or False (Circle one). As long as extension cords are placed out of the way and are not being damaged, there's no need to replace them or to install permanent wiring.

4. All ______ or ______ furnaces should be cleaned and checked ______ the start of each heating system.

5. List 6 places where you think rubbish, books, papers, etc. collects in homes and presents a fire hazard.

6. Why do you think piles of old newspapers, books, etc. are considered fire hazards?

7. Name some activities or areas in which smoking presents a real fire hazard.

8. Name potential fire hazards that are associated with kitchens.

9. Why is it good for outsiders to occasionally inspect our homes for fire hazards?
THINGS TO DO
1. Develop an inspection list of fire hazards. Use the diagram below and the information you have just learned from this unit. Take the checklist home and conduct a fire inspection.

2. Organize teams of at least two people and inspect each others' houses for fire hazards. Use the inspection form from number 1, or use a checklist supplied by your fire department.

Locations of fire hazards in a dwelling
FARM FIRES — LIGHTNING

Lightning is the number one cause of farm building (home and barn) fires. The National Lightning Protection Institute estimates that 37 percent of all rural fires are the result of lightning. In addition to fires, livestock, and sometimes people, are killed by lightning.

Lightning can be thought of as electrical current, much like the electrical current we have in our homes. A lightning bolt, though, is likely to be thousands of times stronger than our house current. And unlike our house current, lightning is uncontrollable. We can't simply flip a switch to stop its flow.

When lightning strikes something on the ground, the electrical current will generally flow through the object and go into the earth where the electrical charge is dispersed and weakened. Because lightning is always trying to follow the shortest, easiest path to earth, it will generally strike the tallest object in an area, or the object that offers the least amount of resistance to the lightning’s flow of electric current. The idea behind lightning protection is to provide a direct, easy, and safe path to the ground for the flow of electrical current. If this path is provided, then the electrical current will pass through it without destroying or burning nearby objects.

Good lightning protection consists of the proper size, number, and placement of air terminals (lightning rods), down conductors, grounding rods of proper size and placement, and interconnecting conductors. Because the installation is as important as the materials used, Underwriters Laboratory has developed a Master Label. Master Labels are given only to installers whose materials and workmanship meet the requirements set up by the Underwriters Laboratory.

After approved lightning protection systems have been installed, they must be maintained. This is where many people fail. Often, down conductors and grounding rods are broken or unhooked. If any part of the lightning protection system is broken or damaged, the whole system is useless. In fact, having only a part of a system is worse than having no protection at all. This may be the case when the air terminals (lightning rods) are the highest objects in the area, but they are not properly grounded. When a lightning bolt is attracted to the rod, it has no way to ground except through the building.

If a storm does approach, make sure you are not the tallest object in an area. This can happen when you are on a hill, on a golf course, or perhaps driving a tractor in a field. If you do find yourself in an open area with a storm approaching find a ditch to lie in or a protected building to get inside of. Inside of a car would also be good. Never stand under a tree or under tall objects that are not protected.
DID YOU LEARN
1. How serious a problem are fires from lightning strikes in rural areas?

2. List several things that can be damaged by lightning.

3. Fill in the missing words. _______ _______ _______ is similar to _______ _______ _______.

4. Fill in the missing words. Two major differences between lightning and house current are _______ _______ _______ and _______ _______ _______.

5. What happens to the electrical current when it strikes an object?

6. Circle the correct answer. Lightning will generally take the (longest, easiest, hardest) path to ground.

7. What is the principle behind lightning protection?

8. List the components of a good lightning protection system.

9. What happens if any one of the lightning protection components is no good?

10. List some examples of where lightning might strike.

THINGS TO DO
1. Locate someone who installs lightning protection systems to speak to the group. The person should have the Master Label certificate.

2. Visit a farm or other place where a good lightning protection system is in effect. Explain the purpose of each component.
FARM FIRES — OTHER SOURCES OF IGNITION

In addition to lightning, there are many other sources of fires on farms. Some of these sources are improper or poor quality wiring, improper use and installation of heating equipment, and fires originating from farm machinery. Let's look at these types of fires and how they can be prevented.

Wiring
Fires due to electrical wiring have caused many farm building fires and are suspected in a large number of fires listed as unknown origin. Wiring often fails due to faulty installation, overloading, physical damage, and deterioration over time due to exposure to temperature extremes. Many original farm buildings were wired with 15 AMP circuits. Because of newer and bigger equipment, it is easy to overload these circuits. Fuses are designed to shut off circuits when they become overloaded. However, if larger fuses are installed, or if a penny is placed behind the fuse, the circuit does not shut off when it becomes overloaded. Instead, the wiring itself becomes hot, melts the insulation wrapped around the wires, and eventually ignites surrounding materials.

Some ideas to help prevent these fires include:

• periodic inspection of the quality of wiring,
• replacing circuits that keep blowing fuses with wiring designed to handle larger loads,
• never using pennies or larger fuses to keep a circuit from blowing, and
• having new or replacement wiring installed by a qualified electrician.

Heating Equipment
Heating devices on farms are used to warm shops and other working areas, to keep water systems from freezing, and to warm young animals such as baby pigs and lambs. Heating devices can be electrical or they use a flammable liquid such as kerosene or fuel oil. Fires occur for a variety of reasons. Sometimes the devices are installed too close to combustibles; animals may dislodge the heating units; or perhaps the heating unit itself breaks in some way and causes a fire.

Here are some good fire safety guidelines to follow in the use of heating equipment:

• Electrical heaters are generally safer to use than those requiring a flammable liquid.
• Never leave a heating device dangling by its cord.
• Surround a heating unit or device by non-flammable materials whenever possible.
• Always install, use, and maintain heating devices according to the manufacturers' instructions.

Machinery Fires
Machinery-related fires often occur while the machinery is operating in the field. During particularly dry weather, wheat stubble and corn stalks can be ignited by hot sparks from the machine or by coming into contact with the machine's engine or muffler. Machinery fires may occur when the fuel tank is refilled without letting the machine cool down first. Be especially careful when refueling machinery not to spill gas on hot surfaces such as the muffler.

Recommended procedures to prevent and control machinery fires:

• Always carry a multipurpose fire extinguisher on farm machinery.
• Keep corn husks and wheat stubble from piling up around the hot parts of machinery.
• In periods of prolonged hot, dry weather, have an extra supply of water available in case of fire.
• Always let the engine cool down before refueling.
DID YOU LEARN

1. List as many reasons you can think of why wiring fails.

2. Why do electrical circuits become overloaded?

3. Describe what can happen if the wiring in an electrical circuit is continually overloaded.

4. List as many areas you can think of where heating devices might be needed on a farm.

5. Name some of the ways a heating device might cause a fire.

6. Explain why electrically operated heating devices are generally considered safer than devices using flammable liquids.

7. When are machinery fires most likely to happen?

8. What type of fire extinguisher should be carried on farm machinery?

THINGS TO DO

1. Have a farm supplier bring in various types of heating devices and explain their safe installation and use.

2. Invite an electrical company representative in for a talk or demonstration on electrical safety, particularly the overloading of circuits.

3. Visit a farm and conduct an inspection of the farm buildings wiring.

4. Inspect all farm tractors and other self-propelled machinery for fire extinguishers. Where extinguishers are in place, note if they are the proper type and if they are properly inspected and charged.
FOREST FIRES

The mountains and forests of the United States are rapidly increasing in importance and value. In addition to the valuable timber, forest lands are now recognized for their value as watersheds, homes for animals, and as recreational playgrounds. Unfortunately, thousands of acres of forest land burn each year. Years ago, a forest fire or a grassland fire threatened only the animals that lived there and the forest's trees and shrubs. But because people have moved into forest lands with permanent communities, second homes, hunting cabins, and the like, a forest fire is now likely to involve communities, homes, power lines, gas pipelines, and major highways.

One thing that makes forest fires so destructive is that once they are started, the fire can be swept completely out of control by gusty winds. And if it has been extremely dry, then the problem is worse. When you're careless in your home and start a fire, usually only your home burns. But if you're careless in the forest and start a fire, you may destroy dozens of homes, hundreds of acres of land, and cause other people to lose everything they own.

Close cooperation among the people who live on and use forest lands, rural and forest fire companies, and community and rural governments is very important. Governments have to provide the proper laws and rules to help keep the chances of forest fires down. They can best do this by proper planning for home development which includes items like traffic flow, road widths, accessibility to fire fighting equipment, and reserve water systems.

Fire departments can help by educating the public on how to prevent forest fires. Handout materials, personal instruction, and close supervision can be part of this program. But the primary responsibility for forest fire prevention has to be placed on the thousands of people who use and live on forest lands.

If you live in or use our forests, there are several things you can do to help prevent forest fires. Make sure outdoor cooking or burning facilities are properly covered so that ashes or sparks do not escape. Keep a garden hose hooked up to use as an extinguisher should a small fire start. Maintain a clear area of at least 30 feet around your home or cabin. Don't start campfires in the middle of the woods unless you have been taught how to start, use, and extinguish them.

If you are just vacationing or visiting a wooded area, make sure all campfires are completely extinguished before leaving or going to sleep at night. Don't let anyone throw matches or cigarettes out car windows. And always be aware of the condition of the forest, especially when it has been hot and dry. For instance, Forest Rangers may ban all outdoor fires in dry periods.

Even though you can not do everything when it comes to forest fire prevention, you should understand how forest fires occur and how you can prevent them. Remind your parents, brothers and sisters, and friends if you see them doing something that might result in a fire. Remember what Smokey the Bear says, "ONLY YOU CAN PREVENT FOREST FIRES!"

DID YOU LEARN

1. Name a few of the things that will be destroyed in a forest fire.

2. Why is the chance of a forest fire greater now than in the past?

3. Name the environmental conditions in which a forest fire is more likely to start.

4. List the types of people or groups who can cooperate to help prevent forest fires.

5. What can the government do to prevent forest fires?

6. What can fire departments do to prevent forest fires?

7. What can forest rangers do to prevent forest fires?

8. What can you do to prevent forest fires?
THINGS TO DO
1. Have a Forest Ranger speak to the group about preventing forest fires.
2. Visit a cabin(s) or homesite(s) in the woods. Have club members decide whether the site(s) presents any serious fire problems.
3. Find a cabin or homesite that is dangerously close to the woods and presents a fire hazard. Help the owner clear back the wooded area, or devise some type of a fire screen between the woods and the cabin.

BURNS AND SCALDS

Every year 300,000 people in the United States are hospitalized with burn injuries and 12,000 people die from fire and burn injuries. Half of these victims are children. The yearly cost to care for burn victims is approximately $11 billion.

To keep yourself, a loved one, or a friend from becoming a part of the above statistics, learn to prevent burns and to provide first aid if one should occur.

A burn is an injury that results from heat or chemical agents. Burns can be caused by contact of skin and body tissue with flame, an explosion, hot liquids, hot metal objects, chemicals, or electrical current.

Burns are classified minor, moderate, and severe, according to the extent, depth, and location of the burn, the age of the victim, and special existing factors.

The depth of burn is described as the degree of burn.
1st degree: Superficial and heals in a few days. Skin is reddened; painful.
2nd degree: Heals without grafting and is characterized by redness, weeping, blistering, and pain.
3rd degree: May be white, brown, black, mottled cherry red, and there is no pain. Tissue does not regenerate and would require grafting.

The severity of burn location refers to critical areas such as burns to the hands, face, eyes, perineum (groin), and respiratory tract.

The age of the victim is a problem when he or she is very young or very old. The hearts of these persons can not stand the shock of the injury and they may die.

Examples of special existing factors that affect burn severity are pre-existing illness and lifestyle (drug, alcohol, or tobacco abuse).

In general, first aid for burns is as follows. The recommendations are grouped under the types of burns a person may suffer.

Thermal Burns
1. Remove heat source...stop the burning process.
2. Check breathing, bleeding, other trauma.
3. Apply clean sheet, blanket if necessary, to keep patient warm.
4. Transport patient as soon as possible to nearest emergency room.

Electrical Burns
1. Shut off current or remove victim from current, using proper techniques and equipment.
2. Check breathing; CPR may be needed for victim of electrical injury.
3. Be aware that minor surface injury may overlie massive internal injury.
4. Transport patient to nearest emergency room as soon as possible.

Chemical Burns
1. Flush continuously with water until patient reaches a doctor or emergency room.
2. Remove contaminated clothing, being careful to prevent spreading chemical to affected area of body.
3. If eyes are involved, remove contact lenses and continuously flush with water.
4. Transport patient to nearest emergency room as soon as possible.

Rules of Thumb for Burns
1. Check to make sure the victim is breathing.
2. Do not give the victim anything to eat or drink. The digestive system is temporarily shut down and the patient may vomit and create new problems.
3. Don’t bother with bandaging the burn. Time is better spent getting to the emergency room quickly. A clean; sheet and blanket to cover the victim is sufficient.
4. Never put creams, ointments, butter, etc., on the burn. Cold water is recommended for small burns and nothing should be put on large burns. Do not use ice.
5. Remove rings, belts, shoes, etc., before swelling occurs.

Finally, and most importantly, seek competent medical attention immediately.

DID YOU LEARN
Answer the following questions about burns and scalds.
1. How many people are hospitalized by burns each year in the U.S.? ______ How many are killed by fire or burns? ______.
2. What is a burn? __________________________
3. What causes burns and scalds?
   a. __________ d. __________
   b. __________ e. __________
   c. __________ f. __________
4. What are the three categories describing depth of burn?
   a. __________ c. __________
   b. __________

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5. Describe the characteristics of one of the categories listed above.

6. What age groups are most severely affected by burns? Why?

7. Three of the five factors determining burn severity (minor, moderate, or severe) are:
   a. 
   b. 
   c. 

8. The five basic steps to treat burns are:
   a. 
   b. 
   c. 
   d. 
   e. 

THINGS TO DO
1. Have a person trained in treating burns present a talk to the group. Doctors, nurses, paramedics, or the Red Cross would be appropriate.
2. Have students take a field trip to a hospital or burn center to see burn victims.