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Module Title: Arc Welding Safety

Objective: To be able to weld using safe practices and to know what personal protective equipment should be used.

Trainer's Note: It is important to weld using safety precautions. There are many dangers related to welding. During the training session have personal protective equipment available to show and for employees to try on.

Background

Arc welding includes shielded metal-arc, gas shielded and resistance welding. Since arc welding equipment varies in size and type, it is important to read and follow the manufacturer's recommendations.

General Arc Welding Safety:

- Before starting any arc welding operation, a complete inspection of the welder should be made.
- Read all warning labels and instructions manuals.
- Remove all potential fire hazards from the welding area.
- Always have a fire extinguisher ready for immediate use.
- Equip welding machines with power disconnect switches which can be shut off quickly.
- The power to the machine should be disconnected before making repairs.
- Proper grounding of welding machines is essential.
- Electrode holders should not be used if they have loose cable connections, defective jaws, or poor insulation.
- An arc should not be struck if someone without proper eye protection is nearby.

Personal Protective Equipment:

- Infrared radiation is a cause of retinal burning and cataracts. Protect your eyes and face with a welding helmet properly fitted and with the proper grade of filter plate.
- Protect your body from welding spatter and arc flash with protective clothing. Such as:
 - Woolen clothing
 - Flame-proof apron
 - Gloves
 - Properly fitted clothing that is not frayed or worn.
 - Shirts should have long sleeves.
 - Trousers should be straight-legged and covering shoes when arc welding.
 - Fire resistant cape or shoulder covers are needed for overhead work.
- Check protective clothing equipment before each use to make sure it is in good condition.
- Keep clothes free of grease and oil.

Proper Ventilation

Be sure there is adequate ventilation available when welding in confined areas or where there are barriers to air movement. Natural drafts, fans and positioning of the head can help keep fumes away from the welder's face.

Ventilation is sufficient if:

- The room or welding area contains at least 10,000 cubic feet for each welder.
- The ceiling height is not less than 16 feet.
- Cross ventilation is not blocked by partitions, equipment, or other structural barriers.
- Welding is not done in a confined space.

**If these space requirements are not met then the area needs to be equipped with mechanical ventilating equipment that exhausts at least 2000 cfm of air for each welder, except where local exhaust hoods or booths, or air-line respirators are used.

Avoiding Electrical Shock

Electrical shock can kill. To prevent electrical shock:

- Use well insulated electrode holders and cables.
- Make sure welding cables are dry and free of grease and oil.
- Keep welding cables away from power supply cables.
- Wear dry hole-free gloves.
- Clothing should also be dry.
- Insulate the welder from the ground by using dry insulation, such as a rubber mat or dry wood.
- Ground frames of welding units.
- Never change electrodes with bare hands or wet gloves.

Review The Following Points

- Proper personal protective equipment is important.
- Electrical shock can be deadly.
- If ventilation is not sufficient, then the welding area should be equipped with mechanical ventilating equipment.
- Always have a fire extinguisher ready for immediate use.

True or False Answer Key

1. T, 2. T, 3. F, 4. F, 5. T

True or False

Name _____

- | | | |
|--|---|---|
| 1. All potential fire hazards should be removed from the welding area. | T | F |
| 2. Use natural drafts or fans to keep the fumes away from your face. | T | F |
| 3. Eye protection is not always needed. | T | F |
| 4. It is acceptable to use electrode holders with loose cable connections. | T | F |
| 5. Electrodes should not be changed with bare hands or wet gloves. | T | F |

Training Module: Battery Safety

Objective: To use and store batteries in a safe manner.

Trainer's Note: Discuss the different types of batteries and what types are used specifically within your operation. Examples may be helpful to have at the training session. The modules on lifting and eye protection could be reviewed along with this module.

Background

Lead-acid storage batteries are chemical machines that produce power on demand. The typical battery has a number of individual cells containing layers of lead plates immersed in sulfuric acid. When sulfuric acid contacts the lead plate inside the cell, energy is produced. The main battery terminals are the positive and negative posts. The battery may also have vent caps on top of it. These caps serve two purposes: they permit the checking and maintenance of water and acid levels and provide a vent for the escape of gases formed when the battery is charging.

Types of Batteries

Car Starting Batteries:

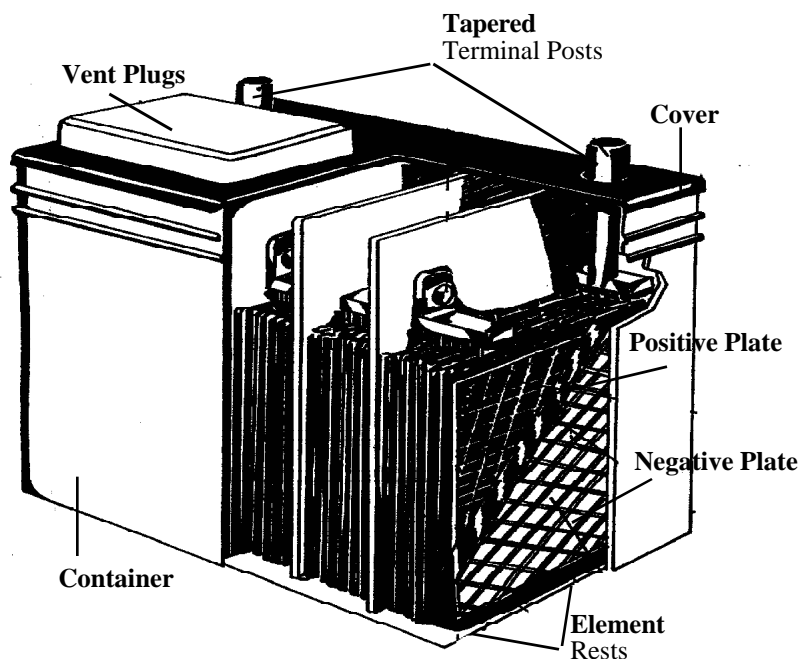
This battery was developed for the job of starting cars and trucks. Built to deliver quick starting at minimum weight, size and cost, these batteries have lead sponges rather than sturdy lead plates. These thin sponges are delicate and start to break down after less than 100 cycles.

Deep Cycle Batteries:

It is designed to be compact, inexpensive, and last for 200 to 400 charge-discharge cycles. These storage batteries are packaged in the same small automotive case and contain somewhat thicker plates of lead. Avoid acid spills by placing the battery in an upright and level position.

Gel Cell Batteries:

The gel cell battery, used in aircraft and designed for portability, are usually small and have gelled acid within a sealed case. This battery works in any position and is designed to be clean and usable in environments intolerant of acid vapors and spills. If charged or discharged too rapidly, gas will build up, causing the battery case to rupture. Besides possible rupture, storage at high temperatures (i.e., above 78° F) accelerates self-discharge and shortens the battery's life. Although more expensive, the sealed gel cell battery can be a safer and cleaner alternative.



Safety Tips for Working With Batteries

- Keep sparks and flames away from the battery. Inspect the battery in natural light.
- Remove wrist watches, which might make electrical contact and create sparks.
- Wear safety goggles or a face shield when inspecting or cleaning the battery.
- If acid does enter the eye, immediately flood with running water for at least 30 minutes. See a doctor as soon as possible.
- If acid contacts the skin, wash the affected area immediately with plenty of water.
- Avoid chemical burns by not rubbing eyes or skin while working with the battery.
- Wash your hands immediately after completing the job.
- Clean up all acid spills and flush clothing with a water and baking soda solution.
- Vent caps should be tight and level. Placing a damp cloth over vent caps when charging may act as a flame arrester.
- Keep batteries away from children.
- Smoking or open flames should never be present in a battery area, and ventilation is important.
- Store batteries in a cool, dry place. Storage temperature should be between 80°F and 32°F.
- Don't make live connection directly to the battery. Explosive gases can be set off by a match, incorrect connection of battery cables, and careless use of tools around the battery.
- Use proper lifting techniques when moving batteries. Batteries are small, but heavy and awkward to lift.

Review The Following Points:

- There are different types of batteries for different jobs.
- Smoking or an open flame should be kept away from batteries.
- Protect the eyes, face, and body from battery acid.
- Live connection directly to the battery should not be made.

True and False Answer Key

1. F, 2. T, 3. F, 4. T, 5. T

Battery Safety Quiz

True or False

Name _____

- | | | |
|---|---|---|
| 1. Ventilation is not important in the battery area. | T | F |
| 2. Batteries should be stored in a cool, dry place. | T | F |
| 3. It is acceptable to make live connections directly to the battery. | T | F |
| 4. The eyes, face, and body should be protected from battery acid. | T | F |
| 5. Batteries should be inspected in natural light. | T | F |

Training Module: Grain Bin Entrapment

Objective: To gain an awareness of the danger of flowing grain, and to learn how to prevent grain bin entrapment.

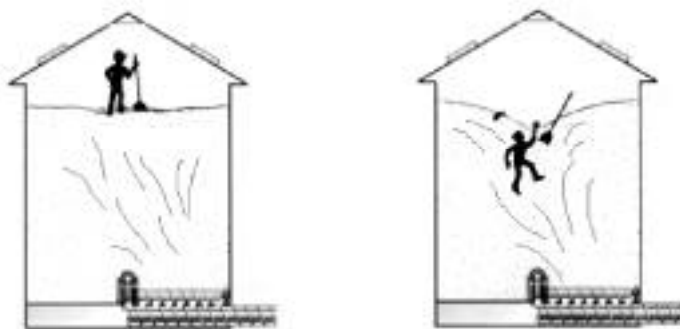
Trainer's Note: Divide the employees into three groups, read and discuss the three different ways people become entrapped in grain and have each group come up with prevention strategies for each one of the entrapment types (allow five minutes for this exercise). After the groups are finished, go over the prevention strategies presented in this module. For better understanding, the graphics provided on this sheet may be reproduced for each group.

Background

Three Types of Entrapment:

Flowing Grain

During unloading, the grain in a bin flows downward from the top center of the bin, creating a “funnel” effect that draws material and objects down the auger. An unloading conveyor at the bottom of the bin transports the grain outside. Depending on the size of the auger, it may take only two to three seconds to become emerged up to the knees in flowing grain, rendering the worker helpless. Flowing grain acts like quick sand and can pull a worker under and result in suffocation.

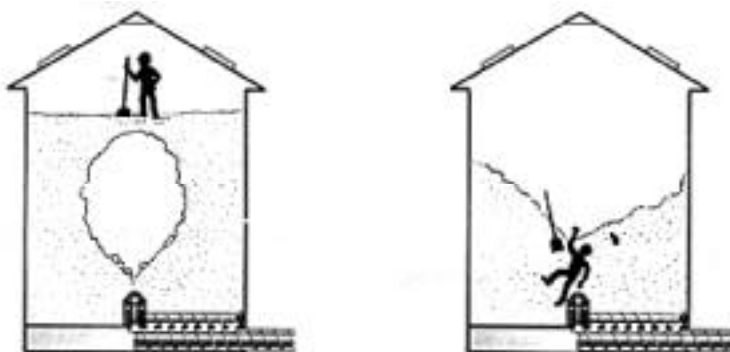


Prevention Strategies

- Warn family, employees, and visitors of the dangers of flowing grain.
- Place warning decals on all bin entrances and gravity wagons.
- Have an established form of nonverbal communication. It is difficult to hear over the equipment noise.
- Turn off and lock out power controls (see Lockout/ Tagout Module) to unloading conveyors before entering a bin.
- Always use a body harness with a lifeline secured to the outside of the bin, and have at least two observers during bin entry.
- Secure grain storage areas to prevent unauthorized entry.

Collapse of a Grain Bridge

A grain bridge can form when grain on the surface is moldy or is frozen together to form a hard, thick crust. When grain is unloaded from a bin with a surface crust, a hollow cavity forms underneath the grain bridge. If anyone enters the bin and attempts to walk on the crusted surface, the additional weight will cause the crust to collapse and the individual could be partially or completely submerged instantly. The shifting grain can move the victim four to five feet from the point of entry where the victim was last seen, making it difficult to determine exactly where the victim is located.

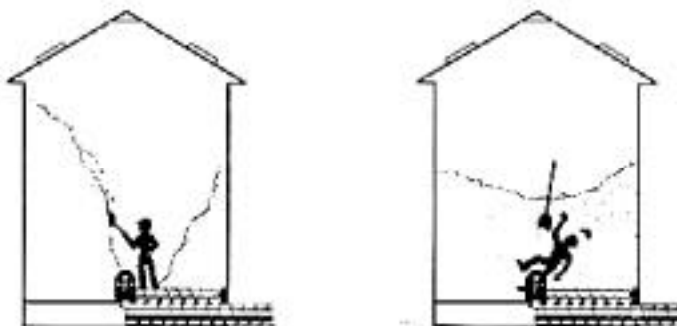


Prevention Strategies:

- To detect whether a grain bridge exists, always look for an inverted cone or funnel after unloading from a bin.
- From the bin roof hatch or from the inside ladder, while tied securely to the ladder, use a pole or a weighted line to free the bridge. Do not stand on the grain surface.
- Manage grain to avoid conditions that cause spoilage and bridging.

Avalanche of a Vertical Grain Wall

Grain in bad condition can cake in large vertical columns against the bin wall. Workers may try to dislodge the grain by poking it with a stick or shovel. This can cause the grain wall to break free and result in an avalanche that can completely bury workers inside the bin.



Prevention Strategies:

- Use of body harness with a lifeline that is securely tied to a point which can withstand 5,400 lbs. of stress.
- If the bin must be entered, a person should be lowered from the top of the bin, dislodging the grain as they descend into the bin staying above the top of the vertical column.
- Be prepared for the entire grain wall to break free and fall at any time.
- Manage grain to avoid conditions that cause spoilage and formation of vertical grain walls.

Review The Following Points

- Turn off and lock out the power source to the unloading conveyors before entering a grain bin.
- Grain bins should be secured to prevent unauthorized entry.
- Inspect for grain bridges by looking for inverted cones after unloading.
- Educate on the dangers of flowing grain.
- Workers should work from the top to the bottom on vertical grain walls.

True or False Answer Key

1. T, 2. T, 3. T, 4. T, 5. F

Grain Bin Entrapment Quiz

True or False

Name_____

- | | | |
|---|---|---|
| 1. During unloading, the grain in a bin flows downward from the top center of the bin, creating a “funnel” effect that draws material and objects down to the conveyor. | T | F |
| 2. Flowing grain acts like quick sand and can pull a worker under and result in suffocation. | T | F |
| 3. Always turn off and lock out power controls to the unloading conveyor or auger before entering a bin. | T | F |
| 4. Grain bins should always be secured to prevent unauthorized entry. | T | F |
| 5. All that is needed during grain bin entry is one observer. | T | F |

Training Module: Grain Bin Hazards

Objective: To recognize, avoid and control potential grain bin hazards.

Trainer's Note: This module introduces the hazards of working with flowing grain. Pretest employees' knowledge using the true/false questions from the end of the module. Review the answers, emphasizing the recognition, avoidance and control of hazards.

Background

Recognizing the hazard:

- **Respiratory Hazard:** - Dust from grain can affect people in a variety of ways. While some may not be bothered, others suffer from dust induced breathing, digestion and stomach problems and/or skin rashes.

To help reduce and prevent allergic reactions, workers should wear proper protective gear and/or avoid dusty areas. Ventilate fumigated bins for several hours, or longer if recommended by the pesticide manufacturer or the EPA before reentering. Upon entry, wear a respirator suitable for protection from dust. Unless a known chemical is present, then wear the proper respirator for that situation. For example, if the grain is moldy, then a HEPA (High Efficiency Filter) cartridge will be needed for your respirator.

- **Fire and Explosion Hazards:** An build up of grain dust can be ignited by a heat source such as fire, sparks, or hot bearings. When contained dust is mixed with air, an explosion can occur.

To reduce the possibility of a fire or explosion:

- Never weld or grind in a bin containing grain
 - **"NO SMOKING"** signs should be posted in key locations and strictly enforced.
 - Perform routine maintenance to reduce risk of ignition due to machinery failure.
- **Housekeeping:** Housekeeping and fire guidelines should be outlined in a written "Standard Operating Procedure". It should include instructions for reducing dust accumulations. A maximum accumulation of 1/8-inch of grain dust is allowed in priority housekeeping areas.

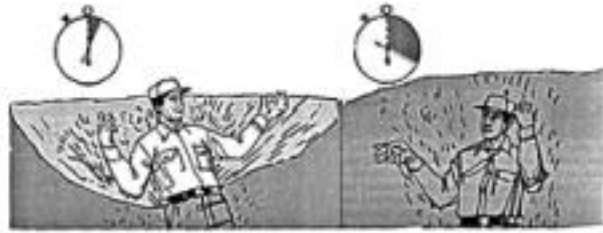
Defective wiring or any sparking should be reported to the supervisor immediately. Identify potential sources of ignition in grain elevators. Some common sources of ignition are:

- Floor areas within 35 feet of the inside of bucket elevator legs.
- Enclosed areas containing grinding equipment.
- Enclosed areas containing grain dryers located inside the facility.

The Standard Operating Procedure should also include methods for removing grain spills from work areas. All employees should know the procedure.

Avoiding or Reducing the Hazard:

“Flowing grain” is the term used to describe the down and outward movement of grain from a storage bin. A funnel is formed and the grain flows toward the bottom center of the cone, causing quicksand like suction. If pulled under the surface suffocation will likely occur. In three to four seconds, grain can be above knee level, making the window of safe recovery very narrow.



Never enter a grain bin when grain is being removed. Only enter when the power is off and locked out on the unloading conveyor or auger. (Refer to module on Lockout/Tagout)

Always use a safety harness, safety line, and have at least two observers during bin entry.

Place warning decals on all bin entrances and gravity wagons.

Controlling the Hazard:

- Shielding and Guarding - By preventing the accidental engagement of machinery, guards and safety switches on automatic equipment can save the life of someone working on or in a bin
- Rescue Plans - Employees working with grain bins should be aware of the rescue plan.

A written emergency plan containing information on the alarm system and evacuation procedures (including a safe meeting place), should be developed and implemented in units of 10 or more workers. .

Review The Following Points

- Grain dust affects people's health differently.
- Wear self-contained or air supplied breathing apparatus when entering bins.
- The “NO SMOKING” rule must be strictly enforced around grain bins.
- Nobody should enter a bin while grain is being removed.
- A written Standard Operating Procedure should be in place and employees should be responsible for knowing the procedure.

True or False Answer Key

1. F, 2. F, 3. T, 4. F, 5. F

Grain Bin Hazards Quiz

True or False

Name _____

- | | | |
|---|---|---|
| 1. After evacuation of a grain-handeling facility, it is a good idea for employees to go straight home. | T | F |
| 2. Rescue plans should only be known by the employer. | T | F |
| 3. Employees should know the common sources of ignition. | T | F |
| 4. Dust is not a health concern in grain bins. | T | F |
| 5. Anyone can enter a bin while grain is being removed. | T | F |

Training Module: What To Do In Case Of Grain Bin Entrapment

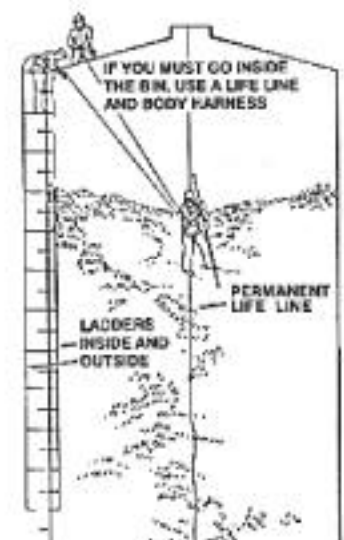
Objective: To know what course of action to take should someone become entrapped in a grain bin.

Trainer's Note: This session is an extension of the Grain Entrapment module. If helpful, use overhead transparencies of outline. Review the true/false quiz.

Background

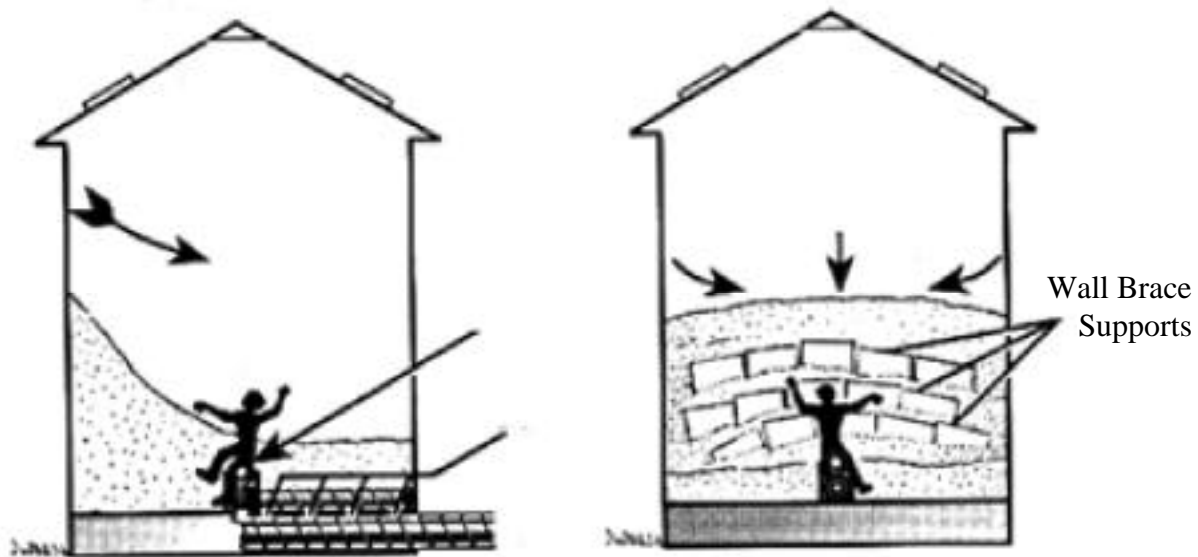
Entrapment in a grain bin can be very serious. Knowing the proper course of action can reduce rescue time and increase victim and rescuer safety.

- Turn off the auger or unloading equipment.
- Call the emergency rescue team or fire department.
- Be patient and do not give up. Individuals have survived for two hours completely submerged in grain. **Wait for the rescue squad before attempting rescue.**
- Offer assistance to rescuers, but follow the directions of the incident commander.
- **Do Not** activate the auger again until the victim is free.
- Ventilate the bin with an aeration system.
- **Do Not** activate the heat source.
- Avoid putting additional pressure on the victim.
- Only enter the bin **if absolutely necessary**, and only with safety lines.
- If you must enter the bin, use respiratory protection as required (dust filter masks, filter respirators, or a self-contained breathing apparatus).
- Gather plywood, sheet metal, bottomless large trash cans, or heavy cardboard cylinders for the rescuer to use to keep grain below the victim's chest.
- If the victim is not completely submerged, construct a retaining wall if the grain slope is above the victim's head.
- A series of retaining walls may be needed.
- Support or brace walls to prevent collapse.
- Remove grain from around the victim.
- Use a vacuum conveyor or scoop to remove grain from around victim.
- Put victim in a harness to keep victim from being swallowed by the grain.
- Be aware of the position of the victim's body.



Review The Following Points

- Shut off the electrical power to the unloading equipment and lockout to secure against accidental start up.
- Call the emergency rescue team or fire department.
- Wait for the rescue squad before attempting to rescue.
- Gather needed equipment for the rescue squad.
- Bin entry should be only **if absolutely necessary**, and safety lines must be worn.



True or False Answer Key

1. T, 2. F, 3. T, 4. T, 5. T

What To Do In Case Of Grain Bin Entrapment

True or False

Name _____

- | | | |
|--|---|---|
| 1. Employees should wait for emergency crews to arrive before attempting rescue. | T | F |
| 2. During a grain bin rescue the heat source should be activated instead of ventilating the bin. | T | F |
| 3. Call the emergency rescue team immediately. | T | F |
| 4. Offer assistance to the rescuers and follow their directions. | T | F |
| 5. Shut off the electrical power to the unloading equipment. | T | F |

Training Module: Caught-in or Caught-between Objects

Objective: To understand why accidents involving being caught-in or between object occur and how to prevent them.

Trainer's Note: Share the following scenarios concerning caught-in or caught-between incidents and discuss the reasons they occur and how they could be prevented.

Background

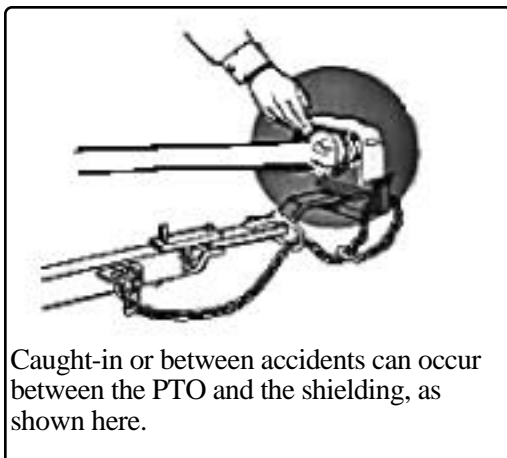
Caught-in or between accidents occur for some of the following reasons:

- Working on moving equipment.
- Working under mental or physical stress.
- Using unsafe equipment.
- Lack of training or instructions
- Inadequate guarding on machines.
- Incorrect hitching practices.

Examples of caught-in and caught-between accidents:

- While hauling hay, a worker stopped to change a flat wagon tire. The wagon fell, pinning the worker between the ground and the wagon.
- Two people were working on a combine when it fell off a jack, the workers were caught under the combine.

Never work under equipment that is supported only by a jack. The jack could tip and the raised equipment then will be dropped on the person under it. (Refer to the module Safe Use of Jacks.)



Caught-in or between accidents can occur between the PTO and the shielding, as shown here.

- An employee removed the shields on the PTO for repairs, but failed to replace them after service. Another employee got caught in the PTO.

After servicing, all PTO shields should be replaced for safe operation. Snug fitting clothing should be worn when working around a PTO. This will prevent clothing from being caught in the PTO. (Refer to the modules Safe Use of the Power Take Off and Power Take off Shielding.)

- When unhitching a wagon, a farmer forgot to chock the wagon wheels, and was caught between the shop wall and the wagon when the wagon rolled forward.
- A farm employee forgot to chock the livestock trailer when unloading cattle and was caught between the trailer and the corral gate.

While unloading or working on equipment, the wheels of equipment need to be pinned to hold them stationary. This procedure is called chocking. By chocking the wheels, the equipment will be unable to roll and cause injury. (Refer to the module Chock and Block.)

- While hitching a loaded hay wagon to a tractor, an employee was caught between the wagon and the tractor.

When helping someone to hitch equipment or an implement to a tractor, you should stand to the side and be clearly visible to the person driving the tractor. If you are standing in between the tractor and the equipment, you could easily be crushed between the two.

Review The Following Points

- Importance of using guards.
- Know how to properly operate equipment.
- Use caution when working with moving equipment.
- Importance of proper chocking techniques.
- Always follow safe operating procedures.

True or False Answer Key

1. T, 2. T, 3. F, 4. F, 5. T

True or False

Name_____

- | | | |
|--|---|---|
| 1. Always replace the shields after servicing equipment. | T | F |
| 2. Never work under equipment that is supported only by a jack. | T | F |
| 3. When unhitching a wagon, it is not necessary to chock the wagon wheels. | T | F |
| 4. It is not important to follow safe operating procedures. | T | F |
| 5. Working on moving equipment may cause caught-between accidents. | T | F |

Training Module: Chain Saw Safety

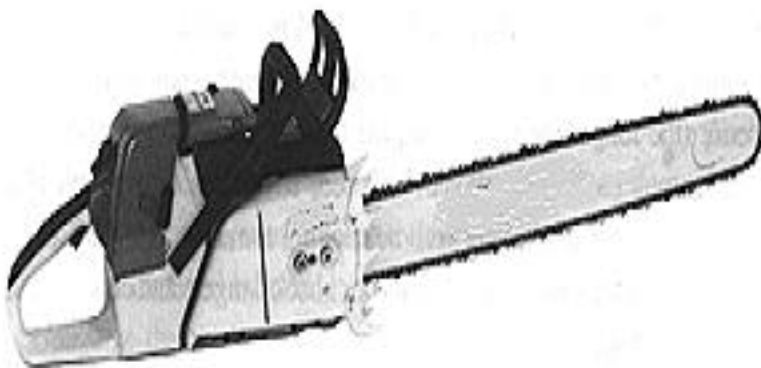
Objective: To know what safety precautions to take when working with a chain saw, and to practice proper maintain of the chain saw.

Trainer's Note: Ask a seasoned employee who has use a chain saw to demonstrate the proper procedure. Allow employees to practice the correct method of using a chain saw. Stress the use of protective clothing and equipment.

Background

Operator's Manual

Keep the operator's manual with the chain saw. If the manual is missing, contact the manufacturer for a replacement. Periodically review the manual for safe operating procedures.



Personal Protective Equipment

Use the proper personal protective equipment (PPE) for the job. Use the following as a guide:

- Clothing should fit well and be free of dangling or ragged edges which can become tangled in the saw. The use of nylon mesh protective leg chaps and/or knee pads can provide increased protection for the legs
- A hard hat protects the head from falling limbs or branches. A properly fitted hat is cool, comfortable and provides protection from head injury.
- A full face shield or safety Goggles/Glasses that have side shields prevent injury from flying wood chips, twigs, and sawdust.
- Protect ears from the high level of noise produced by the saw.
- Safety Boots or shoes with high tops protect ankles in the event of accidental contact with a moving saw blade. Steel toed boots will help protect the feet from falling limbs or logs.
- Lightweight leather gloves protect hands from cuts splinters, and abrasion

Preventive Maintenance

Keep saw in good repair. Consult the operator's manual and check for needed maintenance before each use. The operator's manual can be the best source of information for this procedure.

Sharpen the saw if:

- the chain tends to "walk" sideways while cutting
- the cut shows fine powder instead of chips
- it is necessary to press hard to cut
- smell burnt wood,

Good cutting action and a long chain life, increase with correct chain tension. If too loose, a chain will derail, if too tight a chain will bind.

Proper Lubrication prolongs the life of the saw and increases safety.

Follow these precautions when fueling and starting the chain saw engine.

- Only refuel the engine when it is cool.
- Never smoke when working with a power saw.
- Start by putting one foot on the bracket to the rear of the saw.
- Grip the top handle of the saw firmly with one hand and use the other to pull the starting rope. Never drop start the saw.

Transport a power chain saw in a chain guard or a carrying case. Do not carry the saw in the passenger area of a vehicle. Brace the saw so that it cannot tip. When storing the saw, drain the fuel tank in a safe area, and run the engine at the idle until it stops. Remove the chain and store in oil. Disconnect the spark plug to reduce an accidental starting. Keep out of the reach of children.

Review The Following Points

- Wear close fitting clothing.
- Use a face shields or safety goggles, ear protection, safety boots and gloves.
- Keep equipment in good repair and make adjustments as needed.
- Follow recommendations for refueling and safely starting saws.

True or False Answer Key

1. T, 2. T, 3. F, 4. T, 5. T

Chain Saw Safety Quiz

True or False

Name_____

- | | | |
|--|---|---|
| 1. Transport a power chain saw in a chain guard or a carrying case. | T | F |
| 2. Start a chain saw by putting one foot on the rear of the saw. | T | F |
| 3. Refuel the engine as soon as it runs out of gas. | T | F |
| 4. Correct chain tension results in good cutting action and a long chain life. | T | F |
| 5. A hard hat will protect the head from falling limbs or branches. | T | F |

Training Module: Choosing Spray Nozzles

Objective: To be able to recognize the difference between nozzles, choose the best one for the intended job, and be able to clean nozzles properly and safely.

Trainer's Note: Spray nozzles are important part of reducing spray drift. Choosing the correct nozzle for the job and taking proper care of them are an essential part of spraying safety. Have nozzles at the training session compare the differences and practice cleaning.

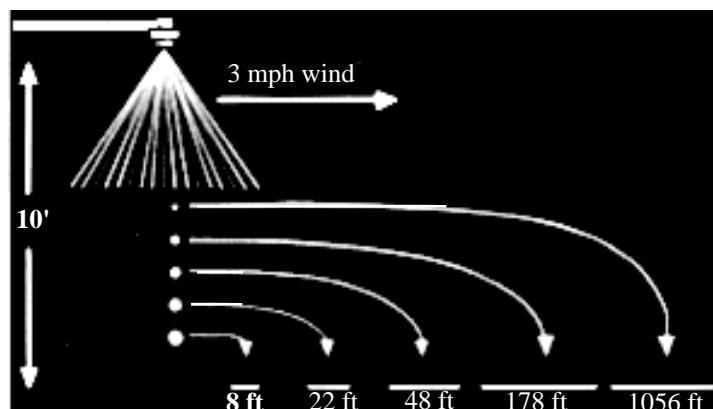
Background

Nozzles regulate the spray flow, droplet size and spray pattern. Proper selection and operation of spray nozzles are important steps in precise application. Choosing the correct nozzle is critical for safe spray application. By using the proper nozzle for the job, less spray will drift to unintended areas. Such as other crops, backyards, or animal pastures.

Flow regulation affects the application rate. Nozzle opening size and spray pressure are key features affecting the flow rate through nozzles. These factors can be varied by selecting a different nozzle size or adjusting the pressure.

Droplet size varies due to pressure, climatic conditions (such as: temperature, humidity, wind speed, and direction) and nozzle size. The size may be affected by the spray angle and the spray pattern shape (nozzle design). In a conventional system, droplet size can be decreased by increasing the pressure at the nozzle. Droplet size can also be decreased by increasing the spray angle of the tip.

Weather has a strong influence on spray drift. Both wind direction and velocity can cause spray to drift away from its intended target. The larger the droplet, the faster it falls toward its target, and the less likely it is to drift. However, high winds can cause large droplets to drift off target. **As shown in the figure, smaller droplets drift longer distances.**



Nozzle Spray Patterns

There are three basic types of nozzle spray patterns: flat-spray, hollow-cone and full-cone patterns. The characteristics of each spray pattern favor certain chemical applications.

Flat-spray nozzles spray droplets from a flat-spray tip, forming a fanshaped pattern as they leave the nozzle opening.

- The edges of the pattern have a lower spray volume, so patterns of adjacent nozzles must overlap to obtain uniform coverage along the spray boom.
- Wider-angle nozzles produce smaller droplets, but they can be spaced farther apart on the spray boom or operated closer to the target.
- Narrow-angle spray tips produce a more penetrating spray and are less likely to become clogged.
- Flat-spray tip characteristics make them ideal for broadcast applications of herbicides when uniformity is critical.

Wide-angle full-cone nozzles produce large droplets that are distributed uniformly in a full-cone pattern.

- The uniform spray pattern is maintained over a pressure range of 10 to 40 psi.
- Droplets are larger than with other tip styles of equal capacity at similar pressures.
- It is good for soil-applied and systemic herbicides.
- Maximum drift control at pressures of 15 to 20 psi is achieved.

Hollow-cone nozzles produce a spray pattern with the liquid concentrated on the outside of a conical pattern.

- The typical spray distribution is saddle-shaped with less liquid in the center of the distribution, tapering off rapidly at the edges.
- It is not well-suited for broadcast applications because proper overlap is difficult to achieve.
- Generally produces the smallest droplets.
- Best used for applying insecticides, fungicides or growth regulators where penetration and coverage are critical.
- Spray drift can be high because of the many small droplets produced at the normal operating pressure of 40 psi and above.

Cleaning Nozzles

- Use water that looks clean enough to drink when cleaning the sprayer. Foreign materials found in the water can wear out nozzles.
- Observe the output pattern of nozzles periodically. Streaks in the pattern indicate that foreign materials are inside the nozzles.
- Remove and clean nozzles, using a soft brush for the tip and screen and strong detergent solution or kerosene.
- Cleaning with a pin, a knife or any other metallic object can completely change the spray pattern capacity of the tip.
- Use a wooden toothpick to unclog nozzle tips.



Spraying Tips to Reduce Drift:

- Follow label recommendations to avoid drift with highly volatile pesticides.
- Use nozzles that produce coarser droplets when applying pesticides on targets that do not require small, uniformly distributed droplets.
- Keep spray volume up, and use nozzles with larger orifices.
- Use nozzles with narrower spray-fan angles.
- Avoid spraying on extremely hot and dry days.
- Do not spray when wind speeds are higher than 5 miles per hour.
- Avoid spraying near sensitive crops that are downwind. Leave a buffer strip of 50 to 100 feet, and spray the strip later when the wind shifts.

Important Note:

It is critical that the proper personal protective equipment (PPE) is worn when working with any type of pesticide, herbicide, or spray. Consult the label for appropriate PPE. (Refer to the modules: Reading Pesticide Labels and Pesticide Protective Equipment).

Review the Following Points

- Nozzles regulate spray flow, droplet size and spray pattern.
- Nozzle opening size and spray pressure are important aspects of the flow rate through the nozzles.
- Droplet size varies due to pressure, climatic conditions and nozzle size.
- There are three basic spray pattern shapes: flat-spray, hollow-cone and full-cone.

True or False Answer Key

1. T, 2. F, 3. T, 4. F, 5. T

Choosing Spray Nozzles Quiz

True or False

Name _____

- | | | |
|--|---|---|
| 1. There are three basic nozzle spray patterns, flat-spray, hollow-cone and full-cone patterns. | T | F |
| 2. Flow regulation has nothing to do with the application rate. | T | F |
| 3. Hollow-cone nozzles can result in high spray drift because of the many small droplets produced. | T | F |
| 4. Nozzles should be cleaned with a regular detergent and a pin or knife. | T | F |
| 5. Streaks in the nozzle's output pattern means that foreign materials are inside the nozzle. | T | F |

Training Module: Chock and Block

Objective: To be able to secure a vehicle or piece of equipment using the proper chock and block method.

Trainer's Note: To demonstrate the chock and block principles, have the training session in the farm shop or in the field. Give employees the opportunity to demonstrate how they would chock/block equipment if they were using it in the field or working on repairs in the shop.

Background

The purpose of the chock is to pin the wheels and hold them stationary. When unhooking farm equipment from a tractor, make sure the tires on the implement have been chocked to prevent the operator or bystanders from being injured if a roll back occurs. The rear most axle should be the one that is chocked. Tires may need to be chocked in both the front and the rear, on some equipment. Operators can be caught between a tractor and the equipment or a piece of equipment and the shop wall because the proper chocking procedures were not followed. It is a simple concept, but many farm employees forget to use this procedure when working with or around equipment. In some cases, workers have been killed or injured because they have failed to follow this procedure.



When loading or unloading bags or pallets from a semitrailer it may be necessary to block freight inside the trailer to prevent the movement. Blocking reduces the chance of a load shift, which can cause a trailer to turn over and damage the cargo or injure a worker. Cargo doesn't have to be round to move, so block all four sides of the cargo separately. Use sound blocking material. Make certain that nails or spikes are long enough and the lumber is thick enough to prevent the cargo from shifting. Other freight should never be used as a block.

When working on equipment don't rely on jacks or hoists to support the equipment. They are made to lift, not to support. The equipment should be blocked to support it while you are working on it.

The principal used in both chocking and blocking is the same: securing to prevent movement.

Tips to Remember:

- Chock wheels at the rear axle.
- Block freight inside the trailer when loading or unloading farm supplies.
- Do not unhook farm equipment that has not been chocked.
- Never put hands, fingers, etc. between equipment and blocks.
- Double-up and alternate the positioning of blocks while building the platform.
- Use larger blocks on the bottom. Make the platform as wide as possible.



Review The Following Points

- Rear axles need to be chocked.
- Do not attempt to unhook farm equipment that has not been chocked.
- Freight should be blocked when loading or unloading a trailer.
- Other freight should not be used as a block. Use proper materials for blocking.
- Keep hands and fingers from in between equipment and blocks.

True or False Answer Key

1. F, 2. T, 3. T, 4. T, 5. T

Agricultural Tailgate Safety Training

Agricultural Safety Program

True or False

Name _____

- | | | |
|--|---|---|
| 1. There is no need to chock farm equipment before it is unhooked from the tractor. | T | F |
| 2. The purpose of the chock is to pin the wheels and hold them stationary. | T | F |
| 3. It is a good safety measure to block cargo inside trailers when loading or unloading. | T | F |
| 4. When chocking a loaded hay wagon, chock the rear axle. | T | F |
| 5. Cargo should be blocked separately. | T | F |

Module Title: Cold Weather Exposure

Objective: To recognize the symptoms and to know the results of overexposure to the cold, and to take precautions to prevent overexposure.

Trainer's Note: There are many times during the cold months of the year that work outside still needs to be done. Discuss with your employees the dangers overexposure to the cold presents, and how to prevent cold weather ailments.

Background

Exposure to cold can lead to serious illness, so it is important to be aware of the temperature and how to protect yourself against it. Cold exposure can occur in weather that is not freezing. Wind, humidity and moisture remove body heat, which can eventually lead to hypothermia. The cold primarily affects the body's extremities. Hands and feet are further away the body core and have less blood flow. However, man can deal with low temperatures much better than high temperatures by just adding clothing.

Cold exposure prevention:

- Wear several layers of loose clothing. Layering provides better insulation. Layers can also be removed if you become too hot.
- Tight clothing reduces blood circulation. Warm blood needs to be circulated to the extremities.
- When choosing clothing, be aware that some clothing may restrict movement resulting in a hazardous situation.
- Boots should be waterproof and insulated.
- By wearing a hat, you will keep your whole body warmer. It reduces the amount of body heat that escapes from your head.
- Make sure to protect the ears, face, hands and feet in extremely cold weather.
- Move into warm locations periodically. Limit the amount of time outside on extremely cold days.
- Carry cold weather gear, such as extra socks, gloves, hats, jacket, blankets, a change of clothes and a thermos of hot liquid.
- Include a thermometer and chemical hot packs in your first aid kit.
- When working, avoid touching cold metal surfaces with bare skin.

Cold Weather Injuries

Frostnip is the freezing of the top layers of skin tissue and is normally reversible. It mostly affects the cheeks, earlobes, fingers, and toes.

Symptoms include:

- Numbness.
- Top layer of skin feeling hard and rubbery, but deeper tissue is soft.
- Skin becomes white and waxy.

Treatment:

- Rewarm the area gently, generally by blowing warm air on it or placing the area against a warm body part.
- The area should not be rubbed as it can damage the effected tissue.

Frostbite is the actual freezing of the tissue and/or body part. Ice crystals form inside the skin that can destroy the tissues, and you could lose skin or part of a finger, toe, or foot, for example. It affects the ears,

nose, fingers and toes most often. Superficial frostbite includes all layers of skin, and deep frostbite can include freezing of muscle and/or bone.

Symptoms include:

- Skin that is white and has a "wooden" feel all the way through.
- Numbness, possible anesthesia.

Treatment:

- Move the person to a warm area. Put affected body parts in warm water (105 - 110 degrees F) until skin becomes flushed. No hotter or additional damage will result.
- After warming, the injured area should be wrapped in sterile gauze, keeping affected fingers and toes separated.
- If you cannot guarantee that the tissue will stay warm, do not rewarm the tissue until it can be kept warm.
- If normal sensations haven't returned within 30 minutes, seek medical attention.

Hypothermia is the general cooling of the body. When the body drops much below the normal temperature of 98.6 degrees Fahrenheit, serious problems can arise. Severe hypothermia can lead to death.

Symptoms of mild hypothermia include:

- Uncontrollable shivering.
- Still able to walk and talk.
- Numbness of hands.
- Unable to complete tasks with hands.

Symptoms of severe hypothermia include:

- Shivering stops.
- Poor muscle coordination, and unable to walk.
- Pulse and respiration rates decrease.
- Irrational/incoherent behavior.

Treatment for mild hypothermia:

- Encourage physical activity to generate muscle heat.
- Give the person hot caffeine-free and alcohol-free drinks.
- Get the person to a warm area and take off any wet clothing.
- Gradually rewarm them by applying hot packs, or water bottles wrapped in hot, wet towels to the groin, head, neck and sides of the chest to help provide a gentle source of heat. Immersing a person in warm water, rewarms them too fast.

Treatment for severe hypothermia:

- Treat a person with severe hypothermia as a medical emergency.
- Let the hospital rewarm the victim. If immediate access to medical facilities is not possible, wrap the person warmly and transport to safety gently. Jostling the person may cause cardiac arrest.
- Remove all wet clothing and place the person in a dry sleeping bag or blankets.
- Once shivering has stopped, the person has lost the ability to generate heat. They need a gentle source of heat, like another human body.
- Apply hot packs to the neck, armpits, side, chest and groin to apply heat. Warm the person's lungs by mouth-to-mouth breathing.
- The extremities should not be rubbed or manipulated.
- Hot drinks are also dangerous as they draw warm blood away from vital organs.

Review the Following Points

- To prevent cold weather ailments dress properly and do not stay out in the extreme cold for extended amounts of time.
- Frostnip is the freezing of the top skin tissue layers, and the affected areas should be rewarmed gently.
- Frostbite is the freezing of all layers of skin, muscles and/or bones. Affected parts should be warmed slowly and seek medical attention.
- Hypothermia is the general cooling of the entire body and can be life threatening.

True or False Answer Key

1. T, 2. T, 3. F, 4. T, 5. T

Cold Weather Exposure Quiz

True or False

Name_____

- | | | |
|--|---|---|
| 1. Several layers of loose clothing should be worn in cold weather. | T | F |
| 2. To avoid cold weather injuries, you should move into warm locations periodically. | T | F |
| 3. Frostnip is the freezing of all layers of skin, muscles and/or bones. | T | F |
| 4. For mild hypothermia, encourage physical activity to generate muscle heat. | T | F |
| 5. The areas affected by cold weather injuries should not be rubbed or manipulated, as this could cause greater damage to the affected area. | T | F |

Training Module: Color Coding

Objective: To understand and develop a color coding system for farm and workplace hazards.

Trainer's Note: A consistent color system, denoting color-hazard relationship alerts employees to safety hazards. Knowing the system increases employee safety. Tour the operation, pointing out the different examples of color coding used and the hazards identified. ALL EMPLOYEES should be familiar with the color coding system. Reassigned workers should learn the color codes in their new area.

Background

Below is the recommended guide for a color coding system. Post a copy of the color coding system in an easy to find spot for quick reference. Use clearly printed labels with colors. **Signs, tags and tickets should follow the same basic colors.**

The Standard Color-Code System:

- RED - Denotes fire safety equipment and safety containers for flammables. Identifies emergency devices (emergency shut-off switches, stop bar, buttons).
- ORANGE - Be aware of machinery or equipment that can cut, crush, shock or cause other injury
- YELLOW - Cautions against physical dangers (slipping, tripping, falling, caught-between and striking-against hazards).
- GREEN - Locates first-aid equipment.
- BLUE - Cautions against the use or movement of equipment being repaired or the starting of equipment.
- MAGENTA AND YELLOW or BLACK AND YELLOW - Warns of radiation hazards.
- BLACK, WHITE OR A COMBINATION - Controls and designates traffic movement, marks aisle, housekeeping areas and similar areas.

Review The Following Points

- All employees should be familiar with the color coding plan used on the farm or in the workplace.
- Post a copy of the color coding system where all employees can see it.
- It is important to follow a color coding system to identify hazards.

True or False Answer Key

1. T, 2. T, 3. F, 4. T, 5. T

Color Coding Quiz

True or False

Name_____

- | | | |
|--|---|---|
| 1. Using a color coding system can identify hazards. | T | F |
| 2. It is important for employees to become familiar with the color coding system used on the operation. | T | F |
| 3. A color coding system can only follow set guidelines. | T | F |
| 4. Lines that carry water, steam, electricity, high pressure, air, gases, and chemicals are the type of lines that need to be color coded. | T | F |
| 5. Clearly printed labels should be used with the color coding program. | T | F |

Training Module: Combine Fires

Objective: To know the causes of combine fires and to be able to take the precautions that are necessary for preventing combine fires.

Trainer's Notes: The prevention of combine fires is especially important at harvest since the crop is ready and the harvest must be timely. Any downtime could result in financial loss and emotional stress. Discuss the importance of following recommended safety procedures to prevent combine fires.

Background

Combine fires may be caused by combustible material being ignited by an electrical short. These shorts are caused by insulation melting, rubbing through and grounding of bare wires or rodent chewing damage.

Fires can also be started by the combination of harvest materials (chaff and leaves) high temperatures, or mixing with oil or fuel. Engine sparks can start stubble or straw fires. Fires are often associated with the cooling system. Dust in these areas should be removed regularly.

To prevent combine fires:

- Use heat-resistant insulation.
- Keep wiring and fuses in proper operating condition and position.
- Properly route and insulate all replacement wires.
- Keep fuel lines in good condition with tight connections.
- Never fill the gasoline supply tank near an open flame, while smoking, or with the engine running.
- Remove excess crop residue from rotating units to prevent fires.
- Put out small stubble fires immediately.
- Wipe up oil and fuel spills as they occur. This prevents chaff and trash from collecting and combining to start a fire.

Review The Following Points

- Check all wiring before each year's harvest.
- Clean all oil spills and gasoline from combine immediately.
- Never fuel the tank when near an open flame or when the engine is running.
- Remove all straw or crop residue that has wrapped around bearings or moving parts.

True or False Answer Key
1. T, 2. T, 3. F, 4. T, 5. T

Combine Fires Quiz

True or False

Name_____

- | | | |
|---|---|---|
| 1. Combine fires are often caused by an electrical short near combustible material. | T | F |
| 2. Never fuel the tank near an open flame or with the engine running. | T | F |
| 3. Wipe oil and fuel spills occasionally to prevent chaff from collecting. | T | F |
| 4. Fires may started from straw or husks wrapping around gears and exhaust pipes. | T | F |
| 5. Stubble fires should be put out immediately. | T | F |

Training Module: Safe Use of Harvesting Equipment with Cutterbars

Objective: To be able to safely work with and unplug cutterbar-equipped farm machinery.

Trainer's Note: Conduct this session in the shop or field. Have harvesting equipment available to demonstrate the proper way to unplug cutters. Review service and maintenance needs. Emphasize that **safety must always be the first priority.**

Background

Cutterbar-equipped harvesting equipment includes sickle cutterbars, rotary disk cutterbars and field combines. The operator should be familiar with the mechanisms and the safety precautions to follow when using harvesting equipment.

When working with a cutterbar:

- Keep hands and feet away from the cutterbar when the machine is running. Shut off the power before unplugging, servicing, or transporting the machine.
- Stand clear of mowers with rotating disks that can throw objects causing serious injury. Do not operate when bystanders are nearby.
- Use the mower safety curtain or cover when operating the cutterbar. Safety curtains prevent objects from being thrown by the rotating disks.
- Tractors with cabs offer additional protection from thrown objects.
- Keep knives and hardware in good condition, thus preventing knives from being thrown from the machine. Consult operator's manual for directions.

To safely unplug the cutterbar or remove trash, follow these steps:

- Stop and disengage the PTO.
- Raise the cutterbar and back up.
- Shut off the engine and with the parking brake engaged shift the transmission into park or neutral.
- Pull the plugged crop in the knives away from the cutterbar.
- Check the cutterbar for broken or damaged components.
- Return safety curtain or cover to their proper operating position.
- Start the engine and engage the PTO at low speed then increase it to rated speed.

Cutterbar knives and rotating disks can severely injure people or animals. Crop residue, rocks, or other debris that are thrown by rotating disks and knives, can cause serious injury to the operator or bystanders. Follow all safety precautions.

Review The Following Points

- Always disengage the PTO before attempting to service any cutterbar.
- Use and maintain all machine shields and covers.
- When pulling crops out of cutterbars, pull away from the cutterbar knives.

True or False Answer Key

1. T, 2. T, 3. F, 4. F, 5. T

Safe Use of Harvesting Equipment with Cutterbars Quiz

True or False

Name_____

- | | | |
|--|---|---|
| 1. Cutterbar knives and rotating disks can severely injury people and animals. | T | F |
| 2. When pulling crops out of cutterbars, always pull away from the knives. | T | F |
| 3. There is no need to disengage the PTO before servicing a cutterbar. | T | F |
| 4. Shields that are lost or broken do not need to be replaced. | T | F |
| 5. It is best to use a tractor with a cab to avoid injury from objects thrown by the cutterbar-equipped machinery. | T | F |

Training Module: Federal Department of Transportation (DOT) Placarding

Objective: To know the importance of DOT Placarding and to follow the guidelines for placarding.

Trainer's Note: If an accident should occur involving a vehicle carrying a hazardous material, there is an imminent danger to the operator, emergency response teams and the surrounding community if these materials spill or catch fire. Rapid identification of these materials by emergency response teams is important.

Background

Ohio farmers use a variety of chemicals to aid in the production of various commodities. When used correctly with adequate personal protection, these chemicals pose little if any threat to the farmer. Similarly, under normal circumstances, agricultural chemicals pose virtually no threat to the surrounding community or the consumers of treated farm products. One potential concern occurs when some of these chemicals are transported on public highways.

To aid emergency response teams, the Federal Department of Transportation (DOT) developed a system for rapid identification of hazardous materials. The system includes: DOT Placarding and proper placement of hazardous material shipping papers. Emergency responders are trained to look for these warning signals. Loads of hazardous materials either not placarded or improperly placarded could put the lives of these individuals and the vehicle operator in jeopardy.

Placarding

Certain specified hazardous materials require that placards, which readily identify the hazard, be placed on four sides of the vehicle transporting materials in quantities that are in excess of one thousand pounds. There are some exceptions that require placarding regardless of the amount. For example: The placarding requirement for Lasso®II in quantities greater than 370 pounds per package is: placards on four sides of the transporting vehicle reading combustible.

Shipping Papers

Shipping documents must accompany the hazardous materials being transported. **Accessibility** of the papers to the emergency crews in an accident situation, is extremely important. The papers should be placed in areas prescribed by DOT:

- Papers should be carried in a separate hazardous materials envelope.
- The papers should be readily visible and within the drivers reach when restrained by a seat belt, or should be kept in a pouch on the driver's door.
- When the driver is not in the vehicle, they should be placed in the door pouch or on the driver's seat.

Liabilities

In the state of Ohio, materials being transported to and from the farm are exempt from Ohio Public Utilities Commission jurisdiction. However, farmers may be covered under federal regulations. In the case of an accident, farmers may be held liable if they have not included shipping papers or properly placarded a load of hazardous material. Contact legal counsel for specifics of your potential liability.

****The table included contains important DOT identification information on 32 of the most commonly used pesticides in Ohio. Contact your agricultural chemical dealer for a copy of the material safety data sheet (MSDS) for verification of the information listed here or if you are unable to locate a particular chemical.**

Review The Following Points

- DOT Placarding and shipping papers are extremely important in the case of an accident when hauling hazardous materials.
- Placards, which readily identify the hazard, should be placed on four sides of the vehicle.
- Shipping documents should be accessible to the driver or the emergency rescuers.
- Loads of hazardous materials either not placarded or improperly placarded could put the lives of emergency responders and the vehicle operator in jeopardy.

True or False Answer Key
1. T, 2. F, 3. T, 4. T, 5. T

Federal Department of Transportation (DOT) Placarding Quiz

True or False

Name _____

- | | | |
|---|---|---|
| 1. Shipping papers should be carried in a separate hazardous materials envelope. | T | F |
| 2. The shipping papers should be kept under the seat, so they are out of the way. | T | F |
| 3. Placards should be placed on four sides of the vehicle transporting materials in quantities that are in excess of one thousand pounds. | T | F |
| 4. Emergency responders are trained to look for DOT placarding and hazardous material shipping papers. | T | F |
| 5. In the case of an accident, farmers may be held liable if they have not included shipping papers or properly placarded a load of hazardous material. | T | F |

Training Module: Dust and Mold

Objective: To be aware of respiratory illnesses associated with organic dust and mold and learn how these illnesses can be prevented.

Trainer's Note: Farmers account for more than 30% of all adults who are disabled by respiratory illness. Most of these farmers are nonsmokers, leaving dust and mold to be the major contributors to their illness. Discuss how to avoid inhaling dust and mold on the farm, especially when working in the silo or grain bins.

Background

Farmer's Lung is a noninfectious allergic disease caused by inhaling dust from moldy hay, straw or grain. This disease occurs when a person's immune system cannot adjust to the invading contaminants. Typical symptoms of exposure are fatigue, chills, shortness of breath, tightness in the chest, headache, irritating cough, and loss of appetite. Organic Dust Toxic Syndrome has similar symptoms, but does not involve the immune system. Bronchitis and asthma are also associated with organic dust exposure.

Mold spores (tiny fungi) attach themselves to airborne dust particles. As the farmer inhales dust particles which may not be extremely hazardous, mold spores, a serious hazard can also be inhaled. Heavy concentrations of mold spores appear as dry, white or gray powder or clouds.

Respiratory symptoms vary depending on the amount and intensity of exposure. After a first reaction, a worker is likely to develop an increased sensitivity to mold exposures, having more severe reactions with fewer exposures. It is possible to develop Chronic Farmer's Lung after one acute attack, but usually it develops slowly, over time after repeated exposure. Contact a doctor if concerns about permanent lung damage arise.

When using respiratory protection, select the appropriate personal protective equipment for the task. The best, most cost-efficient protection is a dust mask. Make sure it fits well. The following precautions can reduce exposure to dust and mold.

- Identify contaminants and hazards in the work environment.
- Minimize the amount and type of contaminants in your work environment.
- Avoid exposure to contaminants, mold spores and dust from decayed grains and forages.
- Limit exposure to all contaminants.
- Operate within a controlled environment whenever possible.
- Use mechanical controls to remove air contaminants.
- Ventilate dusty areas.
- Move work outside whenever possible.
- Avoid dusty work in confined areas.
- Wear respirators, masks or other protective equipment.



Review The Following Points

- Wear a face mask when working with moldy forages and crops.
- Work in a well ventilated area and use exhaust fans when possible.
- Seek medical advice when concerned about exposure.
- Know the warning signs of Farmers Lung.
- Clean mechanical controls (change filters) on a regular schedule.
- Have the face mask fit tested.

True or False Answer Key

1. T, 2. T, 3. T, 4. F, 5. T

Dust and Mold Quiz

True or False

Name_____

- | | | |
|---|---|---|
| 1. Dust and mold are major contributors to respiratory illness among farmers. | T | F |
| 2. Use the appropriate personnel protective equipment for the job. | T | F |
| 3. Have as much ventilation as possible when working with grains and hays. | T | F |
| 4. Farmer's Lung is the only respiratory hazards for farmers. | T | F |
| 5. Farmers account for more than 30% of all adults disabled by respiratory illness. | T | F |

Training Module: Grounding Electricity

Objective: To encourage the safe use of electricity on the job.

Trainer's Note: The combination of voltage, amperage, resistance to the flow of the current and duration of contact makes working with electricity dangerous. Electricity follows an uninterrupted path. If the body becomes part of the path, electricity will pass through it. Even though dry hands and feet offer more resistance to electrical current than do wet hands or feet, the current can be lethal under either condition. This is especially true if the electricity passes through vital organs, such as the heart or lungs.

Background

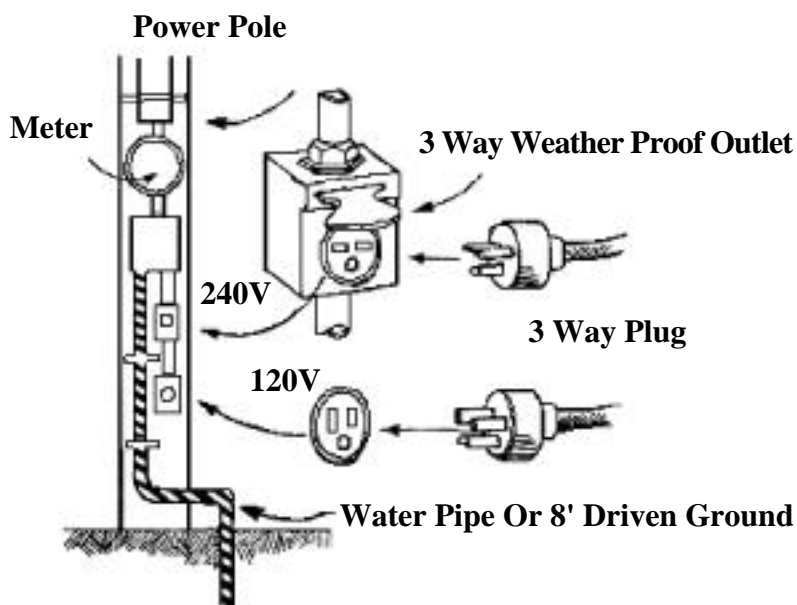
Electricity **always** follows the path of the least resistance. Grounding electricity means that there is an easy path for the current to follow.

For your safety:

- Have only a qualified electrician perform electrical repairs.
- Moisture and electricity **never** mix.
- Unplug tools immediately after use.
- Do not use water to put out an electrical fire.

Note to the Trainer

Using the diagram to the right as a guide, familiarize workers with the difference between 120V and 240 V outlets. As an activity have employees inspect power tools for proper grounding.



Make sure that electrical power tools have a true ground or are double-insulated. For example a drill has a third wire which is the ground wire. This means that the current will follow the ground wire—not the operator. If a drill develops a short, have it repaired before using it again.

Check that portable electric hand tools are properly grounded or use an acceptable double-insulated electric power tool. Usually a three-prong plug in a three-hole outlet provides a proper ground.

Ground-Fault Circuit Interrupter (GFCI)

GFCI was designed specifically for people safety. It can be hard-wired into an electrical box, or it can be portable so it can be plugged into any electrical outlet. Should there be an imbalance of electrical current, due to an electrical short, it would activate the GFCI and prevent an electrocution.

Review The Following Points

- Electricity always follows the path of least resistance.
- Use an effective ground.
- Only electricians should make electrical repairs.

True or False Answer Key

1. T, 2. T, 3. T, 4. T 5. T.

True or False

Name _____

- | | | |
|--|---|---|
| 1. Never use a wire attached to a pipe to act as the ground. | T | F |
| 2. Electricity always follows the path of the least resistance. | T | F |
| 3. If the ground prong is broken off the handtool plug-in end, it
should be taken out of service. | T | F |
| 4. If your body becomes part of the circuit, electricity will pass through it. | T | F |
| 5. If a person comes in contact with electricity, then they may
become electrocuted. | T | F |

Training Module: Electrical Shock

Objective: To familiarize employees with the hazards of working around electricity.

Trainer's Note: Workers should understand the power of electricity. Accidents happen because of ignorance. Teach workers about the components of electricity and how to deal with hazardous situations.

Background

Voltage, current, grounding and resistance are basic electrical terms. Electricity and proper grounding work together for safety.

- Voltage is the force that causes the current to flow.
- Current (amperage) is the amount of electricity that is flowing.
- Resistance is the restriction that slows down or stops the flow of current.
- The greater the resistance the less the amount of electrical flow.
- A ground is a connection between an electrical circuit and the earth.
- Electricity always seeks a ground.

Electrical shock occurs when a part of the body completes a circuit between conductors or a grounding source. Death or injury is caused by the amount of current and increases with voltage. Avoid contact with electrical equipment, especially in damp or wet areas.

The effect of electrical shock depends on the amount of current flow and the path of the current through the victim's body. Some people have survived shocks of several thousand volts, while others have been killed by voltages as low as 12. To prevent electrical shock, which can cause several types of injuries, make sure that your body cannot become part of the electrical flow and a path for the current.

An important phase of electrical safety is knowing how to help an electrical shock victim. Often, particularly in cases of low-voltage shock, victims are unable to pull away from the current source. Stop the flow of electricity in the victim's body. This can be done by disconnecting or de-energize the circuit. **Call for help immediately. Do Not** attempt to remove the victim from the source of the current.

Safety Tips:

- Inspect area for electrical hazards.
- Don't overload circuits.
- Keep electrical equipment away from water and dampness.
- Always check electrical cords for fraying and signs of wear and defects.
- Be sure to lock out/tag out switches when working on equipment.
- In case of an electrical fire, shut off the power and use a fire extinguisher to put out the fire. Never use water to put out an electrical fire; water used on an electrical fire can result in a fatal shock.

Review The Following Points

- Voltage, current and resistance are the basic electrical terms.
- Electrical shock occurs when a part of the body completes a circuit between conductors.
- Electricity and proper grounding work together for safety.

True or False Answer Key
1. T, 2. T, 3. T, 4. T, 5. T

Electrical Shock Quiz

True or False

Name_____

- | | | |
|--|---|---|
| 1. Never use a handtool that has the ground prong broken off of the plug-in end. | T | F |
| 2. Be sure to tag out and lock out equipment switches. | T | F |
| 3. If using a handtool and you feel a tingling sensation, the tool should be taken out of service. | T | F |
| 4. The higher the voltage, the greater the amount of current. | T | F |
| 5. Resistance to electrical flow is almost zero when the skin is wet. | T | F |

Training Module: Personal Eye Protection

Objective: To learn the proper use and care of eye protection.

Trainer's Note: Most eye damage is permanent therefore, eye protection is vital in hazardous situations. There are a variety of protective devices available for the eyes. Show workers examples of eye protective wear and discuss how and when to use each piece. Let workers examine and try on the eye gear.

Background

Shatterproof safety glasses, safety goggles, and face shields offer eye and face protection and yet provide for clear vision. Many eye protectors also have side shields and/or filter lenses. Side shields offer protection from flying objects. Filter lenses provide protection from radiation such as is encountered in welding. Not all flying objects (i.e. high velocity items) will be stopped by wearing eye protection.

As of July 5, 1994, all glasses must meet the minimum standards set forth by the American National Standards Institute. Approved lenses are marked by the manufacturer. "Z87" will be on all other major components.

Prescription glasses wearers should wear protective eye wear that either incorporates the prescription lenses or fits comfortably over prescription glasses without disturbing the fit.



Inspect Protective Eye wear

- The arm pieces on safety glasses should touch the side of the head and curl behind the ears.
- Goggle lenses should be centered and the strap should rest low on the back of the head.
- Flexible elastic headbands must be in good shape.
- Discard pitted or scratched eye wear. Eye wear should be clean and defogged.
- Protective eye wear should fit snugly and be reasonably comfortable under conditions of use.

Keep Protective Eye Wear Clean

- Clean the lenses thoroughly with soap and water.
- Disinfect eye wear that has been exposed to a hazardous substance or worn by someone else.
- Store clean eye wear in a closed, dustproof case.

To protect the eyes, follow these safety tips:

- Wear goggles or a face shield around flying chips or particles, electrical arcing or sparks, chemical gases or vapors, harmful light, liquid chemicals, acids, or caustics, molten metal, dusts, or swinging objects like ropes or chains.
- Turn containers away from the face when opening.
- Remove protective eye wear only after turning off the tool.
- Outdated or scratched prescription lenses can distort vision.
- Replace cracked, pitted or damaged goggles or spectacles.
- Concentrate on task at hand when using power tools.
- Stop and relax the eyes if they are becoming strained.
- Keep sharp or pointed objects away from the face and eyes.
- Be certain that protective eye wear is approved protection against the hazard for which it is being used.
- If filter lenses are used, be certain that the filter lens is of a shade number appropriate for the type of work.
- Check with suppliers for most appropriate types of eye protection for the hazard.

Cover The Following Points

- Tools should be turned off before removing goggles.
- Inspect eye wear before wearing.
- Spectacles must comply with the minimum requirements of the American National Standards Institute.
- Store eye wear in a clean-dustproof case.

True and False Answer Key

1. F, 2. T, 3. F, 4. T, 5. F

Agricultural Tailgate Safety Training

Agricultural Safety Program

True or False

Name _____

- | | | |
|--|---|---|
| 1. Elastic headbands may be worn twisted or knotted. | T | F |
| 2. Tools should be turned off before removing goggles. | T | F |
| 3. Eye protection should be inspected once a year. | T | F |
| 4. Protective eye wear needs to be worn with glasses. | T | F |
| 5. It is acceptable to wear cracked, pitted, or damaged goggles when working in the farm shop. | T | F |

Training Module: Preventing Falls

Objective: To be able to recognize hazards and be able to prevent falls.

Trainer's Note: Falls happen quickly and are unexpected. Discuss problematic areas on the farm or in the workplace. Have one of the employees demonstrate safe ladder practices (Refer to ladder module). Use the following points to discuss how falls can be prevented.

Background

Housekeeping

- Clean up spills immediately.
- Use absorbent material to reduce slipping.
- Dry floors prevent slipping.
- Be alert to potential problems.
- Be aware of the environment, personal safety and the safety of co-workers.

Floor Openings

Floor openings should be guarded by a standard fixed railing on all exposed sides. Consider using a sturdy hinged floor opening cover with removable standard railings on all exposed sides in high traffic areas.

Ladders

- Use an **approved ladder** (usually consisting of two side rails joined by regularly spaced crosspieces called steps, rungs, or cleats, allowing for up and down movement).
- Never overextend the body.
- Place the bottom of the ladder 1/4 of its vertical height from the building.
- The top of the ladder should be 36 inches higher than the level at which the employee is working.
- Keep metal ladders away from electrical wires.

Scaffolding

Scaffolds are temporary, elevated platforms used for supporting workers and/or materials. It is recommended that scaffolds have guardrails and toe boards. Guardrails are a barrier secured to uprights and erected along the exposed sides and ends of platforms to prevent falls.

Stairs

- Walk, don't run, when using stairways.
- Use hand rails. Open, exposed stairs should have a railing. It is recommended that handrails be provided on at least one side of closed stairways preferably on the right side descending.
- Uncluttered stairways with good tread are safest.

General tips to prevent falls:

- You are more likely to slip when rushed, so do not run.
- Avoid Rapid changes of direction.
- Keep floors in good repair.
- Wear shoes with pliable soles and low heels.
- Close open drawers, cabinets, doors or closets after use.

Review The Following Points

- Keeping the work area free of spills prevents slips and falls.
- All open spaces should have a fixed railing.
- Always use an approved ladder.
- Scaffolding must have guardrails and toe boards.

True or False Answer Key

1. T, 2 T, 3. F, 4. T, 5. T.

True or False

Name_____

- | | | |
|--|---|---|
| 1. To prevent slipping, all floors should be kept dry. | T | F |
| 2. Use an approved ladder. | T | F |
| 3. Shop floors and barn steps are safe storage areas. | T | F |
| 4. When spills occur in the shop it is best to use an absorbent material to reduce slipping. | T | F |
| 5. Being alert is one of the surest ways to avoid falls. | T | F |

Training Module: Portable Fire Extinguishers

Objective: To know how to identify the types of fire extinguishers and be able to properly use them.

Trainer's Note: All fires are not the same. Know which fire extinguisher units to use for each type of fire. Point out the placement of all units. Have units available for the training session. Discuss how to read the label, select the proper unit, and how to operate, inspect and maintain it. Let employees practice using an extinguisher.

Background

Fire extinguishers can put out or control a fire until help arrives. Use portable units as first-aid or emergency units on small fires or in the initial stages of the fire. The discharge time on most portable units is only seconds, so plan an escape route. Stay low and avoid breathing the smoke and extinguishing agent. If the fire starts to spread, GET OUT!

Selecting the Proper Fire Extinguisher:

The universal classification system has four designations for fire extinguishers, class A, B, C, D. Based on the size of a fire to be extinguished and the contained extinguishing agent. A 20B rating is recommended for non-expert user. Combination extinguishers are suitable for more than one class of fire and are marked as such.

Class	Symbol	Type of Fuel
A	green triangle	ordinary combustibles
B	red square	flammable liquids
C	blue circle	electrical equipment
D	yellow star	combustible metals



The following chart will help classify fires that may occur on the farm.

Location	Size Range (lbs.)	Suggested Placement
Farm Shop	One Unit, (5-10)	Near exit door
Combine	First Unit, (5-10)	Near cab door
	Second Unit, (5-10)	On opposite side of cab at ground level
Baler	One Unit, (2 ^{1/2})	On structural member
Car or Truck	One Unit, (2 ^{1/2} - 5)	Accessible to driver
Barn or outbuildings	One Unit, (5-10)	In an accessible location

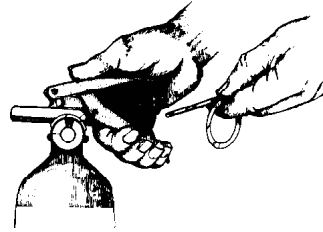
Reading the Label:

The label states the amount of dry or wet chemical contained in the extinguisher. Higher classifications equal greater extinguishing capacity. For example, an extinguisher classified as 4A can extinguish twice as much of a class A fire as an extinguisher classified as 2A. Look for the classification or rating to determine the extinguisher's capacity.

Operating a Fire Extinguisher:

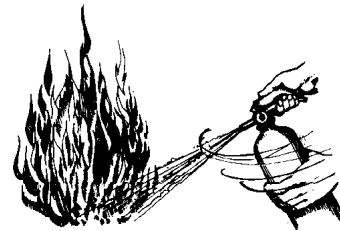
Before you need to use the extinguisher:

- Examine for defects at time of purchase
- Read the operating instructions on the label.
- Make location of extinguisher known.



Follow these Steps To Operate an Extinguisher:

- Remove from the mounting bracket by grasping the unit by the carrying handle and the base and carry it to the fire.
- Pull the locking pin to break the tamper seal. If the unit has a hose, remove the hose from its retaining clip.
- Move the extinguisher as close to the fire as possible. Grasp the hose in one hand and press or squeeze the handle or trigger release with the other. (If the unit is a CO₂ extinguisher, grasping the plastic discharge horn may freeze the hand.) If the unit has no hose, direct the stream of extinguishing agent by moving the extinguisher.
- Use a side to side sweeping motion at the base of the flames starting from the near edge to the rear of the fire and then up the vertical surface.
- Always leave an escape route when fighting a fire.



Inspection and Maintenance of a Fire Extinguisher:

Inspect units monthly to ensure good working condition and adequate protection. Rotate the fire extinguisher to keep chemical from caking. Have units inspected annually by state certified individual.

Inspection Procedure:

- Are all extinguishers in their recommended location?
- Is there enough pressure to discharge the contents of the extinguisher (check the gauge)?
Replace or recharge the unit as needed.
- Is the tamper seal in tact?
- Is the unit damaged?
- Is the hose and nozzle unobstructed?

Review The Following Points

- Be prepared. Read the unit label before you need to use it for a fire.
- Inspect fire extinguishers **monthly** for proper functioning.
- Ensure that all designated locations have a fire extinguisher.

True or False Answer Key

1. F, 2. F, 3. F, 4. F, 5. F

True or False

Name_____

- | | | |
|--|---|---|
| 1. Fire extinguishers can be used to fight a major fire. | T | F |
| 2. To put out a fire, aim at the fire and spray. | T | F |
| 3. Focus on putting out vertical surface fires. | T | F |
| 4. Any fire extinguisher will put out any fire. | T | F |
| 5. Fire extinguisher should be inspected annually. | T | F |

Training Module: Portable Fire Extinguishers

Objective: To know how to identify the types of fire extinguishers and be able to properly use them.

Trainer's Note: All fires are not the same. Know which fire extinguisher units to use for each type of fire. Point out the placement of all units. Have units available for the training session. Discuss how to read the label, select the proper unit, and how to operate, inspect and maintain it. Let employees practice using an extinguisher.

Background

Fire extinguishers can put out or control a fire until help arrives. Use portable units as first-aid or emergency units on small fires or in the initial stages of the fire. The discharge time on most portable units is only seconds, so plan an escape route. Stay low and avoid breathing the smoke and extinguishing agent. If the fire starts to spread, GET OUT!

Selecting the Proper Fire Extinguisher:

The universal classification system has four designations for fire extinguishers, class A, B, C, D. Based on the size of a fire to be extinguished and the contained extinguishing agent. A 20B rating is recommended for non-expert user. Combination extinguishers are suitable for more than one class of fire and are marked as such.

Class	Symbol	Type of Fuel
A	green triangle	ordinary combustibles
B	red square	flammable liquids
C	blue circle	electrical equipment
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Baler	One Unit, (2 ^{1/2})	On structural member
Car or Truck	One Unit, (2 ^{1/2} - 5)	Accessible to driver
Barn or outbuildings	One Unit, (5-10)	In an accessible location

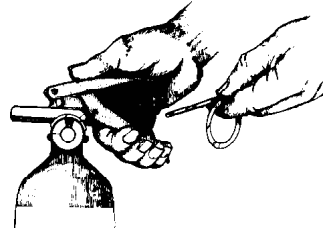
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Operating a Fire Extinguisher:

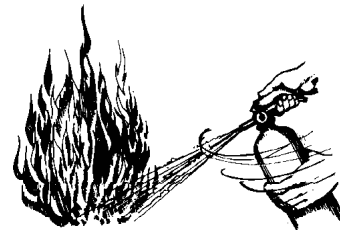
Before you need to use the extinguisher:

- Examine for defects at time of purchase
- Read the operating instructions on the label.
- Make location of extinguisher known.



Follow these Steps To Operate an Extinguisher:

- Remove from the mounting bracket by grasping the unit by the carrying handle and the base and carry it to the fire.
- Pull the locking pin to break the tamper seal. If the unit has a hose, remove the hose from its retaining clip.
- Move the extinguisher as close to the fire as possible. Grasp the hose in one hand and press or squeeze the handle or trigger release with the other. (If the unit is a CO₂ extinguisher, grasping the plastic discharge horn may freeze the hand.) If the unit has no hose, direct the stream of extinguishing agent by moving the extinguisher.
- Use a side to side sweeping motion at the base of the flames starting from the near edge to the rear of the fire and then up the vertical surface.
- Always leave an escape route when fighting a fire.



Inspection and Maintenance of a Fire Extinguisher:

Inspect units monthly to ensure good working condition and adequate protection. Rotate the fire extinguisher to keep chemical from caking. Have units inspected annually by state certified individual.

Inspection Procedure:

- Are all extinguishers in their recommended location?
- Is there enough pressure to discharge the contents of the extinguisher (check the gauge)?
Replace or recharge the unit as needed.
- Is the tamper seal in tact?
- Is the unit damaged?
- Is the hose and nozzle unobstructed?

Review The Following Points

- Be prepared. Read the unit label before you need to use it for a fire.
- Inspect fire extinguishers **monthly** for proper functioning.
- Ensure that all designated locations have a fire extinguisher.

True or False Answer Key

1. F, 2. F, 3. F, 4. F, 5. F

True or False

Name _____

- | | | |
|--|---|---|
| 1. Fire extinguishers can be used to fight a major fire. | T | F |
| 2. To put out a fire, aim at the fire and spray. | T | F |
| 3. Focus on putting out vertical surface fires. | T | F |
| 4. Any fire extinguisher will put out any fire. | T | F |
| 5. Fire extinguisher should be inspected annually. | T | F |

Training Module: Portable Fire Extinguishers

Objective: To know how to identify the types of fire extinguishers and be able to properly use them.

Trainer's Note: All fires are not the same. Know which fire extinguisher units to use for each type of fire. Point out the placement of all units. Have units available for the training session. Discuss how to read the label, select the proper unit, and how to operate, inspect and maintain it. Let employees practice using an extinguisher.

Background

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Selecting the Proper Fire Extinguisher:

The universal classification system has four designations for fire extinguishers, class A, B, C, D. Based on the size of a fire to be extinguished and the contained extinguishing agent. A 20B rating is recommended for non-expert user. Combination extinguishers are suitable for more than one class of fire and are marked as such.

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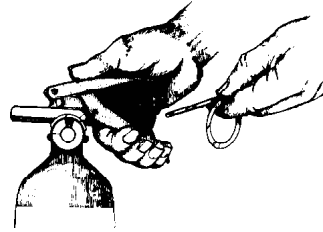
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Operating a Fire Extinguisher:

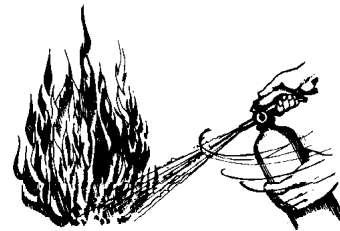
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- Remove from the mounting bracket by grasping the unit by the carrying handle and the base and carry it to the fire.
- Pull the locking pin to break the tamper seal. If the unit has a hose, remove the hose from its retaining clip.
- Move the extinguisher as close to the fire as possible. Grasp the hose in one hand and press or squeeze the handle or trigger release with the other. (If the unit is a CO₂ extinguisher, grasping the plastic discharge horn may freeze the hand.) If the unit has no hose, direct the stream of extinguishing agent by moving the extinguisher.
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- Always leave an escape route when fighting a fire.



Inspection and Maintenance of a Fire Extinguisher:

Inspect units monthly to ensure good working condition and adequate protection. Rotate the fire extinguisher to keep chemical from caking. Have units inspected annually by state certified individual.

Inspection Procedure:

- Are all extinguishers in their recommended location?
- Is there enough pressure to discharge the contents of the extinguisher (check the gauge)?
Replace or recharge the unit as needed.
- Is the tamper seal in tact?
- Is the unit damaged?
- Is the hose and nozzle unobstructed?

Review The Following Points

- Be prepared. Read the unit label before you need to use it for a fire.
- Inspect fire extinguishers **monthly** for proper functioning.
- Ensure that all designated locations have a fire extinguisher.

True or False Answer Key

1. F, 2. F, 3. F, 4. F, 5. F

True or False

Name _____

- | | | |
|--|---|---|
| 1. Fire extinguishers can be used to fight a major fire. | T | F |
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Training Module: Portable Fire Extinguishers

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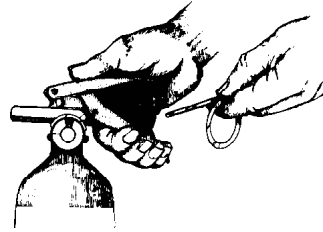
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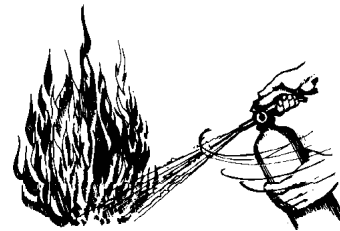
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Inspection and Maintenance of a Fire Extinguisher:

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Inspection Procedure:

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Review The Following Points

- Be prepared. Read the unit label before you need to use it for a fire.
- Inspect fire extinguishers **monthly** for proper functioning.
- Ensure that all designated locations have a fire extinguisher.

True or False Answer Key

1. F, 2. F, 3. F, 4. F, 5. F

True or False

Name _____

- | | | |
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Training Module: Portable Fire Extinguishers

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Selecting the Proper Fire Extinguisher:

The universal classification system has four designations for fire extinguishers, class A, B, C, D. Based on the size of a fire to be extinguished and the contained extinguishing agent. A 20B rating is recommended for non-expert user. Combination extinguishers are suitable for more than one class of fire and are marked as such.

Class	Symbol	Type of Fuel
A	green triangle	ordinary combustibles
B	red square	flammable liquids
C	blue circle	electrical equipment
D	yellow star	combustible metals



The following chart will help classify fires that may occur on the farm.

Location	Size Range (lbs.)	Suggested Placement
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Combine	First Unit, (5-10)	Near cab door
	Second Unit, (5-10)	On opposite side of cab at ground level
Baler	One Unit, (2 ^{1/2})	On structural member
Car or Truck	One Unit, (2 ^{1/2} - 5)	Accessible to driver
Barn or outbuildings	One Unit, (5-10)	In an accessible location

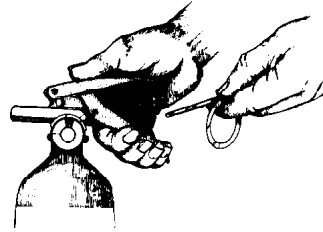
Reading the Label:

The label states the amount of dry or wet chemical contained in the extinguisher. Higher classifications equal greater extinguishing capacity. For example, an extinguisher classified as 4A can extinguish twice as much of a class A fire as an extinguisher classified as 2A. Look for the classification or rating to determine the extinguisher's capacity.

Operating a Fire Extinguisher:

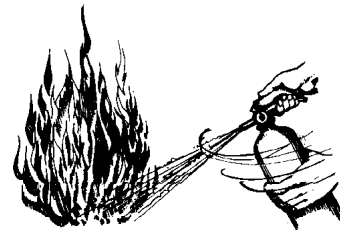
Before you need to use the extinguisher:

- Examine for defects at time of purchase
- Read the operating instructions on the label.
- Make location of extinguisher known.



Follow these Steps To Operate an Extinguisher:

- Remove from the mounting bracket by grasping the unit by the carrying handle and the base and carry it to the fire.
- Pull the locking pin to break the tamper seal. If the unit has a hose, remove the hose from its retaining clip.
- Move the extinguisher as close to the fire as possible. Grasp the hose in one hand and press or squeeze the handle or trigger release with the other. (If the unit is a CO₂ extinguisher, grasping the plastic discharge horn may freeze the hand.) If the unit has no hose, direct the stream of extinguishing agent by moving the extinguisher.
- Use a side to side sweeping motion at the base of the flames starting from the near edge to the rear of the fire and then up the vertical surface.
- Always leave an escape route when fighting a fire.



Inspection and Maintenance of a Fire Extinguisher:

Inspect units monthly to ensure good working condition and adequate protection. Rotate the fire extinguisher to keep chemical from caking. Have units inspected annually by state certified individual.

Inspection Procedure:

- Are all extinguishers in their recommended location?
- Is there enough pressure to discharge the contents of the extinguisher (check the gauge)?
Replace or recharge the unit as needed.
- Is the tamper seal in tact?
- Is the unit damaged?
- Is the hose and nozzle unobstructed?

Review The Following Points

- Be prepared. Read the unit label before you need to use it for a fire.
- Inspect fire extinguishers **monthly** for proper functioning.
- Ensure that all designated locations have a fire extinguisher.

True or False Answer Key

1. F, 2. F, 3. F, 4. F, 5. F

True or False

Name_____

- | | | |
|--|---|---|
| 1. Fire extinguishers can be used to fight a major fire. | T | F |
| 2. To put out a fire, aim at the fire and spray. | T | F |
| 3. Focus on putting out vertical surface fires. | T | F |
| 4. Any fire extinguisher will put out any fire. | T | F |
| 5. Fire extinguisher should be inspected annually. | T | F |

Training Module: Portable Fire Extinguishers

Objective: To know how to identify the types of fire extinguishers and be able to properly use them.

Trainer's Note: All fires are not the same. Know which fire extinguisher units to use for each type of fire. Point out the placement of all units. Have units available for the training session. Discuss how to read the label, select the proper unit, and how to operate, inspect and maintain it. Let employees practice using an extinguisher.

Background

Fire extinguishers can put out or control a fire until help arrives. Use portable units as first-aid or emergency units on small fires or in the initial stages of the fire. The discharge time on most portable units is only seconds, so plan an escape route. Stay low and avoid breathing the smoke and extinguishing agent. If the fire starts to spread, GET OUT!

Selecting the Proper Fire Extinguisher:

The universal classification system has four designations for fire extinguishers, class A, B, C, D. Based on the size of a fire to be extinguished and the contained extinguishing agent. A 20B rating is recommended for non-expert user. Combination extinguishers are suitable for more than one class of fire and are marked as such.

Class	Symbol	Type of Fuel
A	green triangle	ordinary combustibles
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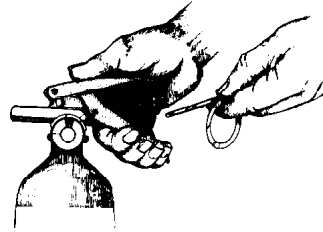
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Operating a Fire Extinguisher:

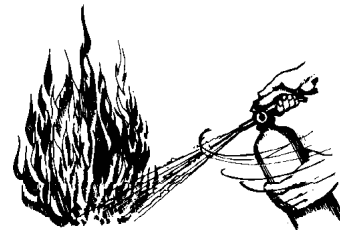
Before you need to use the extinguisher:

- Examine for defects at time of purchase
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Follow these Steps To Operate an Extinguisher:

- Remove from the mounting bracket by grasping the unit by the carrying handle and the base and carry it to the fire.
- Pull the locking pin to break the tamper seal. If the unit has a hose, remove the hose from its retaining clip.
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- Use a side to side sweeping motion at the base of the flames starting from the near edge to the rear of the fire and then up the vertical surface.
- Always leave an escape route when fighting a fire.



Inspection and Maintenance of a Fire Extinguisher:

Inspect units monthly to ensure good working condition and adequate protection. Rotate the fire extinguisher to keep chemical from caking. Have units inspected annually by state certified individual.

Inspection Procedure:

- Are all extinguishers in their recommended location?
- Is there enough pressure to discharge the contents of the extinguisher (check the gauge)?
Replace or recharge the unit as needed.
- Is the tamper seal in tact?
- Is the unit damaged?
- Is the hose and nozzle unobstructed?

Review The Following Points

- Be prepared. Read the unit label before you need to use it for a fire.
- Inspect fire extinguishers **monthly** for proper functioning.
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True or False Answer Key

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True or False

Name _____

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| 4. Any fire extinguisher will put out any fire. | T | F |
| 5. Fire extinguisher should be inspected annually. | T | F |

Training Module: Portable Fire Extinguishers

Objective: To know how to identify the types of fire extinguishers and be able to properly use them.

Trainer's Note: All fires are not the same. Know which fire extinguisher units to use for each type of fire. Point out the placement of all units. Have units available for the training session. Discuss how to read the label, select the proper unit, and how to operate, inspect and maintain it. Let employees practice using an extinguisher.

Background

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Selecting the Proper Fire Extinguisher:

The universal classification system has four designations for fire extinguishers, class A, B, C, D. Based on the size of a fire to be extinguished and the contained extinguishing agent. A 20B rating is recommended for non-expert user. Combination extinguishers are suitable for more than one class of fire and are marked as such.

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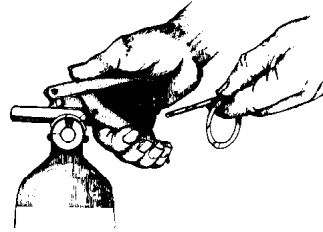
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Operating a Fire Extinguisher:

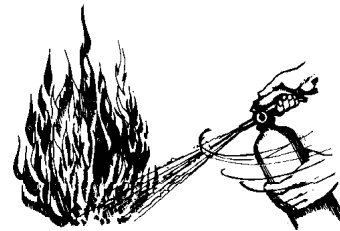
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Inspection and Maintenance of a Fire Extinguisher:

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Inspection Procedure:

- Are all extinguishers in their recommended location?
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Replace or recharge the unit as needed.
- Is the tamper seal in tact?
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Review The Following Points

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Training Module: Portable Fire Extinguishers

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Selecting the Proper Fire Extinguisher:

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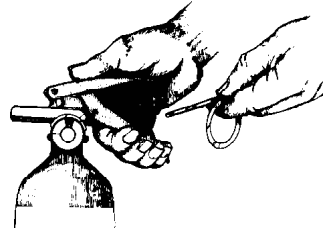
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Operating a Fire Extinguisher:

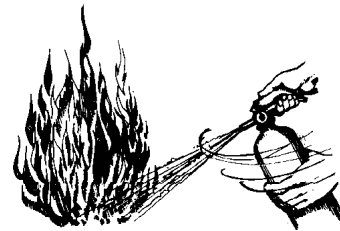
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Review The Following Points

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True or False Answer Key

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Training Module: Portable Fire Extinguishers

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Selecting the Proper Fire Extinguisher:

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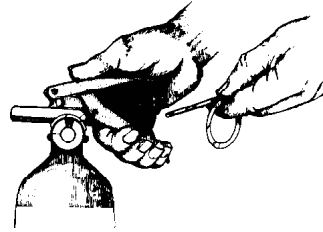
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Operating a Fire Extinguisher:

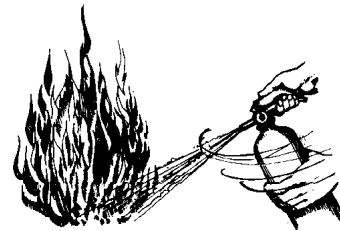
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Review The Following Points

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True or False Answer Key

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Training Module: Portable Fire Extinguishers

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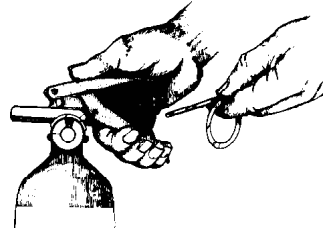
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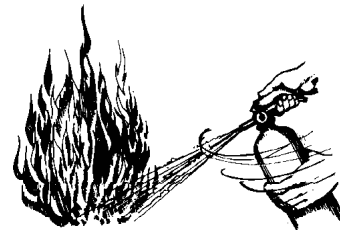
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Review The Following Points

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Training Module: Portable Fire Extinguishers

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D	yellow star	combustible metals



The following chart will help classify fires that may occur on the farm.

Location	Size Range (lbs.)	Suggested Placement
Farm Shop	One Unit, (5-10)	Near exit door
Combine	First Unit, (5-10)	Near cab door
	Second Unit, (5-10)	On opposite side of cab at ground level
Baler	One Unit, (2 ^{1/2})	On structural member
Car or Truck	One Unit, (2 ^{1/2} - 5)	Accessible to driver
Barn or outbuildings	One Unit, (5-10)	In an accessible location

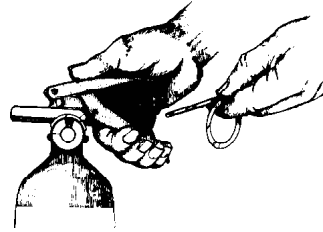
Reading the Label:

The label states the amount of dry or wet chemical contained in the extinguisher. Higher classifications equal greater extinguishing capacity. For example, an extinguisher classified as 4A can extinguish twice as much of a class A fire as an extinguisher classified as 2A. Look for the classification or rating to determine the extinguisher's capacity.

Operating a Fire Extinguisher:

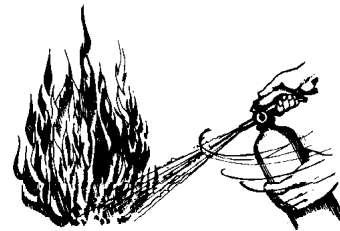
Before you need to use the extinguisher:

- Examine for defects at time of purchase
- Read the operating instructions on the label.
- Make location of extinguisher known.



Follow these Steps To Operate an Extinguisher:

- Remove from the mounting bracket by grasping the unit by the carrying handle and the base and carry it to the fire.
- Pull the locking pin to break the tamper seal. If the unit has a hose, remove the hose from its retaining clip.
- Move the extinguisher as close to the fire as possible. Grasp the hose in one hand and press or squeeze the handle or trigger release with the other. (If the unit is a CO₂ extinguisher, grasping the plastic discharge horn may freeze the hand.) If the unit has no hose, direct the stream of extinguishing agent by moving the extinguisher.
- Use a side to side sweeping motion at the base of the flames starting from the near edge to the rear of the fire and then up the vertical surface.
- Always leave an escape route when fighting a fire.



Inspection and Maintenance of a Fire Extinguisher:

Inspect units monthly to ensure good working condition and adequate protection. Rotate the fire extinguisher to keep chemical from caking. Have units inspected annually by state certified individual.

Inspection Procedure:

- Are all extinguishers in their recommended location?
- Is there enough pressure to discharge the contents of the extinguisher (check the gauge)?
Replace or recharge the unit as needed.
- Is the tamper seal in tact?
- Is the unit damaged?
- Is the hose and nozzle unobstructed?

Review The Following Points

- Be prepared. Read the unit label before you need to use it for a fire.
- Inspect fire extinguishers **monthly** for proper functioning.
- Ensure that all designated locations have a fire extinguisher.

True or False Answer Key

1. F, 2. F, 3. F, 4. F, 5. F

True or False

Name_____

- | | | |
|--|---|---|
| 1. Fire extinguishers can be used to fight a major fire. | T | F |
| 2. To put out a fire, aim at the fire and spray. | T | F |
| 3. Focus on putting out vertical surface fires. | T | F |
| 4. Any fire extinguisher will put out any fire. | T | F |
| 5. Fire extinguisher should be inspected annually. | T | F |

Training Module: Portable Fire Extinguishers

Objective: To know how to identify the types of fire extinguishers and be able to properly use them.

Trainer's Note: All fires are not the same. Know which fire extinguisher units to use for each type of fire. Point out the placement of all units. Have units available for the training session. Discuss how to read the label, select the proper unit, and how to operate, inspect and maintain it. Let employees practice using an extinguisher.

Background

Fire extinguishers can put out or control a fire until help arrives. Use portable units as first-aid or emergency units on small fires or in the initial stages of the fire. The discharge time on most portable units is only seconds, so plan an escape route. Stay low and avoid breathing the smoke and extinguishing agent. If the fire starts to spread, GET OUT!

Selecting the Proper Fire Extinguisher:

The universal classification system has four designations for fire extinguishers, class A, B, C, D. Based on the size of a fire to be extinguished and the contained extinguishing agent. A 20B rating is recommended for non-expert user. Combination extinguishers are suitable for more than one class of fire and are marked as such.

Class	Symbol	Type of Fuel
A	green triangle	ordinary combustibles
B	red square	flammable liquids
C	blue circle	electrical equipment
D	yellow star	combustible metals



The following chart will help classify fires that may occur on the farm.

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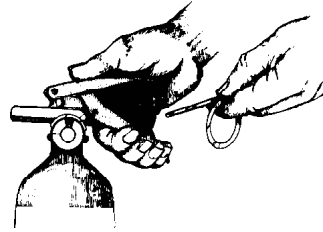
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Operating a Fire Extinguisher:

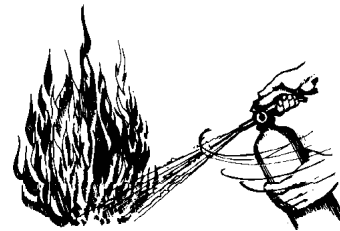
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- Use a side to side sweeping motion at the base of the flames starting from the near edge to the rear of the fire and then up the vertical surface.
- Always leave an escape route when fighting a fire.



Inspection and Maintenance of a Fire Extinguisher:

Inspect units monthly to ensure good working condition and adequate protection. Rotate the fire extinguisher to keep chemical from caking. Have units inspected annually by state certified individual.

Inspection Procedure:

- Are all extinguishers in their recommended location?
- Is there enough pressure to discharge the contents of the extinguisher (check the gauge)?
Replace or recharge the unit as needed.
- Is the tamper seal in tact?
- Is the unit damaged?
- Is the hose and nozzle unobstructed?

Review The Following Points

- Be prepared. Read the unit label before you need to use it for a fire.
- Inspect fire extinguishers **monthly** for proper functioning.
- Ensure that all designated locations have a fire extinguisher.

True or False Answer Key

1. F, 2. F, 3. F, 4. F, 5. F

True or False

Name_____

- | | | |
|--|---|---|
| 1. Fire extinguishers can be used to fight a major fire. | T | F |
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| 3. Focus on putting out vertical surface fires. | T | F |
| 4. Any fire extinguisher will put out any fire. | T | F |
| 5. Fire extinguisher should be inspected annually. | T | F |

Training Module: Portable Fire Extinguishers

Objective: To know how to identify the types of fire extinguishers and be able to properly use them.

Trainer's Note: All fires are not the same. Know which fire extinguisher units to use for each type of fire. Point out the placement of all units. Have units available for the training session. Discuss how to read the label, select the proper unit, and how to operate, inspect and maintain it. Let employees practice using an extinguisher.

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Selecting the Proper Fire Extinguisher:

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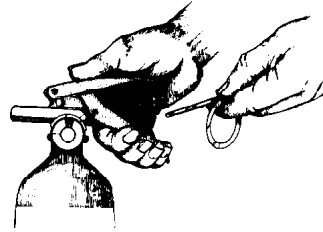
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Operating a Fire Extinguisher:

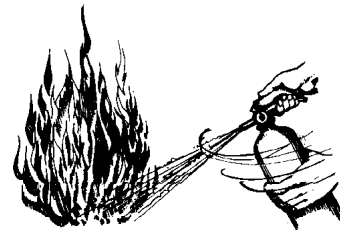
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Follow these Steps To Operate an Extinguisher:

- Remove from the mounting bracket by grasping the unit by the carrying handle and the base and carry it to the fire.
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- Always leave an escape route when fighting a fire.



Inspection and Maintenance of a Fire Extinguisher:

Inspect units monthly to ensure good working condition and adequate protection. Rotate the fire extinguisher to keep chemical from caking. Have units inspected annually by state certified individual.

Inspection Procedure:

- Are all extinguishers in their recommended location?
- Is there enough pressure to discharge the contents of the extinguisher (check the gauge)?
Replace or recharge the unit as needed.
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Review The Following Points

- Be prepared. Read the unit label before you need to use it for a fire.
- Inspect fire extinguishers **monthly** for proper functioning.
- Ensure that all designated locations have a fire extinguisher.

True or False Answer Key

1. F, 2. F, 3. F, 4. F, 5. F

True or False

Name_____

- | | | |
|--|---|---|
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| 4. Any fire extinguisher will put out any fire. | T | F |
| 5. Fire extinguisher should be inspected annually. | T | F |

Training Module: First Aid Kits


Objective: To gain familiarity with a First Aid kit.

Trainer's Note: Review location and contents of the kit prior to session. Check for outdated and/or missing items. Acquaint employees with the location and contents of the kit. Ask employees to suggest additional kit items. Invite a health care professional to participate in this session

Background

Knowing how and what types of first aid to use can prevent a more serious injury. Keep a Red Cross First Aid Manual with the First Aid Kit.

The Red Cross suggests that the kit include:

- Poison First Aid Kit with syrup of Ipecac and charcoal
 - Sterile first aid dressings in sealed envelope (2"x2" for small wounds, 4"x4" for larger wounds and for compress to stop bleeding)
 - Tongue blades
 - Bandage scissors
 - Tweezers
 - Eye wash solution
 - Thermometer
 - Safety pins
 - Ace bandage
 - "Band-aids"
 - Roller bandage 1"x 5 yds. (for finger)
 - Roller bandage 2"x 5 yds. to hold dressings in place
 - Adhesive tape
 - Triangular bandages for a sling or as a covering over a larger dressing
 - Cotton balls for cleaning wounds or applying medication
 - Splints 1/4" thick, 1/2" wide, 12-15" long for splinting broken arms and legs
 - 70 percent isopropyl alcohol and tincture green soap in a covered container for cleaning
 - Ice packs (chemical ice bags) to use to reduce swelling
 - Insect bite kit
 - Several pairs of disposable gloves
 - Waterless hand wash
- 



There are many types of first aid kits available. Keep and maintain an appropriate kit on each major piece of farm equipment, truck, auto and in the barn, shop, and the home.

The Red Cross suggests that workers be certified in emergency cardiopulmonary resuscitation (CPR), the method used to restore the heartbeat and breathing. The administration of CPR may save the life of someone who has been injured or suffers a serious illness. A non-trained individual who gives CPR or first aid may cause harm.

Having an emergency plan in place saves times during an accident. Plan for every farm location, including the home, machinery sheds, barns and field. Know and practice what to do in case of an emergency.

If a serious accident occurs:

- Stay calm and try to calm the victim.
- Shout for help and tell a specific person to call 911 (Emergency Medical Service (EMS)).
- Evaluate the victim's condition and administer first aid or CPR as needed. (Only trained individuals should administer CPR/First Aid). Continue treatment until relieved by the EMS personnel.
- Do not move the victim except to protect victim from further injury.
- Remain with the victim.
- Conduct a quick rescue without risking personal safety.

When calling 911, give the dispatcher the following information and remain on the phone until information is confirmed and the dispatcher says to hang up.

- Location of and directions to the emergency.
- Type of emergency.
- Number of victims.
- Location phone number.
- Treatment given the victim(s).

Review The Following Points

- Have a complete First Aid kit on all major implements and farm facilities.
- Learn First Aid and CPR.
- Know the emergency medical plan and keep it current.
- Know the 911 number and accident information.

True or False Answer Key

1. F, 2. T, 3. T, 4. T, 5. T

First Aid Kits Quiz

True or False

Name_____

- | | | |
|---|---|---|
| 1. Anyone can give proper First Aid in an emergency. | T | F |
| 2. Knowing CPR can save precious seconds and may mean the difference between life or death. | T | F |
| 3. Every farm should have an emergency accident plan. | T | F |
| 4. Keep a Red Cross First Aid manual with each first aid kit. | T | F |
| 5. CPR can save lives. | T | F |

Training Module: First on the Scene

Objective: To enhance crisis intervention skills.

Trainers Note: The awareness of farm hazards is greater than the awareness of rescue or first aid procedures. Intervention should never endanger the rescuer, bystanders or put the victim in graver danger. Post emergency telephone numbers near all phones. A local volunteer fire department or emergency rescue squad member would be an ideal trainer.

Background

Unlike automobile accidents farm rescues are more difficult due to the ruggedness of the farm equipment and poor accessibility to the scene. Standard rescue equipment, such as hydraulic rescue tools and metal-cutting saws, easily removes automobile pieces but may not work on more solidly built agricultural machinery.

When first on the scene:

- **Designate a leader**-A worker who has had first aid training or the senior worker should assume leadership. This person should direct the rescue until the emergency squad arrives and should update the squad on treatment administered.
- **Assign a specific person to call for help**-The ambulance dispatcher will need to know location and condition of field (muddy, steep, rough), type of equipment involved in the accident, number of victims and the extent of their injuries.
- **Assess the rescue situation**-Evaluate the situation and develop an escape plan. Stabilize equipment to minimize the chance of collapse or further injury. Knows the limitations of the helpers and equipment.
- **Establish a hazard zone**-This allows the rescuers room to work at freeing the victim. Only the rescuers should be in the area. This area may contain hazards such as fire, toxic or flammable gases and structural damage.
- **Provide emergency first aid**-Restore breathing and circulation if necessary. If bleeding, apply pressure to related pressure points. Administer any additional first aid treatment.
- **Stay calm**- Calm the victim by keeping one rescuer near the victims at all times.
- **If amputation occurs**- Locate the appendage and wrap it in a moist towel. Keep it on ice, but do not let it freeze. If the appendage is in pieces, send each piece to the hospital as it is found.

Review The Following Points

- Appoint a worker to lead until the emergency squad arrives.
- Call for emergency help as quickly as possible.
- Assess the situation and start first aid.
- Establish a hazard zone.
- Locate any appendage and transfer to the care unit.

True or False Answer Key

1. T, 2. T, 3. T, 4. T, 5. T

First on the Scene Quiz

True or False

Name _____

- | | | |
|---|---|---|
| 1. Someone should take the leadership of the rescue activity as soon as possible. | T | F |
| 2. If additional help is needed, do not hesitate to call. | T | F |
| 3. After locating a missing appendage wrap it in a moist towel and place it on ice. | T | F |
| 4. Plan the rescue and then take action. | T | F |
| 5. One rescuer should remain with the victim at all times. | T | F |

Training Module: Safe Use Of Flammable Liquids

Objective: To be able to use flammable liquids in a safe manner.

Trainer's Note: Review the following information with workers. Stress the importance of keeping flammables away from any possible sparking. Encourage workers to discuss situations where sparking flammables was a problem.

Background

Safe Practices to Follow When Using Flammable Liquids:

Flammables should be stored in a self-closing safety can. Storing flammables in open containers can cause the liquid to vaporize and create an ignitable mixture. This could result in an explosion, if a lit match or spark is present.

Only store gasoline in a red container. Remember it will ignite when coming into contact with a sufficiently hot surface. This is why it is important to allow the engine to cool before refueling.

Storing Liquid-Soaked Rags

Store liquid-soaked rags in a metal container with a tight-fitting lid. This keeps oxygen away from the rags, reducing the possibility of a fire. When exposed to air, some rags can produce enough heat to ignite spontaneously. Keep all flammables in a specific storage cabinet, well identified with warning signs.

Fire Control

Control all ignition sources. Ignition sources around flammables increase the likelihood of a fire. Enforce the “**no smoking**” rule around flammable liquids. Keep sparking tools away from flammables. Use explosion-proof electrical equipment.

Ground and bond all bulk containers during dispensing operations. It is important to ground and bond bulk containers because some materials can be ignited by the minimal energy in a static spark. There must be a conductive connection between the receiving container, dispensing container and a specially installed ground pipe. When drawing liquids from a bulk tank to a portable use container, the container should have a solid connection between the tank or barrel and the container. Using self-closing valves with the dispensing containers limits spills.

Clean Up

Clean up and dispose of spilled material according to local, state and federal regulations.

Identification

Identify flammable liquid containers by a red diamond shape label with black lettering.

Review The Following Points

- Flammables should not be stored in open or unapproved containers.
- Store flammables in a special storage cabinet that is well identified with warning signs for everyone to see.
- Control all ignition sources around flammable liquids.
- Never smoke around flammable liquids.
- Ground and bond bulk containers because some materials can be ignited by the minimal energy in a static spark.

True or False Answer Key

1. F, 2. T, 3. F, 4. T, 5. T

Safe Use Of Flammable Liquids Quiz

True or False

Name_____

- | | | |
|--|---|---|
| 1. Smoking is permitted near flammables. | T | F |
| 2. Keep all sparking tools away from flammables. | T | F |
| 3. Flammable liquids should be identified by a black diamond shape symbol with green lettering. | T | F |
| 4. It is important to know and understand the concepts on flammable liquids. | T | F |
| 5. When rags or other materials are used with a flammable liquid, they should be stored in metal containers with tight-fitting lids. | T | F |

Module Title: Gas Welding Safety

Objective: To be able to weld using safe practices and to know what personal protective equipment should be used.

Trainer's Note: It is important to weld using safety precautions. There are many dangers related to welding. During the training session have personal protective equipment available to show and for employees to try on.

Background

Most farms and small shops have some type of equipment for welding and cutting metals. Acetylene is the most commonly used fuel gas. Acetylene is very flammable and hazardous and can ignite at a wide range of concentrations. Oxygen won't burn or explode, but it helps other objects burn at greater rates. Gases are stored in cylinders which can rupture. A cylinder containing compressed gas can shoot through the air like a rocket if its valve is damaged or broken.

Storage and Handling

- Keep cylinders away from physical damage, heat, and tampering.
- Securely chain equipment to prevent falling.
- Store away from flammable and combustible materials.
- Store extra gas and oxygen cylinders separately.
- Store in an upright position.
- Close cylinder valves before moving.
- Protective caps or regulators should be kept in place.
- Roll cylinders on bottom edges to move—**Do not drag**.
- Allow very little movement when transporting.

General Gas Welding Safety Tips

- Inspect equipment for leaks at all connections using approved leak-test solution.
- Inspect hoses for leaks and worn places.
- Replace bad hoses.
- Protect hoses and cylinders from sparks, flames and hot metal.
- Use a flint lighter to ignite the flame.
- Stand to the side (away from the regulators) when opening cylinder valves.
- Open cylinder valves very slowly to keep sudden high pressures from exploding the regulators.
- Only open the acetylene cylinder valve 1/4 – 3/4 turn; leave wrench in place so the cylinder can be quickly closed in an emergency.
- Open and light acetylene first, then open and adjust oxygen to a neutral flame.
- Follow the manufacturer's recommendations for shutting off the torch. If the guidelines are not readily available, the common accepted practice is to close the oxygen valve first.
- When finished, close cylinder valves, bleed the lines to take pressure off regulators, neatly coil hoses and replace equipment.
- Have a fire extinguisher easily accessible at the welding site.

Personal Protective Equipment:

- Infrared radiation is a cause of retinal burning and cataracts. Protect your eyes with safety glasses.
- Protect your body from welding spatter and arc flash with protective clothing. Such as:
 - Woolen clothing
 - Flame-proof apron
 - Gloves
 - Properly fitted clothing that is not frayed or worn.
 - Shirts should have long sleeves.
 - Trousers should be straight-legged and covering shoes when arc welding.
 - Fire resistant cape or shoulder covers are needed for overhead work.
- Check protective clothing equipment before each use to make sure it is in good condition.
- Keep clothes free of grease and oil.

Proper Ventilation

Be sure there is adequate ventilation available when welding in confined areas or where there are barriers to air movement. Natural drafts, fans and positioning of the head can help keep fumes away from the welder's face.

Ventilation is sufficient if:

- The room or welding area contains at least 10,000 cubic feet for each welder.
- The ceiling height is not less than 16 feet.
- Cross ventilation is not blocked by partitions, equipment, or other structural barriers.
- Welding is not done in a confined space.

**If these space requirements are not met then the area needs to be equipped with mechanical ventilating equipment that exhausts at least 2000 cfm of air for each welder, except where local exhaust hoods or booths, or air-line respirators are used.

Review the Following Points

- Proper personal protective equipment is important.
- Acetylene is very flammable.
- Inspect all equipment before welding.
- If ventilation is not sufficient, then the welding area should be equipped with mechanical ventilating equipment.
- Always have a fire extinguisher ready for immediate use.

True or False Answer Key

1. T, 2. T, 3. F, 4. F, 5. T

True or False

Name _____

- | | | |
|--|---|---|
| 1. The acetylene torch valve should be closed first when shutting off the torch. | T | F |
| 2. When moving cylinders they should be rolled on their bottom edges. | T | F |
| 3. Oxygen is very flammable and will explode. | T | F |
| 4. Extra gas and oxygen cylinders may be stored together. | T | F |
| 5. Personal protective equipment needs to be worn when welding. | T | F |

Training Module: Protective Gloves

Objective: To be able to choose what type of gloves are needed for the job, if any at all.

Trainer's Note: Many jobs on the farm or ranch require the use of gloves. Display various type of gloves during the session and discuss their proper use. It is as important to discuss when NOT to use gloves as it is to discuss the use of gloves.

Background

Gloves can protect hands and forearms from cuts, abrasions, burns, puncture wounds, skin contact with hazardous chemicals and some electrical shocks.

Not every job requires gloves. In some cases it may be dangerous to wear gloves. Never wear gloves while working with or around moving machinery, such as mills or lathes. If the glove got caught in the machinery it could pull the hand and arm in, causing amputation.



Choosing Protective Gloves: Gloves are made of a variety of materials. It is important to know what kind of protection each glove type can offer. Using the wrong glove can cause injury. Cotton gloves could absorb dangerous chemical causing the skin to burn. Using the correct glove reduces hazards in the work place. It is the employer's responsibility to determine how long gloves can be worn and if they are reusable. However, the employee should inform the employer if they that feel their gloves should be replaced.

TYPE OF GLOVE	LEVEL OF PROTECTION
Metal Mesh & Kevlar Knit	Prevents cuts from sharp objects.
Leather	Protects against rough objects, chips, sparks, and moderate heat.
Cotton Fabric	Protects against dirt, splinters, and abrasions. Helps grip slippery objects. Do not use when working with rough, sharp, or heavy materials.
Rubber, Neoprene, Vinyl	Protects from chemicals. Check chemical package for specific instructions.

Review The Following Points

- Choose the right glove for the job.
- In some situations using gloves can be dangerous.
- Check with specific recommendations for the type of glove to use when working with chemicals.

True or False Answer Key
1. T, 2. T, 3. T, 4. T, 5. T

Protective Gloves Quiz

True or False

Name _____

- | | | |
|--|---|---|
| 1. Use a neoprene, vinyl or rubber gloves when working with chemicals. | T | F |
| 2. Leather gloves protect hands from rough objects, chips, sparks and moderate heat. | T | F |
| 3. Metal mesh or Kevlar knit gloves protect against cuts from knives or other sharp objects. | T | F |
| 4. Not every job requires the use of gloves. | T | F |
| 5. Cotton fabric gloves protect against dirt, splinters, slippery objects or abrasions. | T | F |

Training Module: Protecting Hands and Fingers

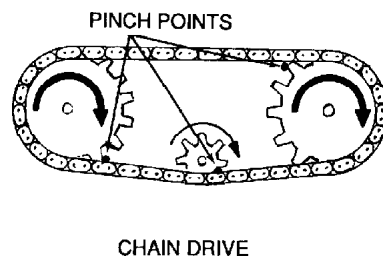
Objective: To understand the need to protect fingers and hands, and how to prevent injuries.

Trainer's Note: Use the guide below to bring attention to danger zones. Review a list of hand and finger safety precautions. Use examples to illustrate points. Workers may offer some other examples of accidents that lead to hand or finger injury.

Background

Protecting Hands and Fingers Guide:

- Identify the pinch points on mechanically moved loads, lowered loads and metal drums. *Pinch points are created when two objects move together, with at least one of them moving in a circle.*
- Know when to wear gloves. *Gloves should be worn when exposed to hazards that cause cuts, scrapes and chemical burns or injuries. Do not wear gloves around reciprocating or rotating machine parts.*
- Allow rotating parts to come to a stop before working on them.
- Use a tapered punch or other appropriate tool to align the holes in parts.
- Rings should not be worn when operating or repairing machinery.
- Remove fuses with fuse removers, not fingers.
- Do not test the temperatures of gases, liquids, or solids with hands. Reflex damage can occur immediately.
- Keep grinder tool rests adjusted to 1/8 inch gap or less.
- Handle sharp or pointed tools (hatchets, chisels, punches, awls, knives, pitch forks and machine blades) carefully.
- Perform maintenance only when tools or machinery are not in operation.
- If guards are removed to perform maintenance, replace them immediately after servicing.



It is hazardous to use fingers to retrieve objects from saw blades, knife blades, or parts moving together, such as a punch press, rotating parts of drill bits and reciprocating parts of in-running rolls.

Review The Following Points

- Avoid using fingers to retrieve objects near saw blades, knife blades, parts moving together, rotating parts and reciprocating parts.
- Use guards on moving machinery parts.
- Do not use hands or fingers to test temperatures.
- Handle sharp or pointed tools carefully.
- Watch for pinch points.
- The power transmission, moving parts, and the point of operation on all machinery or tools should be guarded.

True or False Answer Key
1. T, 2. T, 3. T, 4. T, 5. F

Protecting Hands and Fingers Quiz

True or False

Name _____

- | | | |
|---|---|---|
| 1. Pinch points are created when two objects move together, with at least one of them moving in a circle. | T | F |
| 2. Replace all guards immediately after service. | T | F |
| 3. Never use hands or fingers to test temperatures. | T | F |
| 4. Do not wear gloves around reciprocating or rotating machine parts. | T | F |
| 5. Align holes with fingers. | T | F |

Training Module: Hand Signals for Agricultural Safety

Objective: To know and use the correct hand signals when working under noisy conditions.

Trainer's Note: There are eleven uniform hand signals adopted by the American Society of Agricultural Engineers for agricultural safety. To help everyone communicate in the same "language," the eleven signals should be learned and used by the farm family, employees and farm visitors. The signals should be demonstrated during the tailgate presentation and practiced by the employees. It may be a good idea to post the hand signals in a place where employees will see them, for example, in the coffee room or near a water fountain. This will allow employees to become familiar with the signals on a daily basis.





Background








Hand signals are an ideal communication tool when working around noisy farm machinery. Many times the noise is so loud it is impossible to hear even if everyone is yelling. The hand signals provide a way to communicate the needed information effectively. These signals should be learned and used by the farm family, employees and farm visitors such as feed truck drivers, chemical salespeople and Extension agents.

Use the signals to:

- save time
- prevent accidents
- reduce severity of injuries
- lower the risk of accidental death.

To help everyone communicate in the same "language," the American Society of Agricultural Engineers (ASAE) has adopted 11 uniform hand signals for agricultural safety. The following are the hand signals you should demonstrate to your employees during the tailgate safety training, and then have your employees practice the signals. Beside each hand signal there are detailed instructions for performing the signal. While you are demonstrating the hand signal, you may find it easier to have someone else discuss how to perform the signal.

 <p>COME TO ME</p>	 <p>MOVE TOWARD ME</p>	 <p>THIS FAR TO GO</p>	 <p>MOVE OUT</p>
<p>Raise the arm vertically overhead, palm to the front, and rotate in large horizontal circles.</p>	<p>Point toward person(s), vehicle(s), unit(s); beckon by holding the arm horizontally to the front, palm up, and motioning toward the body.</p>	<p>Place palms at ear level, facing head, and move laterally inward to indicate remaining distance to go</p>	<p>Face the desired direction of movement; hold the arm extended to the rear; then swing it overhead and forward in the direction of desired movement until it is horizontal palm down.</p>

	LOWER EQUIPMENT Make circular motion with either hand pointing to the ground.		RAISE EQUIPMENT Make circular motion with either hand at head level.
	SLOW DOWN Extend the arm horizontally sideward, palm down, and wave arm downward 45 degree minimum several times, keeping the arm straight. Do not move arm above horizontal.		START ENGINE Simulate cranking of vehicles by moving arm in circular motion at waist level.
	STOP Raise the hand upward to the full extent of the arm, palm to the front. Hold that position until the signal is understood.		SPEED UP Raise the hand to the shoulder, fist closed; thrust the fist upward to the full extent of the arm and back to the shoulder rapidly several times.
	STOP ENGINE Draw either hand, palm down across the neck in a "throat-cutting motion."	Hand Signals for Agricultural Safety	

Review the Following Points

- Hand signals are an ideal communication tool for noisy situations.
- There are 11 ASAE uniform agricultural hand signals.
- Standard signals help save time and prevent accidents.
- Using hand signals could save a life.
- Review each signal with employees.

True or False Answer Key

1. T, 2. F, 3. T, 4. T, 5. T

True or False

Name _____

- | | | |
|--|---|---|
| 1. To signal to stop, one should raise their hand upward to the full extent of the arm, palm to the front. | T | F |
| 2. Only the farm owner needs to know the hand signals. | T | F |
| 3. There are 11 uniform ASAE hand signals. | T | F |
| 4. Using the standard hand signals can save time and prevent accidents. | T | F |
| 5. To indicate that the equipment needs to be lowered, make a circular motion with either hand pointing to the ground. | T | F |

Training Module: Safe Use of Hand Held Tools

Objective: To be able to use hand held tools in a safe manner.

Trainer's Note: To avoid accidents in the work place resulting from the incorrect use of hand tools, it will be important that the employee understands the proper use of these items. Encourage employees to discuss their concerns about the dangers involved with using hand tools. During the session, have each employee practice the correct methods for operating hand tools. It is important that everyone has an opportunity to use the tools in the practice session. Have exercises prepared in advance that will allow each employee to use the hand tools in the shop area or on farm equipment. Demonstrate the proper care and storage of the tools. Use the list of tools below as a guide for the session and modify for other tools used within the operation.

Background

The following is a list of major hand held tools that are common to most farm shops:

Wrenches: When placing an adjustable wrench on a nut, make sure the adjustable jaw faces the operator; then pull the wrench toward the operator. Use socket wrenches for hard-to-reach places. Never use a pipe wrench on nuts because the corners of the nuts or bolts are likely to break the teeth of the wrench jaws, making it unsafe for future use. Manufacturers make wrenches of different sizes. So the amount of leverage obtained with the wrench handle is the maximum application; it is unsafe to add more leverage with a length of pipe.

Hammers: When replacing hammer handles, make sure they fit the hammer head. Wedge the handle securely in the head and make sure that it is free of splinters and cracks. Never strike hardened steel surfaces with a steel hammer. Use a soft metal hammer or one with a plastic, wood or rawhide head when striking steel surfaces. Always wear safety glasses to protect your eyes from flying objects. Inspect sledge hammers carefully before each use. Use the right type of hammer for the specific job.

Pliers: Never substitute pliers for another tool such as a wrench to complete the task. It may cause the bolt heads to become chewed. Pliers cannot grip nuts and bolts securely and will slip. If working with electricity use hand insulated grips. Make sure the protective coverings are free from cracks or holes. Use a vise when cutting wire with the pliers. Hold the open end of the wire with your free hand to prevent the cutoff piece from flying through the air. If a vise is not available, use your foot to secure the wire and always use safety glasses.

Other tools available in the shop are to be used for the specific job intended. Crowbars should be used only for jobs that require prying. Files must be cleaned with a file card when finished using. Do not strike the file against another piece of metal. Hand hooks must be kept sharp to prevent slipping when in use. They should be stored with the point in cork to reduce accidents. Scrappers must be kept in good, sharp condition for best results.

Review the Following Points

- Use the right tool for the intended job
- Always wear safety glasses/goggles to prevent serious eye damage.
- It is unsafe to add more leverage to any tool by use of an extension.
- Use the shop vise when the job requires.

True or False Answer Key

1. T, 2. T, 3. T, 4. F, 5. T

Safe Use of Hand Held Tools Quiz

True or False

Name_____

- | | | |
|--|---|---|
| 1. Keeping hand held tools in good condition can reduce job-related accidents. | T | F |
| 2. It is important to wear the proper eye protection when working with hand held tools to prevent possible eye damage. | T | F |
| 3. Using the right tool for the job intended will make the task go quicker and safer. | T | F |
| 4. Crowbars should be substituted for hammers if one is not available. | T | F |
| 5. Storing all tools on the tool rack helps keep blades and points sharp. | T | F |

Training Module: Safe Use Of Hand Pallet Trucks

Objective: To be able to safely use hand pallet trucks in the work place.

Trainer's Note: Review the session and become familiar with the points that pertain to your work-place. Briefly review the operating instructions for hand pallet trucks with the group. Ask an experienced worker to demonstration working with a hand pallet truck. Discuss hand pallet truck accidents and prevention strategies. Use incidents and past accidents to stress the importance of safe operation.

Background

Moving materials with a hand pallet truck may seem easy, but safe handling requires skill.

- Raise the forks by pushing the actuating lever down and pumping the handle. This is only time the handle should be down--to jack the pallet. A one inch clearance between the floor and pallet is usually sufficient.
- Put the actuating lever in a neutral or middle position to move the load. This position disengages the lifting mechanism and frees the handle from hydraulic resistance, but keeps the forks raised. When the lever is released, it will automatically return to the neutral position.

For Safe Operation:

- Avoid moving loads up or down ramps.
- Do not carry riders on the truck.
- Center the forks evenly under the load to maintain good balance.
- Avoid overloading the truck.
- Ensure the stability of the load.
- Use both forks for lifting a load.
- Pull rather than push loads for increased maneuverability.
- Maneuvering loads using the neutral position reduces operator fatigue.
- Operate at a controllable speed, since hand pallet trucks do not have brakes.
- Park the pallet truck out of traffic areas in a safe, level place with the forks lowered.
- The handle should be left in the up position to eliminate tripping hazards.



Review The Following Points

- Maneuvering loads in the neutral position reduces operator fatigue.
- Keep pallet trucks out of traffic areas when forks are lowered.
- Never use one fork to lift a load.
- No riders on the pallet truck.

True or False Answer Key
1. F, 2. F, 3. T, 4. T, 5. T

Safe Use Of Hand Pallet Trucks Quiz

True or False

Name_____

- | | | |
|--|---|---|
| 1. Push the load. | T | F |
| 2. Carry as much as the truck will hold. | T | F |
| 3. Pallet trucks do not have brakes. | T | F |
| 4. A clearance of one inch between the floor and pallet is usually sufficient. | T | F |
| 5. Operate the hand pallet truck at a safe speed to avoid accidents. | T | F |

Training Module: Working with Large Round Bale Equipment

Objective: To know how to prevent possible accidents when working with large round bales and equipment.

Trainer's Note: It is important to remember that these bales are very heavy and are able to roll. Informally discuss with employees how to accomplish work objectives safely. It will be helpful to review the module on tractor safety, cutterbar safety, and PTOs with this discussion.

Background

Usually baling must be done quickly and efficiently. Changing weather conditions can devalue the crop. However, no crop, no matter how large or valuable, is worth an unnecessary injury or death. Careless operation that saves time but endangers workers is foolish. Slow down and use common sense.

Conditioners and Mower-Conditioners

This equipment uses crimping or crushing rolls to condition hay so it will dry faster. The conditioning rolls are PTO-powered. They pull the hay between them, and throw the hay out of the back of the machine. The rolls may pick up a stone or other object and throw it out also.

Some mower-conditioners have rotating, steel impeller tines which are also PTO-powered. They are rotating at 600 to 900 rpm, and can also fling rocks or other objects out the back. **It is important not to have anyone standing near the rear of a conditioner or mower-conditioner.** If service is needed, the PTO should be disengaged and the engine shut off. The rolls or impellers can grab your hand or clothing in an instant. All machine hoods, covers, or shields should be in place as recommended by the manufacturer.

Round Balers

Equipment that produces large round bales provides an efficient and economical way to harvest hay. However, it also poses safety problems. Large round bales can weigh 1500 to 2000 pounds, similar to a small car. Large round bales are bulky as well as heavy. The bales are designed to repel rain and prevent spoilage, however, their round shape allows them to easily roll down inclines or off raised loaders.

Another potential hazard of hay baling is the heat, since hay harvesting is normally done in hot weather. Heat can cause the operator to become fatigued and frustrated easier. Add to these factors the human tendency to misjudge reaction time around aggressive equipment, and the result is a potentially dangerous situation.

To avoid accidents when working with a round baler:

- Replace broken or worn parts. A baler with broken or missing pick-up tines, loose belts, and other damaged parts will not feed material properly into the bale chamber.
- Always lubricate sprockets and chains when the machine is turned off.
- Make sure the twine is properly threaded and the twine arm is adjusted and in good working condition.
- **Do not feed twine by hand into the baler.**
- Set the baler pick-up at the manufacturer's suggested height and operate the power take-off at the suggested speed.
- Travel at a speed at which the machine can handle the width and size of the windrow to avoid clogging and other equipment problems.

- Observe all safety precautions applying to PTO and hydraulically operated machinery.
- Always be sure the PTO is disengaged and the engine shut off before dismounting to service or adjust the baler. This also includes unplugging the baler.
- Keep all shields and safety guards in place.
- Always lock and block the rear gate if you must be underneath it. This will prevent the gate from falling on top of you if the hydraulic system fails.
- During baling, drive on a contour so that released bales do not roll down a slope.
- Make sure the rear of the baler is clear before ejecting a bale.
- Be prepared for a fire. Carry a Class ABC fire extinguisher on your tractor (Refer to the Fire Extinguisher module).

Moving large round bales

Due to their large size and weight, round bales affect the stability of equipment used to handle them. Check the baler owner's manual for charts regarding the size of the tractor and loader required to safely lift and transport large round bales. Always adjust the tractor wheel tread to the suggested setting to assure that the tractor can maintain balance and avoid rollover. Be sure the load being pulled is no heavier than the pulling unit. Five or six bales on a trailer may give a weight of 9,000 to 10,000 pounds.

When transporting large round bales:

- For the best stability, keep the bale on the up-slope side of the tractor.
- Avoid driving across a slope.
- Drive slow and carry the bale low.
- Avoid sudden movements and turns.
- When a bale is rolling don't try to stop it, even with a tractor.
- When using a front-end loader always use a grapple hook. It will prevent the bale from rolling back onto the loader arms.
- A rear-mounted loading spike is ideal because it eliminates the danger of roll-back and it does not block the operator's forward vision.
- For maximum control, insert the spike into the center of the bale.
- Wagons used to haul bales should be of sufficient width and have end racks to prevent bales from moving off either end during transport.
- A bale should never be carried on the front end loader while pulling a loaded wagon.

Review The Following Points

- The large size and weight of round bales affect the stability of equipment used to handle them.
- Disengage all power before attempting to service hay equipment.
- Consider field conditions when harvesting and select the proper ground speed.
- Always lock and block the rear gate if you must be underneath it.
- Remember low and slow when moving large round bales.
- Use a grapple hook if a front-end loader will be used for bale transport.

True or False Answer Key

1. T, 2. T, 3. F, 4. F, 5. T

Working with Large Round Bale Equipment Quiz

True or False

Name _____

- | | | |
|---|---|---|
| 1. All power should be disengaged before attempting any service to machines. | T | F |
| 2. For transporting large round bales, a rear-mounted loading spike is ideal. | T | F |
| 3. The size and weight of the round bales does not affect the stability of equipment used to handle them. | T | F |
| 4. When in a hurry, it is acceptable to leave the engine running to make a quick adjustment to the baler. | T | F |
| 5. Large round bales weigh about as much as a small car. | T | F |

Training Module: Using Hay Harvesting Equipment Safely

Objective: To be able to identify the hazards associated with hay harvesting and know how to prevent possible accidents.

Trainer's Note: Often hay crops are grown on ground too rough, steep or unsuitable for row crops. Taking safe preparations in these areas is especially important for safe operation. Informally discuss with employees how to accomplish work objectives safely. It will be helpful to review the module on tractor safety, cutterbar safety, and PTOs with this discussion.

Background

Usually baling must be done quickly and efficiently. Changing weather conditions can devalue the crop. However, no crop, no matter how large or valuable is worth an unnecessary injury or death. Careless operation that saves time but endangers workers is foolish. Slow down and use common sense.

Conditioners and mower-conditioners

This equipment uses crimping or crushing rolls to condition hay so it will dry faster. The conditioning rolls are PTO-powered. They pull the hay between them, and throw the hay out of the back of the machine. The rolls may pick up a stone or other object and throw it out also.

Some mower-conditioners have rotating, steel impeller tines which are also PTO-powered. They are rotating at 600 to 900 rpm, and can also fling rocks or other objects out the back. **It is important not to have anyone standing near the rear of a conditioner or mower-conditioner.** If service is needed, the PTO should be disengaged and the engine shut off. The rolls or impellers can grab your hand or clothing in an instant. All machine hoods, covers, or shields should be in place as recommended by the manufacturer.

Square Balers

Balers can cause considerable harm if not serviced and operated safely. Knives and mechanical arms must be regarded with extreme caution. Driving at the correct ground speed will help eliminate possible breakdowns.

If service is needed, follow these procedures for safety:

- Disengage all power.
- Shut off the engine.
- Wait for the flywheel and all other moving parts to stop completely.

Other recommendations for safe baler operation:

- While someone is working on the machine knives, never allow anyone to turn the flywheel. Moving parts can easily injure someone.
- Be sure bale twine or wire is properly spliced and threaded in the machine to avoid knotter problems.
- While the knotter is in operation, never pull anything out of it. You can easily become entangled in it.
- When the machine is running, don't hand feed material, such as broken bales or heavy windrows into it. Instead, spread the material on the ground so the machine can pick it up.
- Wear close fitting clothing, no hooded shirts or jackets with drawstrings, and tie hair back.

Bale Ejectors

The two most common bale ejecting or throwing mechanisms are hydraulically powered, high speed belts and bale-throwing frames. Since those mechanisms can throw heavy bales of hay, they can seriously injure people. Also, you could be struck by a bale as it is ejected, or by the throwing frame and pan if you are too close.

Safety precautions to take with bale ejectors:

- Disengage all power, shut off the engine, and move the ejector lockout control into locked position before inspecting, servicing, or adjusting the bale ejector.
- No one should stand behind or work on the ejector while the PTO and engine are operating, or while a bale is in the ejector.
- Shut off tractor engine, disengage the PTO, and engage ejector lockout control before hitching or unhitching wagon behind ejector.
- Don't allow anyone to ride in the bale wagon.

Manual bale loading

Manual bale loading is safe if it is done carefully. The nature of wagons and bale handling requires extra caution due to the following potential hazards:

- Starts and stops can cause handlers to fall off the wagon or truck.
- Workers might step off the wagon or truck while loading bales.
- Falls from the wagon or truck can result in fractures, sprains, and concussions or getting run over.
- Tossing bales could knock someone off balance.
- Use hand signals to communicate when working with baling equipment (refer to Hand Signaling module).

Review The Following Points

- Disengage all power before attempting to service to all hay equipment.
- Consider field conditions when harvesting and select the proper ground speed.
- Use recommend hand signals when working with harvesting equipment.
- Watch for the safety of fellow workers when using harvesting equipment.
- Enforce the "no riders" rule.
- When working with any hay harvesting equipment, practice PTO safety (refer to PTO module).
- Utilize the ejector lockout control when working on the bale ejector.

True or False Answer Key

1. T, 2. T, 3. F, 4. F, 5. T

Using Hay Harvesting Equipment Safely Quiz

True or False

Name _____

- | | | |
|---|---|---|
| 1. All power should be disengaged before attempting any service to machines. | T | F |
| 2. Use the recommended hand signals when working with harvesting equipment. | T | F |
| 3. The bale wagon is a good place for people to ride. | T | F |
| 4. To hitch or unhitch a wagon behind an ejector, the tractor engine should be shut off, the PTO disengaged, and the ejector lockout control engaged. | T | F |
| 5. No crop is worth the risk of injury or death due to unsafe working conditions. | T | F |

Training Module: Working with Large Round Bale Equipment

Objective: To know how to prevent possible accidents when working with large round bales and equipment.

Trainer's Note: It is important to remember that these bales are very heavy and are able to roll. Informally discuss with employees how to accomplish work objectives safely. It will be helpful to review the module on tractor safety, cutterbar safety, and PTOs with this discussion.

Background

Usually baling must be done quickly and efficiently. Changing weather conditions can devalue the crop. However, no crop, no matter how large or valuable, is worth an unnecessary injury or death. Careless operation that saves time but endangers workers is foolish. Slow down and use common sense.

Conditioners and Mower-Conditioners

This equipment uses crimping or crushing rolls to condition hay so it will dry faster. The conditioning rolls are PTO-powered. They pull the hay between them, and throw the hay out of the back of the machine. The rolls may pick up a stone or other object and throw it out also.

Some mower-conditioners have rotating, steel impeller tines which are also PTO-powered. They are rotating at 600 to 900 rpm, and can also fling rocks or other objects out the back. **It is important not to have anyone standing near the rear of a conditioner or mower-conditioner.** If service is needed, the PTO should be disengaged and the engine shut off. The rolls or impellers can grab your hand or clothing in an instant. All machine hoods, covers, or shields should be in place as recommended by the manufacturer.

Round Balers

Equipment that produces large round bales provides an efficient and economical way to harvest hay. However, it also poses safety problems. Large round bales can weigh 1500 to 2000 pounds, similar to a small car. Large round bales are bulky as well as heavy. The bales are designed to repel rain and prevent spoilage, however, their round shape allows them to easily roll down inclines or off raised loaders.

Another potential hazard of hay baling is the heat, since hay harvesting is normally done in hot weather. Heat can cause the operator to become fatigued and frustrated easier. Add to these factors the human tendency to misjudge reaction time around aggressive equipment, and the result is a potentially dangerous situation.

To avoid accidents when working with a round baler:

- Replace broken or worn parts. A baler with broken or missing pick-up tines, loose belts, and other damaged parts will not feed material properly into the bale chamber.
- Always lubricate sprockets and chains when the machine is turned off.
- Make sure the twine is properly threaded and the twine arm is adjusted and in good working condition.
Do not feed twine by hand into the baler.
- Set the baler pick-up at the manufacturer's suggested height and operate the power take-off at the suggested speed.
- Travel at a speed at which the machine can handle the width and size of the windrow to avoid clogging and other equipment problems.

- Observe all safety precautions applying to PTO and hydraulically operated machinery.
- Always be sure the PTO is disengaged and the engine shut off before dismounting to service or adjust the baler. This also includes unplugging the baler.
- Keep all shields and safety guards in place.
- Always lock and block the rear gate if you must be underneath it. This will prevent the gate from falling on top of you if the hydraulic system fails.
- During baling, drive on a contour so that released bales do not roll down a slope.
- Make sure the rear of the baler is clear before ejecting a bale.
- Be prepared for a fire. Carry a Class ABC fire extinguisher on your tractor (Refer to the Fire Extinguisher module).

Moving large round bales

Due to their large size and weight, round bales affect the stability of equipment used to handle them. Check the baler owner's manual for charts regarding the size of the tractor and loader required to safely lift and transport large round bales. Always adjust the tractor wheel tread to the suggested setting to assure that the tractor can maintain balance and avoid rollover. Be sure the load being pulled is no heavier than the pulling unit. Five or six bales on a trailer may give a weight of 9,000 to 10,000 pounds.

When transporting large round bales:

- For the best stability, keep the bale on the up-slope side of the tractor.
- Avoid driving across a slope.
- Drive slow and carry the bale low.
- Avoid sudden movements and turns.
- When a bale is rolling don't try to stop it, even with a tractor.
- When using a front-end loader always use a grapple hook. It will prevent the bale from rolling back onto the loader arms.
- A rear-mounted loading spike is ideal because it eliminates the danger of roll-back and it does not block the operator's forward vision.
- For maximum control, insert the spike into the center of the bale.
- Wagons used to haul bales should be of sufficient width and have end racks to prevent bales from moving off either end during transport.
- A bale should never be carried on the front end loader while pulling a loaded wagon.

Review The Following Points

- The large size and weight of round bales affect the stability of equipment used to handle them.
- Disengage all power before attempting to service hay equipment.
- Consider field conditions when harvesting and select the proper ground speed.
- Always lock and block the rear gate if you must be underneath it.
- Remember low and slow when moving large round bales.
- Use a grapple hook if a front-end loader will be used for bale transport.

True or False Answer Key

1. T, 2. T, 3. F, 4. F, 5. T

Working with Large Round Bale Equipment Quiz

True or False

Name _____

- | | | |
|---|---|---|
| 1. All power should be disengaged before attempting any service to machines. | T | F |
| 2. For transporting large round bales, a rear-mounted loading spike is ideal. | T | F |
| 3. The size and weight of the round bales does not affect the stability of equipment used to handle them. | T | F |
| 4. When in a hurry, it is acceptable to leave the engine running to make a quick adjustment to the baler. | T | F |
| 5. Large round bales weigh about as much as a small car. | T | F |

Training Module: Heat Stress

Objective: To be able to identify symptoms of heat stroke and exhaustion, and know the emergency procedures for both.

Trainer's Note: Heat stress is serious. Discuss measures that could prevent farm work related heat stress. Controlling heat stress is especially important to pesticide handlers and "early entry" workers who must wear protective gear, but heat stress can effect anyone!

Background

Heat stress is a buildup of body heat generated either internally by muscle use or externally by the environment. Heat exhaustion and heat stroke result when the body is overwhelmed by heat. As the heat increases, body temperature and the heart rate rise painlessly. An increase in body temperature of two degrees Fahrenheit can affect mental functioning. A **five degree Fahrenheit** increase can result in serious illness or death. During hot weather, heat illness may be an underlying cause of other types of injuries, such as heart attacks, falls and equipment accidents. More Worker's Compensation claims for heat illness come from agricultural workers than from any other occupation.

The most serious heat related illness is heat stroke. The symptoms are confusion, irrational behavior, convulsions, coma, and death. While over 20% of heat stroke victims die regardless of health or age, children seem to be more susceptible to heat strain than adults. In some cases, the side effects of heat stroke are heat sensitivity and varying degrees of brain and kidney damage.

Preventing heat stress will:

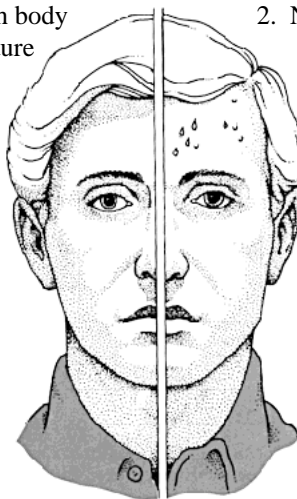
- Protect Health - Heat illness is preventable and treatable before it is life threatening.
- Improve Safety - Any heat stress can impair functioning.
- Increase Productivity - People work slower and less efficiently when they are suffering from heat stress.

Heat Stroke

1. Dry, hot skin
2. Very high body temperature

Heat Exhaustion

1. Moist clammy skin
2. Normal or subnormal temperature



Signs and symptoms of heat stroke and heat exhaustion

Employers, supervisors and workers all have an essential role to play in preventing heat stress. Each member of the team should use good judgment to prevent heat related illness. A heat stress control program should protect all workers at the operation, from those who can work comfortably in heat to those in poor physical shape.

Key elements for controlling heat stress are:

- Drink one glass of water every 15 to 30 minutes worked, depending on the heat and humidity. This is the best way to replace lost body fluid.

- Read medication labels to know how cause the body to react to the sun and heat.
- Avoid alcohol and drugs as they can increase the effects of heat.
- Build up tolerance for working in the heat. Heat tolerance is normally built up over a one to two week time period.
- Take breaks to cool down. A 10 - 15 minute break every two hours is effective.
- Adapt work and pace to the weather.
- Provide heat stress training to workers and supervisors.
- Manage work activities and match them to employees' physical condition.
- Use special protective gear, such as cooling garments and cooling vests on "early entry" workers.
- Know heat stress first aid techniques.

Heat stroke first aid:

- Move the victim to a cool place. Remove heavy clothing; light clothing can be left in place.
- Immediately cool the victim by any available means. Such as placing ice packs at areas with abundant blood supply (neck, armpits, and groin). Wet towels or sheets are also effective. The cloths should be kept wet with cool water.
- To prevent hypothermia continue cooling the victim until their temperature drops to 102 degrees Fahrenheit.
- Keep the victim's head and shoulders slightly elevated.
- Seek medical attention immediately. All heat stroke victims need hospitalization.
- Care for seizures if they occur.
- Do not use aspirin or acetaminophen.



Heat exhaustion first aid:

- Move the victim to a cool place.
- Keep the victim lying down with legs straight and elevated 8-12 inches.
- Cool the victim by applying cold packs or wet towels or cloths. Fan the victim.
- Give the victim cold water if he or she is fully conscious.
- If no improvement is noted within 30 minutes, seek medical attention.

When possible, schedule heavy tasks and work requiring protective gear for cooler, morning or evening hours. Prolonged, extreme hot temperatures mandate the postponement of nonessential tasks.

Most protective garments limit sweat evaporation (but not sweat production) and chemical-resistant suits can cause rapid dehydration if sweat is not replaced. One way to slow the buildup of heat when wearing PPE is to use special cooling garments.

- **If the temperature is above 70 degrees Fahrenheit:** Cooling vests may be useful when pesticide handlers are wearing chemical-resistant suits and are either doing heavy or moderate work for a prolonged period.
- **If the temperature is above 80 degrees Fahrenheit:** Working in chemical-resistant suits for more than a half hour without taking frequent water and rest breaks is unsafe. Cooling garments and frequent breaks are recommended.

Powered air-purifying respirators and supplied-air respirators generally feel cooler than other types of respirators because breathing resistance is minimized and the airstream has a cooling effect.

Review The Following Points

- Heat stress is serious and should be handled as such.
- As strain from heat increases, body temperature and heart rate can rise rapidly.
- Exposure to heat can be serious to children and adults.
- Have plenty of liquids available and administer first aid as needed.

True or False Answer Key

1. T, 2. T, 3. F, 4. T, 5. T

True or False

Name _____

- | | | |
|--|---|---|
| 1. The illness caused by heat stress is very real. | T | F |
| 2. Heat stress may result from the buildup of muscle generated heat in the body. | T | F |
| 3. Exposure to heat stress is not a problem with children. | T | F |
| 4. The most serious heat related illness is heat stroke. | T | F |
| 5. Over 20% of those who suffer a heat stroke die. | T | F |

Training Module: Safe Use of Hydraulic Systems

Objective: To know the hazards that could occur from working with hydraulic equipment and how to prevent them.

Trainer's Note: Many farm implements use a hydraulic system. Understanding the system reduces the chances of having an accident. Ask an experienced worker to demonstrate hooking up farm machinery to the hydraulic system on a tractor. Other workers might practice.

Background

Hydraulic fluid is dangerous. Fluid can escape when adjusting or removing equipment. Fluid can be trapped in the hydraulic system even when the engine and hydraulic pump are stopped. Trapped fluid can be pressurized in excess of 2,000 psi. Pressurized fluid can penetrate the skin, requiring prompt surgical removal. If not properly cared for, gangrene may result. Penetration injuries may not appear serious, but the injected body part is usually lost if medical attention is not promptly sought.

Tighten all connectors before applying pressure. Keep hands and body away from pinholes and nozzles that eject fluid under high pressure. Use a piece of cardboard or paper to search for leaks. Relieve pressure before disconnecting a hydraulic line.

Do not cross hydraulic lines. If the lines are not coupled correctly, the implement will not rise and drop as expected. Tape or color code lines to prevent an accident.

A disconnected implement, in the raised position, has trapped hydraulic fluid that might be pressurized. Heat causes thermal expansion of the fluid, increasing the pressure. Always relieve hydraulic pressure before loosening hydraulic fittings. Injury can result from the hot, high pressure spray of the hydraulic fluid.

Before Servicing a Hydraulic Powered or Controlled Equipment:

- Shut off hydraulic pump power.
- Lower the implement to the ground.
- Move the hydraulic control lever back and forth several times to relieve pressure.
- Follow the instructions in the operator's manual. Specific procedures for servicing hydraulic systems provide safety guidelines.
- Stay away from pinholes and nozzles which eject fluid under pressure.
- Promptly seek medical attention if fluid is injected into the skin.

Review The Following Points

- Adjusting and removing equipment when hydraulic fluid is under pressure can be hazardous.
- Keep all body parts away from pinholes and nozzles which eject fluid under pressure.
- Never cross hydraulic lines on equipment.
- Always lower the implement to the ground before servicing and relieve pressure.
- Follow all instructions in the operator's manual.
- If you notice a lock or a hose in bad condition notify your employer to have it replaced.

True or False Answer Key

1. F, 2. T, 3. F, 4. F, 5. T

Agricultural Tailgate Safety Training

True or False

Name _____

- | | | |
|---|---|---|
| 1. Escaping, pressurized hydraulic fluid is not a safety concern. | T | F |
| 2. Keep body parts away from pinholes and nozzles which eject fluid under pressure. | T | F |
| 3. It is possible to cross hydraulic lines and have the system work correctly. | T | F |
| 4. If hydraulic fluid is injected into the skin, wash the area immediately and return to work . | T | F |
| 5. Trapped hydraulic fluid can be pressurized to 2,000 psi or more. | T | F |

Training Module: Introduction To Agricultural Safety

Objective: To know that safety training is important and that it can reduce accidents.

Trainer's Note: This module is basic introductory information about what makes safety training important, and it also provides a few general safety tips.

Background

In work-related fatality rates among U.S. industries, agriculture ranks first. It is one of the most hazardous occupations in the United States. A majority of agricultural accidents involve some type of machinery or equipment.

Accidents cost time, money, and involve intangible losses. Time will be lost while you are recovering, medical and rehabilitation bills will begin to add up, and, worst of all, you might not be able to function as you did before the accident. Safety is too expensive not to be taken seriously. Accident costs reduce the profit margin of your operation and, in the worst cases, accidents cost people their lives.

Safety is everyone's responsibility. It is up to everyone associated with the agricultural industry to use safe working practices. All family members and employees can contribute to each others' safety. Remember, operators of machinery aren't the only ones who get hurt in agricultural accidents.

General Tips for a Safe Working Environment:

- For an effective farm or ranch safety program, first perform a safety status assessment.
- Make safety everyone's concern including family, employees, visitors, and yourself.
- Be aware of what you are doing and your surroundings. The highest percentage of injuries happen during routine, 'every day' chores.
- Ask for help if a task might be more than you can handle alone.
- Take short rest breaks, so you don't overexert yourself.
- Eat a well balanced diet and get plenty of sleep.
- Stay away from equipment if you are angry. Wait a little while until you cool down.
- Train new equipment operators before letting them work on their own.
- Read the operator's manuals for all equipment.
- Wear the proper personal protective equipment (PPE) for 'every day' chores and for specific jobs. Protective footwear, that also provides ankle support, and close fitting clothing are important for 'every day' work. (Specific job related PPE is discussed in the following modules).

Review The Following Points

- Agriculture is the leading industry for work related accidents.
- Safety is everyone's responsibility.
- Safety is too expensive to learn by accident. Accidents have many related costs.
- The working environment can be made safer by following a few simple safety measures.

True or False Answer Key

1. F, 2. T, 3. T, 4. T, 5. F

Introduction To Agricultural Safety Quiz

True or False

Name _____

- | | | |
|--|---|---|
| 1. Only machinery operators need to worry about safety. | T | F |
| 2. Agriculture is the number one industry in the U.S. in work related fatality rates. | T | F |
| 3. The first step in an effective farm or ranch safety program is to perform a safety status assessment. | T | F |
| 4. Accident costs reduce the profit margin of your operation. | T | F |
| 5. Wearing the proper personal protective equipment is not important unless you are working with pesticides. | T | F |

Training Module: Safe Use of Jacks

Objective: To know how to correctly use jacks for equipment repairs.

Trainer's Note: Serious crushing accidents can result from the improper use of jacks. Demonstrate the correct way to use a jack when working on equipment. Let teams of workers practice the correct method for using a jack with various pieces of equipment.

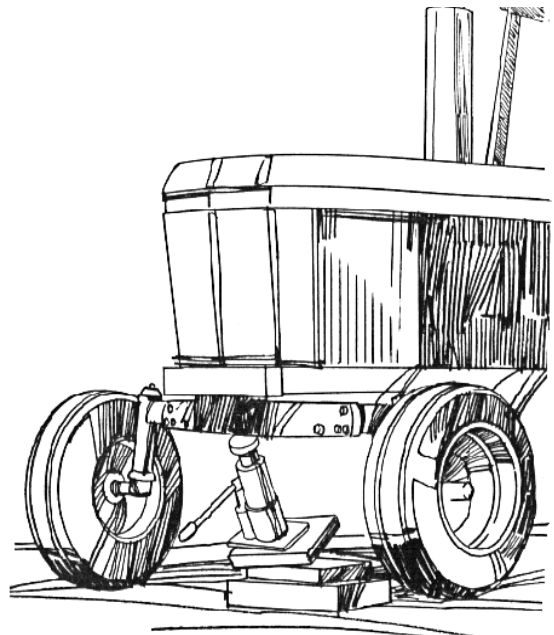
Background

The following recommendations are important for the safe use of jacks. Compare the rated capacity of the jack to the weight of the load to be lifted to ensure that the jack can safely do the job. Keep jacks lubricated as recommended. Do not use a jack that is leaking fluid.

Handle jacks carefully. Dropping or throwing them may distort or crack the metal, and the jack may fail under the load. Position the jack properly at a point that can carry the lifted weight.

The lift point should be flat, level with the floor or the ground, and able to support the base of the jack. Lift should be straight up and down. If working on the ground, place a long wide block under the base of the jack to keep it from sinking, shifting or tipping when weight is applied. If the jack will not lift high enough, place additional blocking under the jack. Never put extenders for height between the jack saddle and the load.

Stabilize the equipment. If the machine is self-propelled, place the transmission in gear or in the park position, and set the brakes. Block at least one of the wheels remaining on the ground. When lifting pull-type equipment, hitch it to a tractor drawbar to keep it in place. Always check the position of the jack after it has started to lift. If it leans, lower the jack and reset. Lift no higher than is necessary. Beware of the jack handle. Some mechanically operated jacks can pop up and kick when the load is lifted or lowered. Stand to one side while jacking equipment to avoid being struck by the handle. Never straddle a jack handle and always remove the handle when it is not being used.



Avoid this from happening! Reset the jack if it starts to lean, and block the equipment more securely.

Support the load that is being jacked with blocks or stands. Never allow raised equipment to remain supported by jacks alone. Jacks can fail and tip, causing the equipment to fall unexpectedly. Place solid blocks or stands under the equipment immediately. Do not use cement or cinder blocks because they may shatter under the load.

When Using Jacks:

- Stabilize equipment, then set brakes and/or block wheels.
- Do not overload the jack.
- Lubricate with recommended oil as directed.
- Do not drop the jack.
- Discard damaged jacks.
- Position the jack properly and discontinue lifting if the load shifts.
- If working on the ground in the outdoors, place a heavy block under the base of the jack.
- Recheck the jack before completing the lift.
- Remove jack handle when lift is completed.
- Lift only as high as necessary.
- Support the lifted load with blocks or a stand.

Review The Following Points

- Check jack before use to ensure that it can carry the load.
- Do not use leaking jacks.
- Stand to the side while jacking to avoid being struck by the handle.
- Support load with blocks or stands.
- Cement or cinder blocks should not be used because they may shatter under the load.

True or False Answer Key

1. T, 2. T, 3. F, 4. T, 5. F

Safe Use of Jacks Quiz

True or False

Name _____

- | | | |
|---|---|---|
| 1. Dropping and throwing jacks may distort or crack the metals causing the jack to fail under the load. | T | F |
| 2. Always place the vehicle in park and set the brakes before jacking. | T | F |
| 3. Do not check or adjust the jack position once it has started to lift the weight. | T | F |
| 4. Support the load that is being jacked with blocks or stands. | T | F |
| 5. A cement or cinder block should be used to block and support the machinery during the lift. | T | F |

Training Module: Proper Use of Ladders

Objective: To be able to demonstrate the safe use ladders that are used primarily for construction and/or maintenance jobs.

Trainer's Note: Read through the entire module prior to beginning the training session. Have ladders available to demonstrate the information about ladder safety.

Background

Basic steps that should be taken before climbing a ladder

- Consider the type of work to be done before choosing a ladder.
- Be certain the ladder is able to carry the amount of weight that will be applied.
- Make sure the ladder is placed on a firm level surface.
- Check the condition of the ladder.

Inspection Checklist for Potential Hazards

<u>Metal Ladders</u>	<u>Wood Ladders</u>	<u>Fiberglass Ladders</u>
sharp edges	splits	loose components
dents	cracks	missing components
bent steps	chips	cracks
bent rungs or rails	loose rungs or steps	chips
no slip-resistant rubber or plastic feet		

Step Ladders

Be certain the spreader is locked before climbing on the ladder.
Never stand on the top or top step of a stepladder.

Extension and Straight Ladders

Raise the extension ladder to the desired height and lock both sides.
Never stand on the top three rungs of a straight or extension ladder.
Don't lean a ladder against a movable object.
Always face the ladder and hold onto the side rails with both hands, when going up or down the ladder.

Ladder Weight Classes

Industrial	Heavy-duty with a load capacity of not more than 250 lbs.
Commercial	Medium-duty with a load capacity of not more than 225 lbs. (Suited for painting.)
Household	Light-duty with a load capacity of 200 lbs.

Proper Ladder Placement

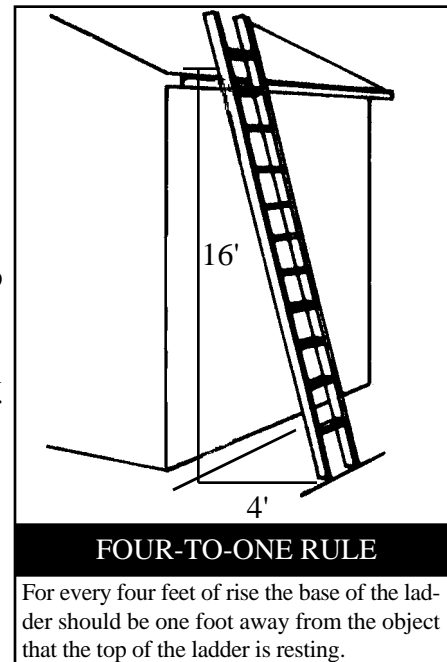
The ladder should be placed so that its base is one foot away from what the ladder leans against for every four feet in height to the point where the ladder rests. This is referred to as the four-to-one rule. For example, if a 16 foot ladder leans against a wall, its base should be placed four feet from the wall.

Remember

- Never use a ladder in a strong wind.
- Never use a ladder in front of a door unless it is locked, blocked or guarded.
- Inspect ladders for potential dangers before using.
- Keep your body centered between the rails of the ladder.
- Never carry tools or materials in your hand when going up or down a ladder.
- Only one person should be on a ladder at a time.
- If one must work near power lines, always use a wooden or fiberglass ladder. **NEVER** work with a metal ladder around power lines.

Review The Following Points

- Chose the right ladder for the intended job.
- Know the potential hazards when using a ladder.
- Know the proper placement of ladders.



True or False Answer Key

1. F, 2. T, 3. T, 4. F, 5. F

Proper Use of Ladders Quiz

True or False

Name _____

- | | | |
|--|---|---|
| 1. Stand on the top three rungs of a straight or extension ladder. | T | F |
| 2. The four-to-one rule should be applied when leaning a ladder against an object. | T | F |
| 3. Keep the body centered between the rails of the ladder. | T | F |
| 4. It is a good idea to use a ladder in windy conditions. | T | F |
| 5. A wood ladder is safe to use if it has cracks and splits, as long as it doesn't have any missing rungs. | T | F |

Training Module: Preventing Lifting and Overexertion Injuries

Objective: To be able to lift properly to avoid injuries.

Trainer's Note: Problems can arise from overexertion. On a flip chart list guidelines and suggestions for proper handling. Describe jobs that might result in overexertion. Ask a worker to demonstrate appropriate lifting techniques. Cover some practical tips to avoid overexertion.

Background

Approximately 25 percent of workplace injuries in Ohio result from lifting, pulling or pushing objects. The part of the body most often injured is the back.

Material Handling — Think Before Lifting

- Have a handling plan that avoids slippery hazards and includes a destination.
- Test the load to ensure that it can be safely carried.
- Know the limits! If the load is too heavy, awkward or bulky to carry alone, get help.
- Use machinery or equipment, such as pushcarts, hand truck, wheelbarrow, forklift or hoist.
- Do not overlook the use of levers, incline planes or rollers to move loads.

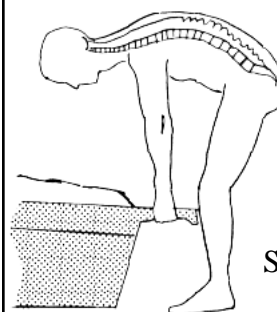
Serious back injuries occur because of improper lifting techniques. Some common improper lifting techniques people often use include:

- Bending from the waist to pick up objects.
- Lifting boxes above the chest.
- Twisting the body to carry or lift a heavy box or object.
- Lifting objects when in poor physical shape.

Guidelines for safe lifting:

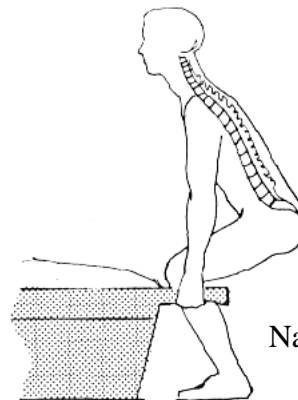
- **Get a good grip.** Grasp the load firmly. Use gloves if they allow for a better grip.
- **Get a good footing.** Center body weight to provides a powerful line of thrust and good balance.
- **Keep it close.** Grasp the load firmly and lift towards the belt buckle. Hold the load close to the body to avoid putting pressure on the back.
- **Lift smoothly.** Raise, carry and lower the load smoothly. Never jerk a load.
- **Avoid twisting.** If turning is required while lifting or carrying a load, turn the feet and body instead of twisting the back.
- **Push.** Push rather than pull the load.

NO!
Wrong Lifting Position!



Stoop Position

Proper Lifting Position!



Natural Position

Reveiw The Following Points

- Approximately 25 percent of work related injuries in Ohio result from overexertion, mainly from lifting.
- Think and plan **before** lifting.
- Push rather than pull the load.
- Use mechanical means whenever possible.
- Avoid twisting when lifting or setting down a load. Turn the body instead of twisting the back.

True or False Answer Key
1. F, 2. T, 3. T, 4. T, 5. T

Preventing Lifting and Overexertion Injuries Quiz

True or False

Name _____

- | | | |
|---|---|---|
| 1. For best results, always pull rather than push a load. | T | F |
| 2. Wear gloves if they allow for a better grip. | T | F |
| 3. Approximately 25% of all injuries in Ohio result from overexertion, mainly from lifting, pulling or pushing objects. | T | F |
| 4. Use mechanical means to handle materials when possible. | T | F |
| 5. To prevent injuries, you should turn the body instead of twisting the back. | T | F |

Training Module: Liquid Manure

Objective: To become aware of the dangers associated with liquid manure storage, and to discuss rescue/emergency responses.

Trainer's Note: Stored liquid manure creates dangerous gases and can be a potential site of a drowning. When a person enters an enclosed manure storage or reception pit, without the proper respiratory equipment, the worker may be overcome by the gases, become asphyxiated, and/or drown.

Background

Manure gas is not a pure substance, but a combination of several gases that are created as manure decomposes. Some components of the gas are toxic, leading to increased toxicity when combined with other gases. Liquid or semisolid manure that is handled by agitating, pumping, and spreading can release large amounts of gases.

Characteristics of Gases Produced in Decomposing Manure and Some of their Effects:

<u>Gases</u>	<u>Odor</u>	<u>Density</u>	<u>Effects</u>
Ammonia	Pungent ¹	Lighter than air	Irritation to eyes and nose. Asphyxiating at high levels.
Carbon Dioxide	None	Heavier than air	Drowsiness, headache. Can be asphyxiating.
Hydrogen Sulfide	Rotten Egg Smell ¹	Heavier than air	Toxic: causes headache, dizziness, nausea, unconsciousness, death.
Methane	None	Lighter than air	Headache, asphyxiating, explosive in 5 to 15% mixture of methane with air.

¹ Smells are often not distinguishable from other barnyard odors.

Preventing Hazards:

- The first precaution and the safest is **DO NOT** enter a manure storage.
- If it is absolutely necessary to enter a manure storage, check gas concentration levels, thoroughly ventilate the storage, wear a supplied air or self-contained breathing apparatus (SCBA), have at least two people standing by, and put on a safety harness and attach a rope in case rescue is necessary.
- Locate serviceable equipment parts (shear pins, cleanouts, etc.) so that they are accessible from outside the storage area. It is recommended that all storage openings be large enough to allow for the removal of equipment.
- Locate manure pump-out openings in the open air to reduce the danger of working in a confined area when agitating or pumping. A steady supply of fresh air is necessary, especially during agitation.
- Protect all openings to reception pits or storage with sturdy grates and covers to prevent accidental entry by humans, animals, or equipment.
- Removable covers and grates should be used on pumping and agitation ports.
- Always have at least one other person available when agitating a manure storage. The extra person can get help if needed.
- Always operate the ventilation system during agitation.
- Always get help before attempting to rescue livestock that have fallen into a manure storage structure.
- If an animal is overcome by noxious fumes in an enclosed confined area do not try to rescue it. Do not enter the building, turn off pumping and agitation equipment. Increase ventilation to dilute and remove any gases.
- Do not smoke, weld, or use an open flame near enclosed, confined areas where methane can buildup.
- Locate first aid or rescue equipment (air packs and face masks, nylon lines with snap buckles, and parachute type body harness with “D” rings for attaching lines) near the manure storage area.

When protective barriers are missing, earthen storage basins or lagoons are potential drowning sites. To prevent this type of accident, build railings alongside all walkways or piers for open manure storage structures. Fence in earthen storage basins and lagoons. The fence will keep livestock and people away from the structure. Signs should be posted indicating “CAUTION - MANURE STORAGE (or LAGOON).”

In case of an emergency, there should be a lifesaving station around the lagoon. It should be equipped with a reaching pole and ring buoy on a line. (Refer to Pond Safety Module).

Review The Following Points

- Make sure equipment is accessible.
- Grates need to be sturdy.
- Always operate ventilation systems during agitation.
- Never enter confined storage areas alone.

True or False Answer Key
1. T, 2. F, 3. T, 4. F, 5. T

Liquid Manure Quiz

True or False

Name _____

- | | | |
|---|---|---|
| 1. Manure is a combination of several gases that are created as manure decomposes. | T | F |
| 2. There is no danger in entering a manure storage area alone. | T | F |
| 3. During agitation, ventilation systems should be running. | T | F |
| 4. If an animal is overcome by noxious fumes in an enclosed confined area, try to rescue it immediately. | T | F |
| 5. Liquid or semisolid manure that is being agitated, pumped, or spread is capable of releasing large amounts of gases. | T | F |

Training Module: Loading Docks and Warehouses

Objective: To be able to recognize loading dock and warehouse hazards.

Trainer's Note: Walk through the workplace and discuss the various locations or jobs where accidents may occur. Encourage the employees to point out potential accident sites. Below are some common hazards and prevention tips.

Background

Powered industrial lift trucks are widely used. Two common, serious accidents involving powered industrial trucks are:

- Backing off of the dock.
- Overturns (turning too fast with the wheels too close to the edge of the dock).

Improper and irregular stacking of materials causes accidents. Failure to “tie in” stacked boxes or cartons, and piling stock too high causes the stock to fall. Make sure that stacked materials do not block the sprinkler system.

Double check to ensure that the brakes of the highway truck are set and the rear wheels are chocked (Refer to Chock and Block module). Chocking the rear wheels keeps the trailer from moving away from the dock upon entry with the lift truck.

Tips for working on the docks:

- Be alert when working on the dock.
- Don't speed, watch out for other trucks and workers.
- Look for boxes, cartons, drums, crates or skids that are not in their proper places. Also watch for items that extend beyond the aisles.
- Follow established traffic lines and storage boundary lines.
- Be especially alert for overhead hazards, like pipes, structural members, lights, door casings, or high cable wires and signs.

Know where fire extinguishers are located and what type of extinguisher to use on different types of fires (Refer to Fire Extinguisher Training Module). Follow rules regarding the handling and storage of flammable materials. Pay attention to the U.S. Department of Transportation official warning signs and symbols on containers.

Review The Following Points

- Be alert on the dock.
- Stack materials properly.
- Follow all established traffic lanes and storage boundary lines.
- Know where all fire extinguishers and fire alarm boxes are located.
- Be aware of overhead hazards, like pipes, structural members, lights, door casings, or high cable wires and signs.

True or False Answer Key

1. T, 2. T, 3. F, 4. T, 5. F

Loading Docks and Warehouses Quiz

True or False

Name _____

- | | | |
|--|---|---|
| 1. Injuries are caused by the improper and irregular stacking of materials on the dock and at the warehouse. | T | F |
| 2. Follow established traffic lanes and storage boundary lines. | T | F |
| 3. It is not important to chock the wheels of trailers at docks for loading or unloading. | T | F |
| 4. It is important for all employees to know where to locate a fire extinguisher. | T | F |
| 5. It is not important to keep the work area clutter free. | T | F |

Training Module: Lockout and Tagout

Objective: To be able to properly lockout and tagout equipment.

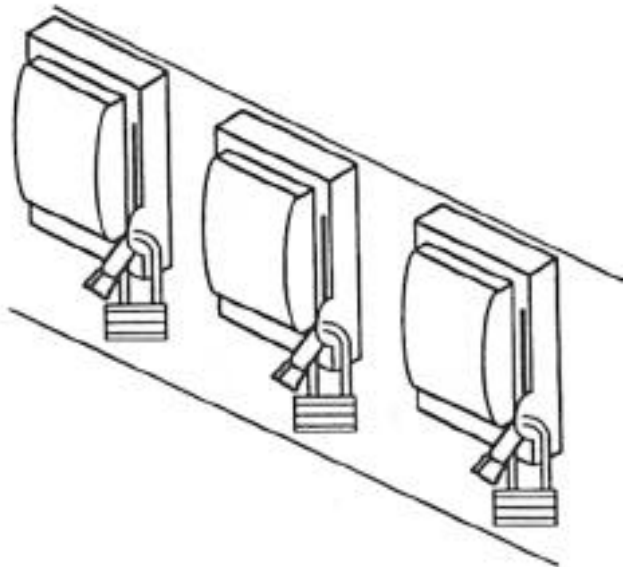
Trainer's Note: If the employees are not familiar with the terms, it may be necessary to define them. An entire demonstration could be shown on locking out and tagging out a piece of equipment. Follow the procedure for lockout/tagout and adapt to fit various jobs.

Background

To **lockout** means to place a lock on a device that prevents the release of energy. Locking out is intended to prevent the unexpected start-up or energizing of machinery and equipment during service and maintenance operations.

To **tagout** means to place a tag on a switch or other shut off device which warns others not to start the piece of equipment. Tagout should only be used with lockout, unless locking out the equipment is impossible.

Equipment should be locked out while being repaired. Accidents which occur because machinery that is being repaired and not locked out often result in serious injuries like amputations, fractures, and even death. Locking out and tagging power at its source is important while repairing or adjusting machinery because it ensures that power does not reach the machinery. For example, locking out the power to the augers in grain bins whenever they must be entered.



Lockout/Tagout Procedures:

- Notify all affected employees that a lockout/tagout procedure is ready to begin.
- Turn off the equipment at the control panel.
- Turn off or pull the main disconnect. Be sure all stored energy is released or restrained.
- Check all locks and tags for defects.
- Attach your safety lock or tag on the energy isolating device.
- Try to restart the equipment at the control panel to ensure that it is secured.

- Check the machine for possible residual pressures, particularly for hydraulic systems.
- Complete the repair or servicing work.
- Replace all guards on the machinery.
- Remove the safety lock and adapter.
- Let others know that the equipment is back in service.

Common mistakes in lockouts:

- Leaving keys in the locks.
- Locking the control circuit and not the main disconnect or switch.
- Not testing the controls to make sure they are definitely inoperative.

Review the Following Points

- Equipment should be locked out while being repaired.
- Lockout means to place a lock on a device that prevents energy release.
- Tagout means to place a tag on a switch or other shut off device that warns not to start that piece of equipment.
- Make sure to remove keys from the locks.
- Lock the main switch.
- Test the controls to make sure they are definitely inoperative.
- Replace all guards on the machinery after servicing.

True or False Answer Key

1. T, 2. T, 3. F, 4. T, 5. T

Lockout and Tagout Quiz

True or False

Name _____

- | | | |
|---|---|---|
| 1. To lockout means to place a lock on device that will prevent the release of energy. | T | F |
| 2. To tagout means to place a tag on a switch or other shut-off device warning others not to start that piece of equipment. | T | F |
| 3. Equipment doesn't need to be locked out while being repaired. | T | F |
| 4. Never leave the key in the lock when "Locking out". | T | F |
| 5. Always test the controls in a lockout to make sure they are definitely inoperable. | T | F |

Training Module: Preventing Machine Hazards

Objective: To reduce hazards and prevent accidents involving machinery.

Trainer's Note: Have experienced workers assist in the training for this session. Use a common piece of equipment to briefly review the proper steps for checking a piece of machinery before operating it. Demonstrate maintenance procedures and operate equipment to show the hazard areas.

Background

There are about 9,000 machine related injuries in Ohio each year. Proper training can prevent these injuries. Know how to operate a piece of machinery and inspect for problem areas before turning on the power. Avoid tripping hazards by keeping air hoses and extension cords out of the way.

Check before operating:

- Have you reviewed the owner's manual? It will provide operating, repairing, lubricating and fuel information.
- Are the Warning decals in place?
- Are the machine guards properly placed and in good condition?
- Are electrical lines damage free?
- Are air and hydraulic lines in good condition and not leaking?
- Is the setup a proper setup?
- Is the area around the machines orderly?
- Is the equipment jack in working order?

Personal Protection:

- Wear PPE, such as goggles, safety shoes and leather gloves.
- Long hair should be tied back or tucked under to avoid getting caught in machinery.
- Avoid wearing jewelry.

Machine Maintenance Checklist for Safety:

- Keep machines repaired, lubricated and adjusted.
- Clean up excess lubricants.
- Clearly mark control switches and valves that control machines.
- Check machines for emergency stop switches; they should be located on or near the machine so the machine can be turned off quickly if a malfunction occurs.

During Operation:

- Turn power off and remove key before working around or performing maintenance on the machine.
- Stay away from moving parts.

Review The Following Points

- Always wear PPE on the job.
- Avoid wearing jewelry, hair styles, or loose clothing that might get caught on machinery.
- Keep work space clutter free.
- Know how to use the machine safely before operating.

True or False Answer Key

1. T, 2. T, 3. F, 4. T, 5. T

Agricultural Tailgate Safety Training

Agricultural Safety Program

True or False

Name_____

- | | | |
|---|---|---|
| 1. Before using a piece of machinery, know how to operate it safely. | T | F |
| 2. Avoid wearing jewelry when working with machines on the farm or in the shop. | T | F |
| 3. Wear tennis shoes when working on heavy machinery. | T | F |
| 4. Knowing the location of the emergency stop switches could save a life. | T | F |
| 5. Keep machines well maintained to guard against hazards. | T | F |

Training Module: Material Handling Devices

Objective: To be able to use tools and equipment effectively and safely to move farm materials.

Trainer's Note: Use mechanical devices when a task cannot be completed by hand. Using these devices can simplify the task, but may increase the risk of danger. Ask experienced workers to demonstrate the proper use of the mechanical devices used in the workplace. All new employees should practice using them. Mechanical devices can be a great help to move machinery parts as well as potted plants and produce.

Background

Hand Trucks:

- Wheelbarrows, dolly trucks and two-wheeled hand trucks are all hand trucks.
- Two-wheeled hand trucks can lift and transport heavy, bulky objects short distances.
- Work gloves and safety shoes should be worn.
- Hand trucks should be equipped with canvas, leather or rubber knuckle guards to help prevent hand injuries.
- When loading, the heavy objects should be below the lighter ones, and the load kept as low as possible.
- The hand truck should not be overloaded, and the load should not obstruct your view.
- Use proper lifting techniques (Refer to Preventing Lifting and Overexertion Injuries module) when lifting a load.
- The operator should push and balance the truck always walking forward.
- The truck should not be held in place with your foot. Two-wheeled hand trucks should be equipped with brakes.



Conveyors:

- Generally, conveyors used in industry are roller, belt, screw, bucket, chain, overhead trolley, portable, mobile, tow, or assembly types.
- Moving parts should be guarded with wire mesh enclosures or railings.
- Rollers or pulleys at the ends of belt conveyors should be guarded to prevent fingers and hands from being drawn into pinch points.
- A shield, guard or housing should enclose each end and all other areas at floor level where workers could come in contact with moving parts.
- Avoid riding on conveyors, except those that incorporate platforms and control rooms for operating personnel.
- Conveyors should have conveniently located warning devices and emergency stop controls.
- Turn off power and lock the switch during maintenance.

Powered Industrial Trucks:

- Powered industrial trucks move material quickly and easily and save work and time.
- Know how to safely operate the trucks and to correctly react to every situation.
- Pay attention to maximum load limits and the condition of the bed—never overload.
- Check brakes, steering, controls, forks, hoist, warning devices and lights before and after each shift and report any malfunctions to supervisor.
- Back the truck down a ramp, but keep the load in front when going uphill.
- Tilt the forklift masts back when driving the lift and keep head, arms and legs inside.
- Keep the forks about 4 to 6 inches above the ground.
- Do not lift people.
- Sound the horn at a blind corner.
- Check clearances when loading or unloading.



Cranes and Derricks:

- Only trained operators are permitted to run cranes.
- The rated load must be plainly marked on each side of the crane and the crane must never be overloaded.
- Never work or stand underneath a crane that is moving material.
- If operating, do not swing loads over workers.
- Keep hoisting chains and ropes free from kinks.
- Use a load block hook with a sling--do not wrap chains or ropes around loads. Operators should make sure the sling clears all obstacles.
- Standard hand signals for boom cranes should be understood by both the operator and the signaler. (Refer to Hand Signals module).
- Crane operators should never remove their hands and feet from the controls while a load is suspended.

Review The Following Points

- All employees should be trained before operating machinery.
- Watch for coworkers when completing work tasks.
- Make sure all loads are balanced when moving.
- Keep all screens and safety shields in place.
- Use standard hand signals for communication.

True or False Answer Key

1. T, 2. T, 3. F, 4. T, 5. T

Material Handling Devices Quiz

True or False

Name_____

- | | | |
|--|---|---|
| 1. Use standard hand signals for communication. | T | F |
| 2. Two-wheeled hand trucks are used for transporting heavy and bulky objects short distances. | T | F |
| 3. Brakes aren't necessary on two-wheeled hand trucks, the operator can hold the truck in place with their foot. | T | F |
| 4. Crane operators should never remove their hands and feet from the controls while a load is suspended. | T | F |
| 5. Pay attention to maximum load limits, never overload. | T | F |

Training Module: Power Lawn Mowers

Objective: To be able to operate power lawn mowers according to safety guidelines.

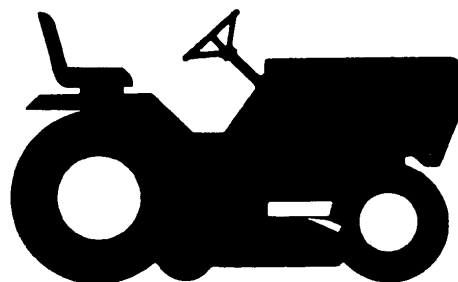
Trainer's Note: Safe lawn mowing practices can save lives. Point out the safety devices on the mower. Discuss the importance of leaving shields and stops in place. Demonstrate PPE and lawn mower maintenance. Discuss various lawn mowing accidents and brainstorm about how these accidents could have been prevented.

Background

A power lawn mower can be dangerous and cause serious injuries. A rotary mower blade whirls at 2,000 or 4,000 revolutions per minute, or at 100 to 200 miles per hour. For safety reasons, it is important to know how to quickly disengage the clutch and stop the engine.

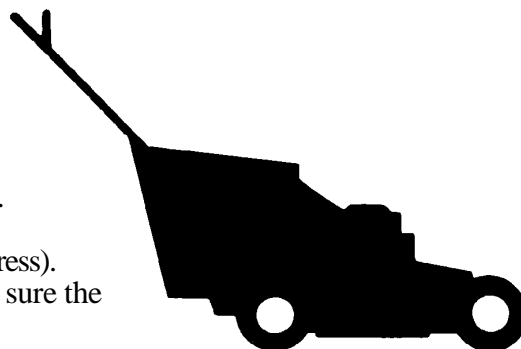
To operate a power lawn mower, follow these tips:

- Begin by reading the operator's manual.
- Before mowing remove debris from lawn.
- Wear protective, close fitting clothing.
- Start mower from a firm stance with feet in a safe position.
- Take self-propelled mowers out of gear before starting.
- Keep both feet on the footrests of a riding mower.
- Keep all guards and safety shields in place.
- Never fill the gasoline tank on the mower if the engine is hot.
- Store gasoline in an approved, properly labeled container.
- Turn off the motor before dismounting or removing a foreign object
- Disconnect the spark or electric plug before repairing mower.
- Never use an electric mower on wet grass.
- Provide routine maintenance.
- No extra riders on self-propelled mowers (refer to module: No Riders on Farm and Lawn Equipment).



Be Aware of Mowing Hazards:

- A mower can tip over easily.
- Push the mower away from the body during a fall.
- Never leave a running mower unattended.
- Take rest periods as needed (refer to module: Heat Stress).
- Foreign objects can fly from the mower, so make sure the mowing area is clear of people and animals.



Proper mowing directions:

- When mowing on a slope with a riding mower, you should mow **down** the slope.
- When mowing on a slope with a push mower, you should mow **across** the slope.

Proper dress for mowing:

- Sturdy shoes.
- Long pants and long sleeve shirts.
- Safety glasses or goggles when mowing near solid objects.

Review The Following Points

- Wear protective, snug clothing when mowing.
- Keep guards and safety shields in place.
- Turn off the mower before dismounting or removing any foreign objects.
- Know how to disengage the clutch and stop the engine.
- A rotary blade whirls between 2,000 and 4,000 revolutions per minute, at speeds between 100-200 miles per hour.
- Never leave a running mower unattended.

True or False Answer Key
1. T, 2. T, 3. F, 4. T, 5. T

Power Lawn Mowers Quiz

True or False

Name_____

- | | | |
|--|---|---|
| 1. An improperly used power lawn mower can cause serious injuries. | T | F |
| 2. The speed of a rotary mower blade is 100 - 200 miles per hour. | T | F |
| 3. Do not turn off a lawn mower to remove foreign objects. | T | F |
| 4. Carefully inspect the lawn for debris, and remove it before mowing. | T | F |
| 5. Keep lawn mower guards and shields in place at all times. | T | F |

Training Module: The Material Safety Data Sheet (MSDS)

Objective: To become familiar with the Material Safety Data Sheet.

Trainer's Note: Safety increases when on-the-job hazards are understood. The MSDS is an easy reference for information on hazardous substances. The MSDS must be "readily accessible" to workers exposed to hazardous substances. The distribution of MSDS is required on farms with eleven or more (full or part time) employees. Review the MSDS supplied with this module. Emphasize that the information benefits and protects workers. Use a MSDS to guide the discussion.

Background

The MSDS provides information on hazardous materials, substances, and wastes. Chemical manufacturers develop and provide an MSDS for each hazardous product. The distributor is responsible for getting MSDSs to employers. Keep at least one copy of the MSDS with the chemical.

MSDS are not standardized but should include:

- Name and make up of chemical
- Emergency telephone number(s)
- Name of the manufacturer and distributor
- Location of manufacturer and distributor
- Signal word (Danger, Warning, Caution)
- Regulatory information
- Hazardous ingredients
- First Aid procedures
- Health hazard information
- Control for exposure (Personal Protective Equipment (PPE) required)
- Physical hazard information
- Spill or emergency directions
- Disposal Information

Review The Following Points

- The importance of the material safety data sheet (MSDS)
- What is included on an MSDS list and why
- The benefits of an MSDS.

True or False Answer Key

1. T, 2. T, 3. T, 4. T, 5. T

The Material Safety Data Sheet (MSDS) Quiz

True or False

Name _____

- | | | |
|--|---|---|
| 1. Employees have the right to know about on-the-job hazards. | T | F |
| 2. The MSDA helps to protect employees. | T | F |
| 3. There is no standard form for an MSDS. | T | F |
| 4. An MSDS contains information on hazardous materials,
substance, and wastes. | T | F |
| 5. An MSDS describes chemical hazards and how to work with
the chemical safely. | T | F |

Training Module: Safe Handling of Anhydrous Ammonia (NH₃)

Objective: To incorporate adequate safety precautions when working with or transporting NH₃.

Trainer's Note: Present a **dry** run safety demonstration on how to work with NH₃ correctly and demonstrate the proper use of PPE. After reviewing the check list below, encourage discussion about NH₃ accidents with participants. Involve employees and a NH₃ sales representative in the demonstration, if possible. Remember, reacting quickly to an anhydrous ammonia accident is critical. This module is intended as a refresher for employees who work with NH₃ and is not intended as a sole source of information on the safe use of this product. Contact your dealer for more information on in-depth training for your employees.

Background

Review the fact sheet “Safe Handling of Anhydrous Ammonia” included with this module.

Personal protection is the responsibility of both the employer and the employee. Anhydrous ammonia is a strong alkali that can cause **death or severe injury** to body tissue due to its caustic, corrosive, freezing and dehydrating action. An almost instant freeze-drying process occurs when the liquid NH₃ comes in contact with body tissue.

Ample Water Supply for Flushing Eyes/Skin

- Five gallons of water must be carried in each vehicle used to tow NH₃.
- Each employee should carry a **full** 16 oz. water bottle.
- A 150 gallon water container should be kept at the loading site.

Personal Protective Equipment Necessary For Working With NH₃

- Goggles/face shield
- Approved respirator
- Rubber gloves
- Long-sleeved and loose fitting shirts

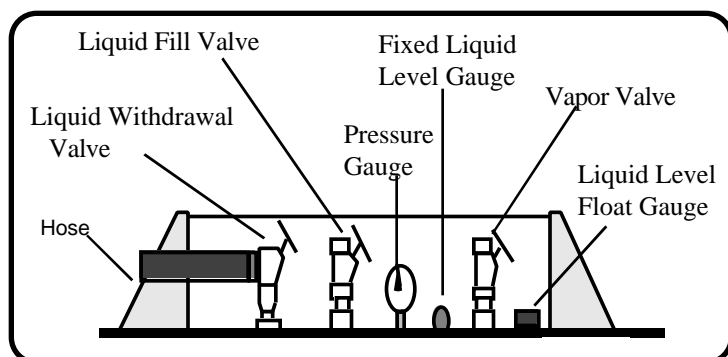
Care and Maintenance of NH₃ Tank

To handle NH₃ safely, it is imperative that all equipment is properly maintained and checked daily. A regular, scheduled maintenance program will ensure that all the valves and the tank are safe for handling the high pressure liquid and its vapor form. Perform a daily visual inspection to locate any defects in the tank or hoses.

Important Valves And Components List

- **Liquid Withdrawal Valve**-Be sure valves are functional and will shut off. Any leak detected in the valve is cause for immediate repair or replacement. The valve should be removed every five years and inspected for internal corrosion and thread deterioration. At this time, check the excess flow for (1) movement of the valve plunger, (2) corrosion of springs, valve seat and guide, and (3) out of round disk.

- **Liquid Fill Valve**-(Same inspection procedure as liquid withdrawal valve).
- **Vapor Return Valve**-(Same inspection procedure as liquid withdrawal valve).
- **Pressure Gauge**-Check the consistency with other tanks of similar volume. Make sure the lens is clean and the dial face is clearly readable.
- **Fixed Liquid Level Gauge**-Clean, repair or replace as needed.
- **Liquid Level Float Gauge**-Check against the 85% level gauge for accuracy. An inaccurate reading, leaking at the seal, or unreadable lens should be repaired or the defective item replaced.
- **Safety Relief (SR) Valve**-Stand to one side and use a mirror for viewing. The SR valve should be free of dirt and rust. Replace the rain cap if it is damaged or missing. Leakage or discharge below 250 psi is cause for replacement. The SR valve should be replaced every five years.
- **Hydrostatic Relief (HR) Valve**-Inspect the valve for leakage, corrosion or damage. The HR valve should be replaced every five years.
- **Transfer Hose**-Examine the hose closely for cuts, abrasions, soft spots, bulges, kinking or flattening and similar defects. Check for slippage of the hose at coupling. The hose must be replaced five years from the date of manufacture (stamped on hose).
- **Tank Condition**-Prevent corrosion and excessive pressure buildup from direct sunlight by keeping the tank painted with a reflective paint. Dented or damaged tanks should be taken out of service until checked by an authorized inspector and repaired as necessary. All welding on the tank must be done by a certified welder. Be careful in repairing or replacing these parts to prevent accidental exposure to anhydrous ammonia.



Checklist for Safety:

- **Do not fill the NH₃ tank more than 85% full.**
- **Do not use a faulty hitch pin or a wagon with a weak tongue.**
- **Check the condition of the tires and frame of the tank.**
- **Always disconnect the fill hose before moving the tank.**
- **Replace deteriorated or out of date hoses and faulty valves. Hoses must be replaced within five years of the date stamped on the hose**
- **Always wear the proper protective equipment (as noted above).**
- **Bleed pressurized NH₃ from the hose before connecting or disconnecting.**

Review The Following Points

- Have an ample water supply.
- Wear personal protective equipment.
- Never fill a tank over 85% of the tank's capacity.
- Inspect and replace hoses and valves as needed.
- Bleed off pressure in the hose before disconnecting.
- Stay clear of hose and valve openings.
- Follow step-by-step procedure when using the equipment.

True or False Answer Key

1. F, 2. F, 3. T, 4. T, 5. F

True or False

Name _____

- | | | |
|--|---|---|
| 1. There is no benefit to protecting the face and eyes is when using NH_3 . | T | F |
| 2. Leaving the fill hose connected while moving the tank is a safe practice. | T | F |
| 3. An ample water supply must be available while working with NH_3 . | T | F |
| 4. Anhydrous ammonia is a colorless gas. | T | F |
| 5. Overfilling the tank with anhydrous is harmless. | T | F |

Training Module: Protecting Against Noise

Objective: To know the effect of noise on hearing, and to practice proper protection against unsafe noise levels.

Trainer's Note: For this session, the trainer may want to demonstrate proper hearing protection by bringing earplugs and earmuffs to the session. Before the training, it may be helpful to purchase some of the types of earplugs shown below to give to each employee. This will allow the employees during the training to determine which they find most comfortable. Ask the employees to share some of the reasons they do not wear hearing protection. It will be important for the employees to understand that by protecting their hearing they have nothing to lose, but a lot to gain. Demonstrate to the audience that hearing protection does not make it more difficult to hear warning signals, machinery, or speech.

Background

The most common reason employees resist wearing ear protection is because they just don't think they need it. This is a frightening fact because hearing loss is gradual, and by the time it is realized, the ability to hear is not as good as before. It may be too late. Another reason individuals give for not wearing ear protection, is that they think the protection will be uncomfortable.

The following are several types of ear plugs which give good protection, are comfortable and easy to use:



Formable Plugs

Plugs are spongy, soft compressed or shaped prior to insertion; expandable to provide a snug fit. These are disposable plugs and are not for reuse.



Premolded Plugs

Plugs made of soft flexible material preformed to fit the ear. Must be fitted (sized) for each ear. These plugs are designed for reuse and must be washed after each use. They are good to use in cases when hearing protection is used on a regular basis.



Earmuffs

Adjustable headband with soft cups and cushions that seal around the ear. Plugs may be worn under muffs for additional protection. Muffs may be more comfortable to wear over a longer period than plugs, but should not be worn with eyeglasses or any other obstruction that will reduce their effectiveness.

How noise can hurt you:

- Too much exposure to loud noise can result in stress, from constantly straining to listen and be heard.
- Noise can cause you to miss important safety instructions.
- Prolonged exposure to loud noise can result in permanent hearing loss.
- Even if you are exposed to loud noise for a short time, you may temporarily lose your hearing.

How to tell if noise is hurting you:

- You may have a problem if you hear ringing or other noises in your ears, have a hard time hearing people when they talk to you, or are unable to hear high pitched or soft sounds.
- If you experience any of these problems, tell your supervisor. You may need to have your hearing tested.

****Becoming accustomed to loud noise is a sign of gradual hearing loss****

Noise is defined as sounds people prefer not to hear. Noise is especially dangerous in the workplace because it interferes with communication and disrupts concentration. Sound is measured by decibels. Noise that is 85 decibels or greater can affect your hearing if you work around it more than eight hours a day.

For example:

Chicken Coop; Conversational Voices	60-70 Decibels
Tractor Idling; Conveyers	80 Decibels
Diesel Trucks; Power Lawn Mowers	95 Decibels
Power Tools	100 decibels

Protective covering or insertions in the ears reduces noise levels to the inner ear. It is important to use hearing protection when noise exposure cannot be controlled adequately by environmental changes, such as moving farther away from the noise. Hearing protection should be worn when noise levels exceed 85 decibels.

Good protection against noise depends on the seal between the surface of the skin and the surface of the hearing protector. Caution should be taken because protectors can become loose and create leaks. Having a leak does not protect the ears from harmful noise levels. Talking and even chewing can create a leak in the protection. Earplugs should be made of a soft material, such as neoprene. Earplugs should also be properly designed, well-fitted, and clean.

Not all materials can block the same amount of sound. The manufacturer indicates how much noise (in decibels) the hearing protection device blocks. This is called the noise reduction rating (NRR). For general use, look for a NRR of 25 or greater.

Review the Following Points

- Sound that exceeds 80 decibels can cause hearing loss.
- Good protection against noise depends on the seal between the surface of the skin and the surface of the ear protector.
- It is important that hearing protection is worn properly.
- If head noise or ringing noises occur in the ears at the end of the workday, the worker might be exposed to too much noise, and should take precautionary measures.

True or False Answer Key
1. F, 2. T, 3. T, 4. T, 5. T

True or False

Name_____

- | | | |
|--|---|---|
| 1. All hearing protection is the same, so there is no reason to worry about the NRR. | T | F |
| 2. Protecting your hearing reduces noise level to the inner ear. | T | F |
| 3. Hearing loss is gradual, and by the time it is realized the ability to hear has already diminished. | T | F |
| 4. Most employees resist wearing ear plugs because they feel they are not needed. | T | F |
| 5. Muffs and plugs can be worn together for additional protection. | T | F |

Training Module: No Riders on Farm and Lawn Equipment

Objective: To know the dangers associated with riders on farm equipment and mowers.

Trainer's Note: Riders on any power equipment is a safety hazard and should not be allowed. Address the reasons why people have riders. Stress the hazards involved with riders and how these hazards outweigh the perceived benefits of having one or more riders. (Note: OSHA gives an exemption to an extra rider on tractors and other equipment for the purpose of training).

Background

Despite that most farm equipment does not have an extra seat provision, some people allow riders. **Any rider for any reason is a safety hazard.** An extra rider may block the driver's view or movement. They also may fall from the tractor and be run over or become entangled in equipment and be killed.

Some ways to reduce the perceptive need to carry a rider are: advanced planning of work tasks, using safety management techniques to reduce hazards, alternative forms of transportation and changing job assignments. The majority of riders are young children and account for the largest number of fatalities.

Remember:

- Only one person is allowed on each piece of farm.
- No riders should be enforced for lawn equipment also. Children are allowed to ride on lawn equipment, it opens the door for bigger equipment.
- Do not let farm or lawn equipment serve as a baby-sitting service. Many children are injured each year in machinery related accidents.
- Conduct new employee training in a "classroom" setting before anyone drives a tractor.
- When additional help is needed at a work site, arrange additional transportation.

Extra passengers are problematic because they:

- Interfere with the operator's vision and ability to use the control levers.
- Distract the operator.
- Increase the rider's exposure to noise, dust and chemicals.
- Increase the risk of a multiple injury incident.

Review The Following Points

- Riders on any power equipment is a safety hazard and should not be allowed.
- Many children are injured each year in machinery related accidents.
- All drivers of farm equipment need training in a classroom setting.
- Planning transportation needs ahead reduces the temptation to carry passengers on farm machinery.

True or False Answer Key

1. T, 2. T, 3. F, 4. F, 5. F

No Riders on Farm and Lawn Equipment Quiz

True or False

Name _____

- | | | |
|---|---|---|
| 1. Advance planning of all transportation needs is one way to keep riders off of farm and lawn equipment. | T | F |
| 2. Extra riders can be a distraction to the operator. | T | F |
| 3. Letting children ride on farm and lawn equipment is a good way to provide child care. | T | F |
| 4. Most farm equipment provides extra seating for riders. | T | F |
| 5. Two heads are better than one when it comes to making quick decisions on farm equipment. | T | F |

Training Module: Orchard Ladder Safety

Objective: To be able to properly use orchard ladders.

Trainer's Note: Ask employees to demonstrate using a tripod and extension ladder. Reinforce the proper way to use the ladders.

Background

Before workers begin working from ladders, they should be properly trained. Orchard harvesting teams should include an experienced person, to simplify and expedite ladder moving. Moving ladders in the orchard can cause extra work and may lead to additional accidents.

The improper moving and lifting of tripod orchard ladders leads to many accidents including falls.

Tripod orchard ladders are designed to be used on soft and uneven terrain therefore they lack spreaders, locking devices, steel points, and safety shoes. This ladder is not a general purpose ladder and should only be used in an orchard for pruning and harvesting operations. The ladder could collapse when used on firm, smooth ground. The top of the ladder can be made of a combination of wood or metal. Only one person should be on the ladder at a time.

Tripod Orchard Ladder Features:

- Single back leg provides relatively stable support on uneven terrain.
- Steps are at least 27 inches long and should have a metal angle brace.
- Maximum flare on the top to bottom rails (averaging 2.25 inches per foot) is required to stabilize the base.
- A double base on the rails is provided to control excessive penetration in soft soil.

The back of an orchard ladder should be towards the tree center, allowing for additional support if the worker slips. An orchard extension ladder should only have one person on the ladder at a time. The top of the ladder is not to be used as a step.

Orchard Extension Ladder Features:

- Converging rails at the top for easy fit in the limb crotch.
- Virtual one-point top bearing increases stability.
- Optional equipment which can be used on orchard extension ladders includes:
 - Steel "spikes" to prevent base slipping/skidding.
 - Rubber sleeves on upper rail sector to reduce branch abrasion and possibility of slip along the limb.



Review The Following Points

- Tripod orchard ladders are a source of many accidents.
- The top of the ladder is prohibited as a step.
- It is recommended that the back of an orchard ladder should be aimed toward the tree center.
- Everyone using a ladder should have proper training before work begins, especially in orchards.

True or False Answer Key

1. T, 2. T, 3. T, 4. T, 5. F

Orchard Ladder Safety Quiz

True or False

Name _____

- | | | |
|---|---|---|
| 1. Never use the top step of a ladder to reach. | T | F |
| 2. Everyone using a ladder should have training. | T | F |
| 3. Moving the ladders as little as possible will save time and prevent accidents. | T | F |
| 4. Orchard harvesting teams should include an experienced person, to simplify and expedite ladder moving. | T | F |
| 5. Tripod orchard ladders can be used as a general purpose ladder on the farm and home. | T | F |

Training Module: Overhead Electrical Hazards

Objective: To be able to prevent contact with overhead power supply lines.

Trainer's Note: Discuss the hazards of overhead power lines. Suggest methods for avoiding contact with power lines. Address questions concerning power supply lines. Invite a representative from the local power company.

Background

Using electrical equipment on farms saves time and labor. If large agricultural equipment, such as portable elevators, augers, irrigation pipes, grain trucks and harvesting machinery, come in contact with overhead power lines, the operator will be electrocuted resulting in death or disabilities. Irrigation pipes only need to be near an overhead power line to kill the handler.

Employees should check for overhead power lines before:

- Pulling or installing pump casing and pipe.
- Raising or lowering farm machinery.
- Moving irrigation equipment.
- Pruning Trees.
- Constructing buildings.

Remember:

- The absence of protective insulation from most overhead power lines making any contact is dangerous.
- Nonmetallic materials (lumber, tree limbs, tires, ropes, straw and hay) can conduct electricity
- Electricity always seeks the easiest and shortest path to ground. This includes going **through** people.
- Do not touch power lines.
- Unqualified workers, vehicles and machinery must stay at least ten feet away from unguarded equipment.
- Hay stored under power lines increases the chance that a loader will contact the power lines.
- Stay away from fallen overhead wires. Notify the power company immediately.
- Ladders should not be used near overhead power lines.
- Plan a travel route for equipment that avoids overhead power lines.
- The ground level should not be raised underneath overhead power lines.

Review The Following Points

- Most overhead power lines have no protective insulation. Any contact is dangerous.
- Electricity always seeks the easiest and shortest path to the ground.
- Never touch fallen overhead wires. Notify the power company immediately.
- Employees should check for overhead power lines before attempting any work activities.
- Plan your route of travel to avoid power lines.

True or False Answer Key

1. T, 2. F, 3. T, 4. T, 5. T

Overhead Electrical Hazards Quiz

True or False

Name _____

- | | | |
|---|---|---|
| 1. Never touch power lines. | T | F |
| 2. Nonmetallic materials such; as lumber, tree limbs, tires, ropes, straw, and hay, do not conduct electricity. | T | F |
| 3. Irrigation pipes or other machinery do not need to touch an overhead power line for it to be lethal. | T | F |
| 4. Notify the power company immediately should a problem or concern arise. | T | F |
| 5. Electricity seeks the easiest and shortest path to the ground. | T | F |

Training Module: Pesticide Exposure

Objective: To know the types and causes of pesticide exposure and how to prevent exposures.

Trainer's Note: Discuss how personal protective equipment can protect the applicator from the different types of exposure. The modules: Pesticide Protective Equipment and Reading Pesticide Labels can provide additional information.

Background

There are four ways toxic materials can be taken into the body. They are: oral, dermal, inhalation, and ocular exposures, with dermal be the most common type of exposure. These types of exposures are explained in the chart below.

Type of Exposure	Definition	Cause of Exposure
Oral Exposure	Swallow or ingest a pesticide	<ul style="list-style-type: none"> • Not washing hands before eating, drinking, smoking or chewing tobacco. • Mistaking a pesticide for food or drink. • Accidentally applying pesticides to food. • Splashing pesticide into the mouth through carelessness or accident.
Dermal Exposure	Having pesticide on your skin.	<ul style="list-style-type: none"> • Not washing hands after handling pesticides or their containers. • Splashing or spraying pesticides on unprotected skin. • Applying pesticides in windy weather. • Wearing inadequate personal protective equipment while handling pesticides or their containers.
Inhalation Exposure	Breathing in a pesticide.	<ul style="list-style-type: none"> • Prolonged contact with pesticides in closed or poorly ventilated spaces. • Breathing vapors from fumigants and other pesticides. • Breathing vapors, dust, or mist while handling pesticides without appropriate protective equipment. • Inhaling vapors immediately after a pesticide is applied. • Using the wrong respirator, or an improperly fitted respirator, or using filters, cartridges, or canisters that are "full" of chemicals, dust, etc.

Type of Exposure	Definition	Cause of Exposure
Ocular Exposure	Pesticide gets in the eye.	<ul style="list-style-type: none"> • Splashing or spraying pesticides in eyes. • Applying pesticides in windy weather without eye protection. • Rubbing eyes with contaminated gloves or hands. • Pouring dust, granules or powder formulations without eye protection.

Exposure is considered:

Acute: One-time case of pesticide exposure. For example: a spill on the body. Exposure is usually easy to determine.

Chronic: Low-level exposure over a longer period of time. Exposure is usually difficult to determine.

A combination of the two exposures can be dangerous. For example, daily exposure to a pesticide through contaminated clothing combined with an acute exposure like spilling a pesticide on your skin poses the greatest risk because the body may not be able to deal with the acute exposure.

Avoiding Exposure:

In order to avoid exposure, it is important to avoid the causes of exposure. For example, by wearing the proper eye protection you can prevent a pesticide from getting in the eyes.

To avoid exposure:

- Wear proper personal protective equipment (Refer to the module: Pesticide Personal Protective Equipment).
- If you do start to breathe pesticide mist or dust, move away from that area as quickly as possible and get into fresh air.
- Use a closed handling system.
- Maintain and clean personal protective equipment.
- Wash exposed body parts often to reduce dermal exposure.
- Read pesticide labels thoroughly (Refer to module: Reading Pesticide Labels).

Review the Following Points:

- Dermal exposure to a pesticide means that it gets on the skin.
- Ocular exposure to a pesticide means that it gets in the eye.
- Oral exposure to a pesticide is swallowing or ingesting it.
- Inhalation exposure is inhaling a pesticide.
- Using improper personal protective equipment can lead to exposure to the pesticide.

True or False Answer Key

1. T, 2. T, 3. F, 4. F, 5. T

Pesticide Exposure Quiz

True or False

Name _____

- | | | |
|--|---|---|
| 1. Oral exposure to pesticides can be caused by a spill of pesticides entering your mouth. | T | F |
| 2. Inhalation of pesticides can occur if you have the wrong respirator or one that does not fit correctly. | T | F |
| 3. Eye exposure to pesticides can be caused by a spill of pesticides into your mouth as a result of an accident or carelessness. | T | F |
| 4. Applicators or workers do not need to wash their hands after applying pesticides. | T | F |
| 5. Personal Protective Equipment can decrease exposure to pesticides. | T | F |

Training Module: Reading Pesticide Labels

Objective: To read and understand pesticide labels before using the chemicals.

Trainer's Note: Pesticide labels explain how to safely apply the chemical. For this training module show some labels and discuss what they say, how to use the information and why it is important.
NOTE: Do not use the label on an open container for demonstration purposes. Get some sample labels from a dealer or use unopened pesticides.

Background

Before applying pesticides, know what the label says! The chemical formulation, signal word, precautionary statements, personal protective equipment statements, application method, and the projected length of exposure are indicated on the label. By reading and understanding the label, pesticides can be used safely and correctly.

Read the Label:

- **Before purchasing the pesticide.** It must be registered for your intended use, and you must make sure there are no restrictions that would prohibit its use.
- **Before mixing and applying the pesticide.** Understand how to mix and safely apply the pesticide, and know the first aid needed if an accident should occur.
- **When storing pesticides.** To prevent breakdown, contamination, and fire hazards know how to properly store pesticides. The farm chemical storage center should also be securely locked.
- **Before disposing of unused pesticide and empty containers.** To prevent environmental contamination and human health hazards.

The Label Contains:

- **Brand name.** The name given to the pesticide by the manufacturer.
- **Chemical name.** The name given to the pesticide by chemists to describe the chemical structure.
- **Common name.** For clarity, most pesticides have an assigned official common name. Common names and brand names are not the same and not all labels will list a common name. For example, diazinon is a common name.
- **Formulation.** Pesticide labels always list the formulation type, such as emulsifiable concentrate, wettable powder, or soluble powder.
- **Ingredients.** The label lists the percentage of active and inert ingredients by weight. Inert ingredients are those components that do not have pesticidal action.
- **Contents.** Labels list the net contents, by weight or liquid volume, contained within the package.
- **Manufacturer.** The label always has the name and address of the manufacturer of the product on it.
- **Registration and Establishment Numbers.** The numbers assigned by the EPA and other registering agencies such as the state.

- **Signal Word.** Part of the registration process assigns each pesticide to a toxicity category and prescribes which signal word must be used on the label.

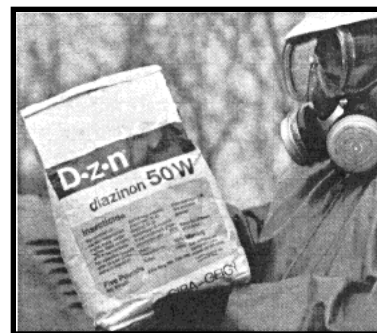
<u>Category</u>	<u>Signal Word on Label</u>
High Toxicity	DANGER
Moderately Toxic	WARNING
Low Toxicity	CAUTION
Relatively Non-Toxic	NONE

- **Precautionary statements.** Describes the hazards associated with the chemical. It tells why the pesticide is hazardous, what adverse effects may occur, and describes the type of protective equipment that must be worn while handling the pesticide.
- **Statement of practical treatment.** This tells what to do in case of accidental exposure.
- **Statement of use classification.** Pesticides are classified by the Environmental Protection Agency as either "General-Use" or "Restricted-Use," based on the potential of the pesticide to cause harm to people, animals, or the environment.
- **Directions for use.** These instructions tell how to apply the pesticide, how much to use, where to use the material, when it should be applied, and also included the preharvest interval for all crops whenever appropriate.
- **Misuse statement.** This reminds users to apply pesticides according to label directions.
- **Reentry statement.** Restrictions may apply to the time that must elapse before a person can enter an area treated with a pesticide. This reentry interval is included on the label or in state regulations.
- **Storage and disposal directions.** Improper storage of some pesticides may cause them to lose their effectiveness or even cause an explosion or fire. Directions for proper storage and disposal of the pesticide can be found on the label.
- **Warranty.** This information informs you of your rights as a purchaser and limits the liability of the manufacturer.

The label is the law and must be followed.

Review the Following Points

- Always read the labels before applying pesticides.
- Know what the warnings are and what they mean.
- Understand the differences between toxicity levels.



True or False Answer Key

1. F, 2. T, 3. F, 4. T, 5. T

True or False

Name_____

- | | | |
|---|---|---|
| 1. Storage and disposal instructions won't be found on the label and therefore are unimportant. | T | F |
| 2. One should read the label to know how to mix and safely apply the pesticide. | T | F |
| 3. The common name is the same as the brand name of a pesticide. | T | F |
| 4. "Danger" on the label means high toxicity. | T | F |
| 5. Read the label to find out what PPE to use. | T | F |

Training Module: Pesticide-Contaminated Clothing Laundering

Objective: To be able to launder pesticide-contaminated clothing according to safety guidelines.

Trainer's Note: Although personal protective equipment (PPE) should be worn when working with pesticides, if clothing does become contaminated with pesticides it must be laundered separately and properly. This also applies to reusable PPE.

Background

Traditional types of work clothing absorb pesticides and hold them close to the skin. The chance of the pesticide being absorbed by the skin is increased. Clothing can be decontaminated, but it is recommended to wear personal protective clothing to keep the pesticides away from the skin. Personal protective clothing must also be decontaminated.

When laundering reusable protective clothing:

Always read the pesticide label before doing anything else. The label may give recommendations for the laundering process. All clothing worn while working with pesticides should be considered contaminated, and be separated from the rest of the clothing. When working with possible pesticide contaminated clothing, **rubber gloves should be worn**. Clothing should be laundered after each use. It is easier to remove pesticides daily than to remove accumulated contamination. Contaminated clothing should not be dry cleaned or washed in a public laundry facility.

****Before laundering contaminated clothing, check with local or state agencies for proper disposal of contaminated rinse water.**

After taking off clothing, use detergent and water to thoroughly wash your hands, face, neck and forearms. Then take a shower.

Steps in laundering reusable protective clothing:

- Pre-rinse or presoak clothing. Presoak clothing contaminated with similar pesticides together.
- Pesticide-contaminated clothing should be laundered separately from household laundry.
- The machine should not be overloaded, so only wash a few contaminated items at a time.
- Use only hot water (140 degrees to 160 degrees).
- The water level should be on the highest setting, washing for the full cycle (12 minutes) using a double rinse.
- Dry detergent should be used to clean dry formulations of pesticides, and a liquid detergent to clean liquid formulations of pesticides.
- Use 25 percent more detergent when clothing items have been treated with a soil/water repellent finish (i.e. Scotchguard™ or Zepel™).
- **Bleach should not be used.** It does not help to remove pesticide residue, and can react with ammonia fertilizer forming chlorine gas, which can be **fatal**.
- All laundered clothing should be line dried. Sunlight will help to breakdown any pesticide residue left in the clothing, and keep the dryer from becoming contaminated.

- Store pesticide handler clothing in a clean, dry place **separate from other clothing**, and away from pesticides and pesticide containers.
- **Clean the washing machine** by running the empty washer through a full wash cycle with hot water and detergent. This is an important step in the laundering of pesticide contaminated clothing. If the machine is not decontaminated, then other clothing will become contaminated.

Pesticides cannot be removed from:

- leather boots
- leather watchbands
- inner bands on caps and some decorative items
- severely contaminated clothing

Warning:

1. Do not wash limited use coveralls if they have been contaminated with pesticides.
2. Treat contaminated coveralls the same way you would treat the pesticide. Wear gloves and other PPE to protect yourself from pesticide residues within the clothing.

Reusable coated/laminated suits:

Suits made from materials such as PVC or nitrile should not be decontaminated in a washing machine. Instead, hose them off and wash them in a tub of hot soapy water. Protective clothing made of nitrile, PVC or other rubberlike compounds should be line dried in the shade to keep harmful sunlight from damaging the materials. Suits made from plastic laminates, nitrile or latex may melt if placed in a dryer.

Review the Following Points:

- Pesticide-contaminated clothing should be washed separately from other clothing.
- When washing, use the maximum water level and the hottest water, and then line dry clothing.
- Clean the machine with a full wash cycle using hot water.
- Contaminated coveralls should be treated the same way you would treat the pesticide.

True and False Answer Key

1. F, 2. T, 3. T, 4. F, 5. T

Pesticide-Contaminated Clothing Laundering Quiz

True or False

Name _____

- | | | |
|--|---|---|
| 1. Pesticide residue can easily be removed from leather. | T | F |
| 2. Contaminated clothing should be laundered after each use. | T | F |
| 3. Rubber gloves should always be worn when laundering pesticide contaminated clothing. | T | F |
| 4. Pesticide-contaminated clothing does not have to be kept separate from other laundry. | T | F |
| 5. Bleach should not be used in the laundering process. | T | F |

Training Module: Pesticide Protective Equipment

Objective: To be able to choose the proper attire for pesticide application, and assure cleanliness of personal protective equipment

Trainer's Note: Helpful visual aids for this module include personal protective equipment (PPE) and a variety of pesticide labels. Based on the recommendations provided on the labels, demonstrate what PPE to wear during various chemical applications.

Background

The following PPE is available to protect against pesticide exposure:

Gloves: Wear unlined, elbow length, chemical-resistant gloves when handling any pesticide concentrate or chemical labeled DANGER, POISON or WARNING. Check gloves for holes or leaks. To check for leaks, fill the gloves with water and squeeze. Throw the gloves away if water squirts through a hole. Leaks or holes in the gloves can expose the skin to chemicals.

Either tuck gloves into shirt sleeves or vice versa. This prevents the chemicals from getting inside the gloves at the cuff. After applying or handling pesticides and before removing the gloves, wash them with detergent and water to prevent contaminating the hands.

Never wear cotton or leather gloves. They do not protect against dermal (skin) exposure. They would allow chronic exposure to the pesticide.

Footwear: When applying or handling chemicals, wear unlined, lightweight rubber vinyl boots which cover the ankles. Wear long pants over the boots to avoid getting pesticides inside of the boots. After each use, thoroughly wash and dry boots on the inside and out to remove residues and reduce exposure risk. Always wear gloves when cleaning personal protective equipment after it has been used.

Eye Protection: Wear tight fitting, non-fogging chemical splash goggles or a full face shield when applying or handling pesticides. Clean the eye protection and wash the sweatband after each use.

Head Protection: Protect the head and neck against pesticide exposure by wearing a waterproof rain hat or washable, wide-brimmed hard or bump hat. Avoid cotton and felt hats because they absorb pesticides.



Respirators: Wear a respirator when it is recommended. It will be necessary to wear a respirator when handling concentrated, highly toxic pesticides. Ensure that the respirator fits properly, and is the appropriate type for the hazard.

Clothing: Spraying contaminates clothing so be sure to wear fresh clothing daily. Wash contaminated clothing separately from other laundry. Dispose of items that are saturated with pesticides. Drop into plastic bag rolled in an open position. For further information refer to model: Pesticide-Contaminated Clothing Laundering.

Review The Following Points

- Pesticide applicators are legally required to follow all personal protective equipment instructions that appear on the labels of pesticide containers.
- Wear the right PPE clothing/protection for the right job.
- Never use faulty or worn out PPE.
- Always wash thoroughly when finished with pesticide applications.

True or False Answer Key

1. T, 2. F, 3. T, 4. T, 5. T

Pesticide Protective Equipment Quiz

True or False

Name _____

- | | | |
|--|---|---|
| 1. Eye protection should fit snugly and be non-fogging. | T | F |
| 2. Wear pants on the inside of the boots to avoid getting pesticides on the pants. | T | F |
| 3. Use a respirators as called for by the pesticide label. | T | F |
| 4. Never wear the same clothes without washing them first. | T | F |
| 5. Throw away any PPE equipment that has holes or is damaged. | T | F |

Training Module: Farm Pond Safety

Objective: To become aware of the dangers associated with farm ponds.

Trainer's Note: Everyone with access to a farm pond should know how to swim and how to give artificial respiration. Water safety information can be attained through local extension services and the American Red Cross. Consider providing swimming lessons for those who cannot swim. Water safety education should be offered to employees and family members. Teach this module at the pond where demonstrations by qualified rescue professionals can easily take place.

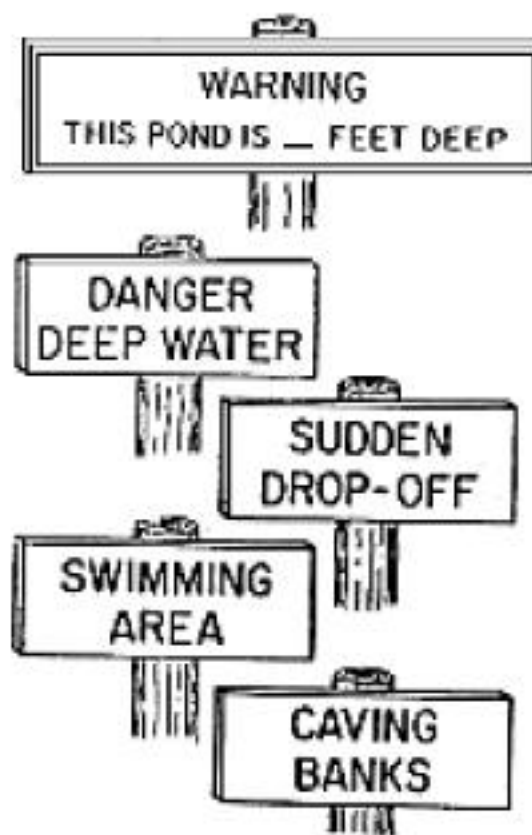
Background

A farm pond is used to control soil erosion and flooding and to provide water for recreational purposes, livestock, irrigation, fire protection, and fish production. In most cases, it is recommended that ponds be fenced in with posted "KEEP OUT" signs. A drowning is more likely to occur when protective barriers are absent. It is the farmer's responsibility to ensure that the farm pond is as safe as possible.

Accidents can be prevented and lives saved by warning signs. Mark dangerous areas. Farm ponds used for swimming should have a secure rescue post near the water. The post should be painted yellow and be equipped with a buoy and reaching pole. The buoy should be attached to a piece of nylon rope long enough to reach across the pond. On the opposite side attach a thin, lightweight 12' to 14' pole for reaching. If a swimmer is in trouble remember to use the reaching pole first. Throw the buoy as a second attempt. A rescuer should only enter the water as a last resort! Attach a notice of the location of the nearest phone and the local emergency number on the post.

Rules for Farm Pond Safety

- When children are swimming an adult should be present.
- Never swim alone, Even the best swimmers get into trouble.
- General water safety education should be



arranged for all pond users.

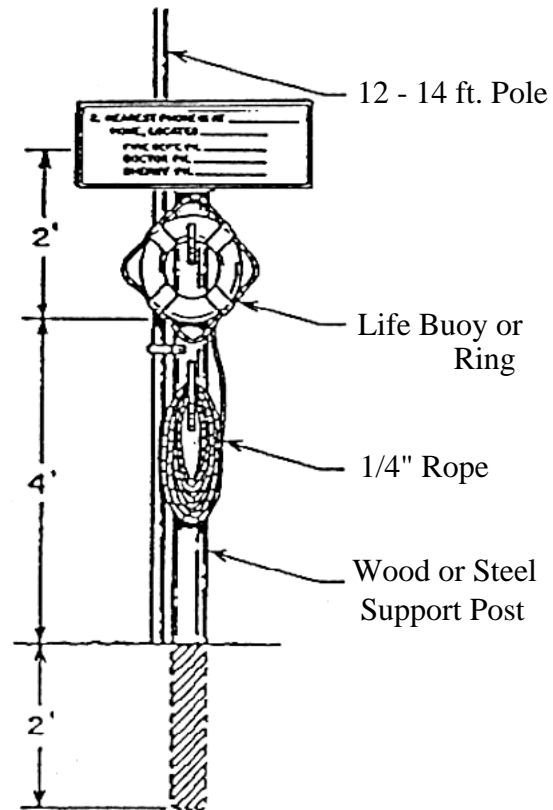
- Piers and boat landings should be well built and securely braced.
- Rescue equipment (reaching pole, rope, buoy) should be readily available.
- Water should be approved by local health department.
- Fence the pond and lock the gate.
- Keep the recreational area free of debris.
- Mark deep and/or unsafe swimming areas with floats.
- Air mattress and inner tubes can be hazards.

If boating on the farm pond:

- Ensure that the boat is safe and in good condition.
- Never overload the boat. Even a good quality boat can sink.
- Have a life preserver on board for each person on board.
- Follow all approved water safety rules.

Review The Following Points

- Offer general water safety education to all employees.
- Place warning signs around the pond and if possible, install a fence.
- Know how to give artificial respiration.
- Never swim alone. Even good swimmers can drown.
- Install a rescue post.



True or False Answer Key

1. F, 2. F, 3. T, 4. T, 5. T.

Farm Pond Safety Quiz

True or False

Name _____

- | | | |
|--|---|---|
| 1. Good swimmers are always safe. | T | F |
| 2. All farm ponds have safe, clean water for swimming. | T | F |
| 3. General water safety education should be arranged for pond users. | T | F |
| 4. All farm ponds should have a rescue post installed for safety. | T | F |
| 5. The farm pond is an important part of many Ohio farms. | T | F |

Training Module: Safe Operation of Portable Circular Power Saws

Objective: To be able to safely use power saws, and to prevent accidents.

Trainer's Note: Hold this session in the shop. Discuss the hazards involved with using power saws and how these hazards can be avoided. Ask the workers why the hazards associated with power saws are often overlooked.

Background

Keep the Work Area Safe:

- Keep extension cords out of water.
- Keep work area free of clutter and debris.
- Use proper lighting.
- Have adequate ventilation.

Saws In Safe Working Condition Have:

- Sharp blades.
- A three conductor plug, unless it is double insulated.
- A properly functioning rubber coated extension cords without cuts, tears or breaks in the outer coating.
- Properly functioning guards should enclose the portion of the blade above and below the material being cut.

Portable power saw guards should be able to move freely and should almost totally enclose the blade except when a cut is being made. Then the guard should rotate to allow the blade to be exposed while making the cut. However, the portion of the blade extending below the material being cut will not be covered by a guard. The depth of the cut should be adjusted to limit the amount of blade extending through the material being cut to 1/2" or less.

Follow Safe Work Practices:

- Wear eye protection.
- Replace dull or burned saw blades.
- Lift the saw from the cut after the blade stops.
- Carry the saw by the handle and use the handle to raise or lower the saw.
- Use the correct blade for the cut intended.
- Disconnect power before cleaning the saw, changing blades, or making adjustments.
- Use power hand saws appropriately.
- Place materials on a firm surface for cutting (not on hands, arms, across the knees or feet).
- Cut the materials beyond the end of a support so that the waste falls clear.
- Adjust the blade depth to limit the amount of blade exposed below the material being cut to 1/2" or less.

Review The Following Points

- Keep work areas clean and free of clutter.
- Always wear goggles or other eye protection.
- Use the correct blade.
- Carry the saw by the handle and keep fingers off the trigger switch.
- Make sure power saws are grounded with a three prong conductor plug.
- Replace all damaged parts and cords.
- Make sure guards are in place and functioning.

True or False Answer Key

1. F, 2. T, 3. T, 4. F, 5. T

Safe Operation of Portable Circular Power Saws

True or False

Name _____

- | | | |
|---|---|---|
| 1. Eye protection is not necessary when using a power saw. | T | F |
| 2. If an extension cord is damaged it should be replaced immediately. | T | F |
| 3. Carry the saw by the handle and not with a finger on the switch trigger. | T | F |
| 4. One blade can be used for all saw cuts. | T | F |
| 5. Never use an arm or leg as a saw horse. | T | F |

Training Module: Protecting the Head

Objective: To know when and what type of head protection to use.

Trainer's Note: Explain when and where to wear a hard hat. Discuss how to prevent accidents by wearing a hard hat. Have each employee try on and adjust a hard hat to proper fit.

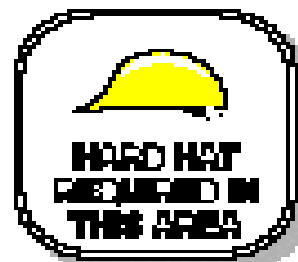
Background

Wear a hard hat if there is danger of striking the head on overhead objects or of being hit by a falling, overhead object. Potentially dangerous situations include:

- Working below other workers or machinery.
- Working around or under conveyor belts.
- Working around exposed energized conductors.

Wear hard hats made of slow-burning, water-resistant molded plastic. They protect the head in various ways.

- The hard outer shells resist blows and penetration from above.
- Shock-absorbing suspensions (headband and straps) act as an impact barrier between the hat and the head.



Because the suspension gives a helmet its impact distributing qualities, helmets worn over a cap or parka hood do not protect the head. Liners are available to keep the head warm and chin straps are also available to keep the hat in place. Hard hats come in different classes or levels of protection.

CLASSIFICATION	LEVEL OF PROTECTION
Type I	Designed for top of head protection
Type II	Designed for top, front, rear and side protection
Class G	Resists impact and penetration and provides limited resistance to electricity.
Class E	Resists impact and penetration and provides high resistance to electricity.
Class C	Provides impact and penetration resistance only. They are usually made of aluminum and should never be worn around electricity

Inspect the Hard Hat Before Using.

Wear the hat if:

- The headband is not stretched or worn and fits comfortably.
- The shell is not dented, cracked, or visibly damaged.

After Using the Hard Hat:

- Check the hat for damage. If damaged, destroy the hat.
- Wash the shell frequently using hot soapy water only; rinse thoroughly.
- Store the hat carefully in a cool, dark, dry place.

Cover The Following Points

- Know when to wear a hard hat.
- Choose the best hard hat for the job.
- Wear hard hats that are in good repair.
- Discard damaged hats.

Protecting the Head Quiz

True or False

Name _____

- | | | |
|---|---|---|
| 1. Do not wear a hard hat when working below conveyor belts. | T | F |
| 2. Helmets worn over hats still offer protection. | T | F |
| 3. A class "C" helmet should be used when working with electricity. | T | F |
| 4. Hard hats should be inspected before each use. | T | F |
| 5. Hard hats should be stored in cool, dry places. | T | F |

Training Module: Safe Use of the Power Take Off (PTO)

Objective: To become aware of the dangers of the PTO system, and to learn to use the system safely.

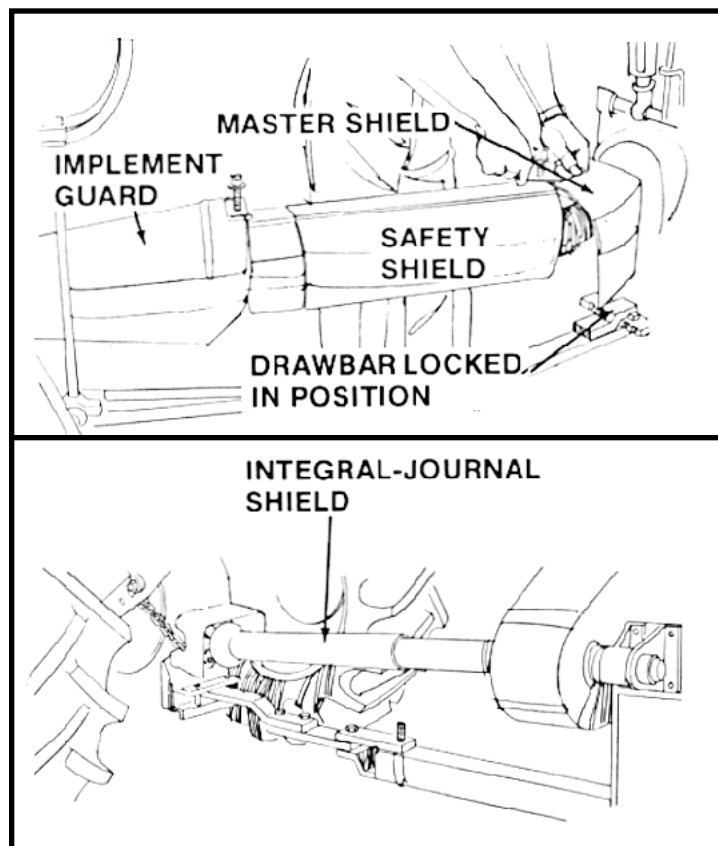
Trainer's Note: PTOs are used on farm and lawn equipment. Demonstrate how to properly hook up and unhook a PTO. Wear close-fitting clothing to reinforce the idea that loose clothing is dangerous. Discuss the importance of keeping protective shields in place. Ask workers for examples of possible accidents and preventive measures that should be taken.

Background

Keep **safety shields** securely fastened on equipment. Safe operation of the PTO is not possible without these shields in place. A sudden slip or fall could throw a worker directly onto the unshielded rotation shaft. Also those who are unfamiliar with the equipment, may not recognize the danger of the power shaft.

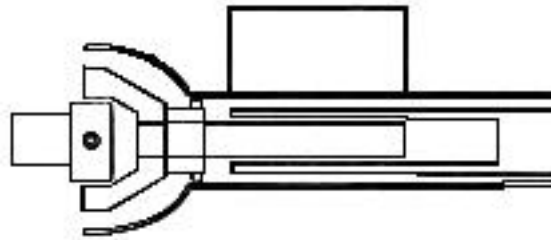
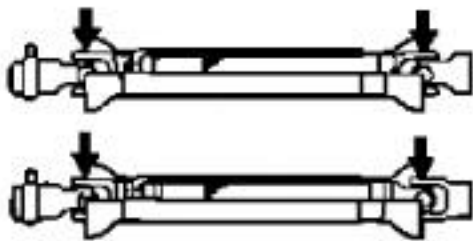
Wear **snug fitting clothes** when working around power shafts. Loose clothing can catch in or be wrapped around the power shaft. Do not step over an operating PTO. A sudden slip or a loose shoe string could cause the worker to become entangled in the PTO shaft. Long hair may also become entangled in a PTO shaft. Hair should be pulled back out of the way.

Most power shafts can be extended. These shafts are usually constructed with a square shaft inserted into a housing or casing. It is important that at least 5 1/2 inches of the sliding shaft remain in the housing when the power shaft is connected to the tractor. This reduces the possibility of the shafts separating while the tractor is in motion. If the shaft splits, the portion of the shaft connected to the tractor is free to whirl at high speeds, endangering the worker and tractor. If the shaft does separate, disengage the PTO immediately and stop the tractor. Use extreme caution when operating equipment with a separable PTO shaft. Never hook 540 rpm equipment to a 1000 rpm PTO or vice-versa.



Review The Following Points

- Keep all PTO guards and shields in place, even when the PTO is not operating.
- Always disconnect the PTO when not in use.
- Never engage the PTO while the machine engine is shut off.
- Keep hands, feet, and clothing away from PTO.
- Keep hair away from the PTO.
- Never operate PTO shafts at extreme angles.
- Be sure that the PTO spinner shields rotate freely at all times. Always disengage all power and shut off tractor before servicing.



True or False Answer Key

1. T, 2. F, 3. T, 4. T, 5. T

True or False

Name_____

- | | | |
|--|---|---|
| 1. Always disconnect the PTO when it is not in use. | T | F |
| 2. Wear loose fitting clothing when working with PTO's. | T | F |
| 3. Always keep the PTO safety shields on the machine. | T | F |
| 4. Never hook 540 rpm equipment to a 1000 rpm PTO or vice-versa. | T | F |
| 5. Never engage the PTO while the machine engine is shut-off. | T | F |

Training Module: Power Take-Off (PTO) Shielding

Objective: To be aware of the dangers of not using PTO shielding.

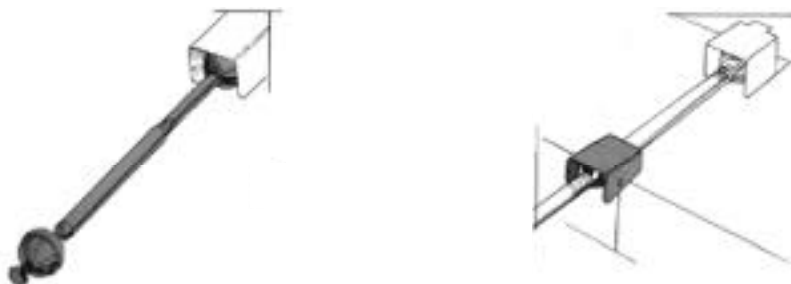
Trainer's Note: Use PTO shields on implements for demonstrating the points in this training lesson. Point out the shields on a tractor with power takeoff. Ask workers to give examples of mishaps that can occur when shielding is not in place.

Background

Death or injury can result from becoming entangled with a PTO. In order to prevent injury or death, proper shielding must be in place. Replace damaged or missing shield immediately. If there are questions about the machinery, check with employer or equipment dealer.

Using Caution When Working with PTO Equipment:

- Disengaging the PTO before getting off a tractor reduces the chance of slipping or falling onto a rotating shaft or getting caught in a moving part.
- Integral shields should move freely. When the power is off, the shield should easily rotate by hand. Repair damaged shield or bearings immediately.
- Keep the tractor PTO master shield in place.
- The equipment operator should wear close-fitting clothes and slip-resistant footwear. Rotating parts catch loose clothing easily.
- Never step across a rotating power shaft. Forage blowers, grinders, and mixers must run at full speed while the operator is working in their vicinity, so it is **crucial** to always walk around the revolving shaft.
- Never allow children around the equipment or work area.



Review The Following Points

- Keep all shields in place at all times except when servicing.
- Replace all shields immediately after servicing a PTO shaft.
- Never step over a working PTO.
- Always disengage the PTO before getting off a tractor.
- Wear close fitting clothing when working around a PTO.
- Keep children away from a PTO.

True or False Answer Key

1. F, 2. F, 3. T, 4. F, 5. T

Power Take-Off (PTO) Shielding Quiz

True or False

Name _____

- | | | |
|---|---|---|
| 1. Wear loose fitting clothing when working around PTOs. | T | F |
| 2. Allow children to play around PTOs. | T | F |
| 3. Keep any shielding on PTO's in place or replace immediately after servicing. | T | F |
| 4. Stepping over a rotating power shaft is acceptable. | T | F |
| 5. Always disengage the PTO before getting off a tractor. | T | F |

Training Module: Repetitive Motion

Objective: To be able to identify the potential for injury in tasks requiring repetitive motion.

Trainer's Note: Eliminating repetitive motion injuries requires adapting work activities. Alert workers to the warning signs of potential problems. Discuss how to avoid or correct problems.

Background

Repetitive motion injuries (also called cumulative trauma disorder or CTD) occur when some action, usually bending or twisting, is done over and over. Pain or other warning signs may develop slowly. The most common body parts that are affected by repetitive motion injuries are: fingers, hands, wrists, elbows, arms, shoulders, back and neck. Other areas may also be affected. If pain does occur in any of the above mentioned areas or others, don't ignore it. The pain will not go away, but instead will get worse, and the injury will become more severe.

Some movements that may lead to repetitive motion injuries include:

- Repetitive action of the hand or arm
- Bending at the wrist
- Grasping or pinching objects
- Frequently raising the arm and/or the shoulder
- Applying force with the hand or arm

Symptoms that may alert you of an injury include:

- Waking due to pain
- Numbness
- Tingling
- Swelling or tenderness
- Continuous aches
- Loss of strength
- Loss of joint movement
- Crackling
- Decreased coordination

Prevention means working and playing smart. Plan how to use or move work equipment so that the same motions are repeated over and over. Be aware of repetitive motion used on and off the job. Repetitive motion trauma is most likely to occur after applying pressure or doing the same motion over and over. Some examples are: Putting on and taking off milkers in dairy operations, picking and sorting fruit, and sweeping floors. If inflicted in spite of prevention, contact your primary care provider for an evaluation. Receiving an early evaluation and treatment is important.

Your doctor may prescribe medication to help reduce symptomatic inflammation and pain. Regular follow-up visits with your physician should be scheduled to monitor your progress. For more serious cases you may be referred to an occupational therapist.

In most cases the physician will remove a person from the situation that is causing the injury. Time away from the situation, followed by a gradual return to an improved work situation will be suggested by the physician. Strengthening hand and arm muscles with exercise may be another suggestion. An improved work situation could be accomplished by simply changing motions so the same motion isn't continuously repeated, or by including short rest breaks into your daily routine.

Consider these tips:

- Avoid repeating the same motion, the same way for long periods of time.
- Work in a comfortable position.
- Force can cause injury; to nerves, muscles and tendons.
- Get plenty of rest.

Review The Following Points

- Work smart before using tools and work equipment.
- Be aware of the repetitive motions included in your work.
- If pain or numbness occurs, seek medical attention.
- Change work habits to change the repetitive motion.

True or False Answer Key

1. T, 2. T, 3. F, 4. T, 5. T

Repetitive Motion Quiz

True or False

Name _____

- | | | |
|--|---|---|
| 1. Tingling or numbness in the fingers, hand or arm is a sign of repetitive motion injuries. | T | F |
| 2. Preventing repetitive motion problems starts with learning to work and play smart. | T | F |
| 3. There is no need to worry about changing work habits to change a motion that is repeated over and over. | T | F |
| 4. Not having enough rest, limits recovery from the motions and pressure that can lead to problems. | T | F |
| 5. Repetitive motion injures are caused by the simple actions of bending or twisting the body. | T | F |

Training Module: Respiratory Diseases

Objective: To know the symptoms of respiratory diseases, and how to take actions to prevent these diseases.

Trainer's Note: Breathing silo gases, dust, or mold spores can cause lung disease or death. Teach employees to recognize this danger and to avoid exposure. Conduct this session near a silo with the proper respirators available. Review the Respirator Fit and Silo Safety Modules along with this module.

Background

There are several different types of respiratory diseases and illnesses a person can have. Some last for only 24 hours, others may be chronic, while other diseases are life threatening. These diseases have a variety of causes, such as silo gases, dust, and mold spores. They are all very serious and preventable.

Silo Filler's Disease occurs when lung tissue comes into contact with silo gas. Nitrogen oxides begin to form a few hours after the silo is filled. They may be present up to weeks afterward. However, the first three weeks after filling the silo are the greatest risk.

Symptoms of silo filler's disease may be an eye and upper airways irritation with fatigue and shortness of breath for a few days. This is normally followed by a full recovery. The second scenario may be the disease developing in two stages. The first stage consists of a cough and some shortness of breath. A few days later a second more serious stage may occur. This stage may consist of fluid forming in the lungs. Silo filler's disease is difficult to treat. The fatality rate has been as high as 29 percent.

To help prevent Silo Filler's Disease:

- Stay away from recently filled silos.
- Run the blower for at least 15 minutes before entering a partially or recently filled silo.
- Enter the silo during daylight when gases are more likely to be visible. However, there still may be enough gas present to cause problems yet still not be visible.
- Bleach-like fumes should not be inhaled. However, if these fumes are inhaled and you are having difficulty breathing get to fresh air immediately.

Farmer's Lung is caused by the mold spores that grow in hay, stored grain, or silage with high moisture content. These spores are stored in winter and spring in closed storage areas and on dairy farms. When the dry uppermost silage is removed after months of storage, spores are released into the air. Inhaling mold spores may cause farmer's lung disease (FLD). FLD occurs most often in the winter months. The classic attack will occur 5-6 hours after the exposure. The disease may develop without any observed interval between exposure and the appearance of symptoms. Symptoms are feverish and flu-like. They may also include; shortness of breath discomfort in the lungs, and a tightness and/or pains in the chest. Individuals developing FLD may have repeated attacks lasting weeks or even months. They may suffer from this condition for the rest of their lives when exposed to even the slightest amount of mold dust. Chronic reactions resemble nagging chest colds. By the time the person receives treatment, permanent damage can already be done. People have died from Farmer's Lung. Don't be afraid to mention Farmer's Lung to your physician, as they may not be very familiar with the disease.

Silo Unloader's Syndrome is a result of inhaling too much dust. When afflicted, the farmer may die immediately of asphyxia or succumb to pulmonary edema within 24 hours. Survivors often develop progressive bronchitis within a few weeks.

Organic Dust Toxicity Syndrome (ODTS) is also caused by exposure to excessive amounts of dust. The symptoms of ODTS are identical to an acute attack of Farmer's Lung. This is not an allergic reaction, and anyone can get ODTS. Some people may become extremely sick as a result of ODTS, but most recover completely. Having ODTS once does not damage the lungs and doesn't increase the risk of getting it again.

The best **prevention** for these illnesses is adequate ventilation and keeping the moisture content of hay low. A respirator approved for toxic dust should be used every time when you have to enter or are working near a conventional silo. If you are having difficulty breathing with a respirator, get into fresh air immediately and check your respirator for problems.

Review The Following Points

- Use a respirator when working around recently filled silos.
- Do not remain at the silo if you smell a bleach-like odor.
- Have plenty of ventilation around the silo.
- Avoid freshly filled silos for 48 hours.

True or False Answer Key
1. T, 2. F, 3. T, 4. T, 5. F

True or False

Name_____

- | | | |
|--|---|---|
| 1. Silo Filler's Disease is a result of inhaling silo gases. | T | F |
| 2. All FLD attacks will clear up over night and are not a serious problem. | T | F |
| 3. Freshly filled silos should be avoided for at least 48 hours. | T | F |
| 4. FLD is caused by inhaling mold spores. | T | F |
| 5. A bleach-like odor is not cause for alarm. | T | F |

Training Module: Respirator Fit

Objective: To wear the correct respirator for the job and make sure it fits properly.

Trainer's Note: There are many daily jobs that require the use of respirators to protect your lungs. It is important to use the respirators correctly to receive their full benefit. Have respirators on hand to try on for fit and to show the different types.

Background

A dust/mist respirator will always have two straps and should not be confused with single strap masks. (The single strap masks are only for nontoxic nuisance dusts.) It protects your lungs from most dusts, mists, pollen and certain low toxicity pesticides, as specified on the label, by removing small particles from the air you breathe.

Dual cartridge respirators are available to handle a long list of contaminants. The three types mostly used by farmers and ranchers are those effective for pesticide application, those for ammonia, and those for spraying toxic paints and using solvents. However, they are not designed for use against gases that are extremely toxic even in small concentrations such as manure or silo gases from a recently filled silo. They also, should not be used for contaminants their cartridges are not designed to handle or in oxygen deficient places. An air-supplied respirator should be worn in oxygen-limited environments.

A respirator should not be used if:

- You have a beard, mustache, long sideburns, a deep facial scar or deformity.
- You have lung disease, heart trouble or breathing problems. A doctor's advice may be needed before using a respirator in these situations.
- It has not been approved for the specific hazard you are protecting yourself against.
- It does not accommodate for glasses.

Fit Tests For Respirators

Dust Respirator fit test:

- Check for proper fit each time you put on a dust respirator.
- Cup both hands in front of the mask. Be careful not to push on the mask or move it.
- Inhale deeply. Check to see if the facepiece collapses toward your face.
- Smile, then frown.
- If the mask is drawn in and no air is leaking in around the edges, you have a proper fit.
- If you don't have a proper fit, try readjusting the straps or repositioning the respirator on your face.
- Repeat the test until you have a proper fit.
- Check the written material that comes with the respirator for other specific fitting instructions.

Dual Cartridge Respirator Fit Test:

- For a Positive Pressure Test, put on your respirator and block off the exhalation valve with the palm of your hand, as shown in the picture to the right.
- Gently exhale, then hold it for about 10 seconds.



- Place your hand on the facepiece to see if it is bulging slightly.
- Smile, then open your mouth. If you notice a slight bulge and you don't detect any air leaks, you have a proper fit.
- For the Negative Pressure Test, place the palms of your hands over the cartridge openings (as shown in the picture to the right), and gently inhale, holding your breath for 10 seconds.
- You will notice that the facepiece is collapsing slightly.
- Smile, then open your mouth. If the facepiece is collapsing slightly and you don't detect any air leaks, you have a proper fit.



****Both fit tests should be done to ensure a proper fit.****

Review The Following Points

- Respirators will help protect your lungs.
- Choose the proper respirator for the hazards you are working around.
- Use the correct cartridge depending on what it will protect you from breathing in pesticides, anhydrous ammonia, grain dust, paint sprays or other contaminants.
- Read the instructions that come with the respirators and also the labels of pesticides and other contaminants.
- Be sure there's a tight seal between your face and the facepiece. Perform the fit tests!

True or False Answer Key
1. T, 2. T, 3. F, 4. T, 5. F

True or False

Name _____

- | | | |
|---|---|---|
| 1. It is important to perform respirator fit tests to check for a tight seal between the facepiece and your face. | T | F |
| 2. You should not wear a respirator if you have a mustache or beard. | T | F |
| 3. After inhaling deeply, while performing the dust respirator fit test, the respirator should have bulged outward. | T | F |
| 4. When using a dual cartridge respirator, you should perform a positive and negative pressure test. | T | F |
| 5. Dual cartridge respirators can be used for any type of toxic gas. | T | F |

Training Module: Restricted-Entry Intervals

Objective: To observe and know why it is important to observe restricted-entry intervals.

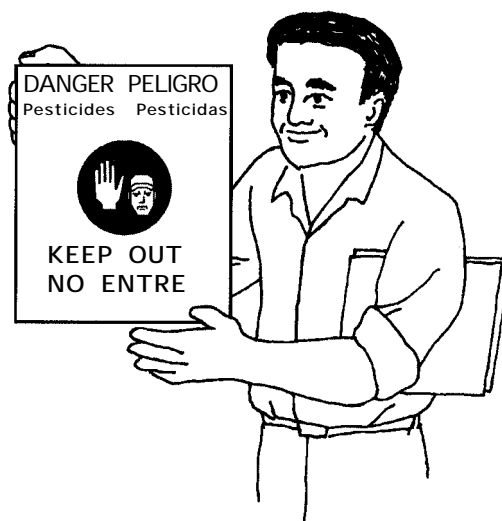
Trainer's Note: In 1992 the EPA revised the Worker Protection Standard for agricultural pesticides. As a result, employers should benefit from a reduction of lost work time, reduced medical expenses, and increased productivity of workers. It may be helpful to review the modules Pesticide Exposure and Reading Pesticide Labels along with this module, and to also have examples of warning signs used for REI notification.

Background

The Worker Protection Standard (WPS) offers the opportunity for growers, workers, and handlers to help protect themselves and one another from pesticides. Compliance with WPS is expected to avert 80 percent of the adverse health effects of pesticides. Restricted-Entry Intervals (REIs) is part of the revised WPS.

REIs are established for all pesticides used in agricultural production. The REI for each pesticide is based on the product toxicity. Read the pesticide label for Toxicity and REI hours (refer to module: Reading Pesticide Labels). REIs range from 12 to 72 hours.

Another important part of WPS which is related to REIs is the notification about pesticide applications. Workers must be notified about treated areas so they can avoid inadvertent exposures. In most cases, employers can notify workers either orally or by posting warning signs at all the entrances to the pesticide-treated area. You should always check the label, as some product labels will require both oral and posted notification.



Early-Entry Into Restricted Areas:

In general, workers may not enter a treated area during a Restricted-Entry Interval. Early entry that will result in contact with surfaces treated with pesticides is permitted in only three work situations:

- Short-term tasks that last less than one hour and do not involve hand labor.
- Emergency tasks that take place because of an agricultural emergency.
- Specific tasks approved by EPA through a formal exception process.

Additional training requirements for early-entry workers are required by the WPS. Early-entry workers must receive pesticide safety training for workers before entering a treated area on the agricultural establishment during an REI. The 5-day grace period for training that applies to other agricultural workers does not apply to early-entry workers.

Along with the basic pesticide safety training, early-entry workers must also be given specific information and instructions on certain tasks as stated below:

- How to put on, use, and take off the early-entry personal protective equipment (PPE) that is specified on the product label for early-entry tasks.
- The importance of washing thoroughly after removing PPE.
- How to prevent, recognize, and give correct first aid for heat illness.

Early-entry workers must also be informed, in a manner that they can understand, the safety information and instructions on the pesticide label to which the REI applies, including:

- Human hazard statements and precautions.
- First aid.
- Signs and symptoms of poisoning.
- PPE required for early entry.
- Any other precautions or instructions related to safe use or early entry.

Review The Following Points

- REIs are a way to reduce pesticide exposure.
- REIs are established for all pesticides used in agricultural production.
- Workers must be notified about areas treated with pesticides, so they can avoid inadvertent exposure.
- The pesticide label will give REI information.
- Early-entry workers must be given additional pesticide training.

True or False Answer Key

1. T, 2. F, 3. T, 4. T, 5. T

Restricted-Entry Intervals Quiz

True or False

Name _____

- | | | |
|---|---|---|
| 1. REI means Restricted-Entry Interval. | T | F |
| 2. REIs are established only for certain pesticides used in agricultural production. | T | F |
| 3. Workers must be notified about pesticide treated areas either orally or by posting warning signs according to the pesticide label. | T | F |
| 4. There are only three work situations in which early-entry workers may enter an area during REI. | T | F |
| 5. Early-entry workers must receive training to learn the signs and symptoms of poisoning. | T | F |

Training Module: Rollover Protective Structures (ROPS)

Objective: To understand risk of tractor overturns, and the effectiveness of the proper use of ROPS.

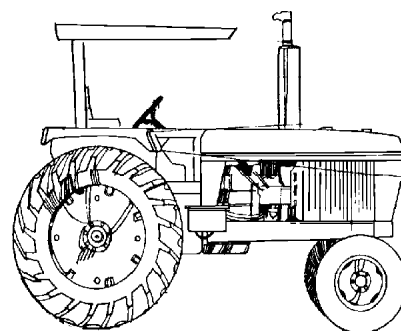
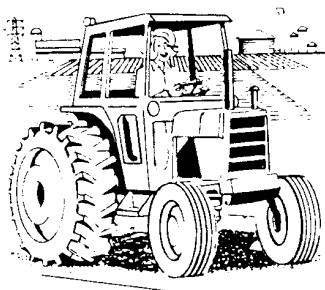
Trainer's Note: Discuss safe driving practices for farm tractors and machinery. Focus on the following safety precautions in preventing rollovers.

Background

Tractor rollovers account for 50% of tractor related fatalities in the United States. Distracted operators, speed, and rough or uneven ground are leading causes of tractor rollover. Rollover protective structures (ROPS) became available for tractors in the mid 1960's and were not available for all new tractors until the mid-70's. However, they were not standard equipment on new tractors until 1985. Many tractors built before that time are still in use and they contribute to the tractor fatality rate because they are not ROPS and seat belt equipped. Use of ROPS and seatbelt are 99.9% effective in preventing deaths due to tractor overturns.

OSHA requires ROPS and seatbelts to be installed on all tractors operated by employees.

For tractors that are not equipped with a ROPS, check with the manufacturer or dealer for the



availability of ROPS retrofit kits. If they are available, the tractor should be retrofitted. Install and use seat belts on tractors with ROPS. Seatbelts ensure that the operator stays within the “zone of protection” offered by the ROPS during a tractor mishap. Seatbelts should not be used on tractors without ROPS. Rollover protective structures do not prevent rollovers, but 99.9% effective in preventing death or serious injury. Distracted operators, speed, slopes, and uneven ground are leading causes of tractor rollover.

There are two types of rollover protective structures:

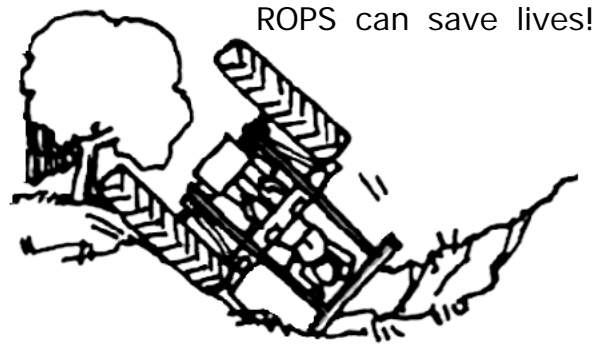
- Rollover Protective Frame
- Rollover Protective Enclosure

Rollover Protective Frame

These are either two or four post frames which are securely mounted to the main body of the tractor. Use the provided seat belt to keep the operator within the protected area.

Rollover Protective Enclosure

A rollover protective enclosure utilizes the protective frame, but totally encloses the frame with metal and glass. Seat belts are provided and must be used to contain the operator within the protected area. In addition, this cab enclosure gives protection from weather, dust, noise and vibration.



Enclosures on older tractors were designed for operator comfort not for rollover protection and they are not considered ROPS. ROPS must meet regulations and standards that certify that they provide adequate protection in a tractor rollover. To find out if a frame or enclosure is certified, look for a certification label, contact the manufacturer, or check for the presence of a manufacturer installed seatbelt.

Reducing the risk of a side rollover:

- Set wheels as far apart as possible.
- Lock the brake pedals together before high speed road travel.
- Match speed to operating conditions and loads. Do not let the front wheels bounce.
- Slow down before turning.
- Use engine braking when going downhill.
- Avoid crossing steep slopes. Watch for depressions on the downhill side and bumps on the uphill side. Turn downhill, not uphill, if stability becomes a problem.
- Stay at least as far from ditches and rivers as banks are deep.
- Keep front-end loader buckets as low as possible when moving.
- If right front tire goes off the road into the ditch--turn downward rather than attempting to turn back onto the roadway.

Reducing the risk for rear overturn:

- Always hitch loads at the drawbar.
- Use front weights to increase tractor stability.
- Start forward motion slowly and change speed gradually.
- If possible, avoid backing downhill.
- Drive around ditches.
- Back out or be towed out of ditches or mud.

Review The Following Points

- Install and use seat belts on tractors with ROPS.
- ROPS do not prevent rollovers from occurring.
- Most rollovers involve tractor speed, operator error, or unsafe driving conditions.
- Follow safety steps to prevent rollovers.

True or False Answer Key

1. T, 2. T, 3. T, 4. T, 5. F

Rollover Protective Structures (ROPS) Quiz

True or False

Name _____

- | | | |
|--|---|---|
| 1. There are two types of rollover protective frames used on tractors. | T | F |
| 2. Seat belts are to be worn on tractors with ROPS. | T | F |
| 3. Fifty percent of all tractor related deaths in the United States are the result of rollovers. | T | F |
| 4. To find out if a tractor frame or enclosure is certified, read posted label on equipment. | T | F |
| 5. All cab tractors are equipped with ROPS. | T | F |

Training Module: Rotary Agricultural Mower Safety

Objective: To understand hazards associated with rotary mowers and methods for reducing those hazards.

Trainer's Note: A rotary mower is a useful piece of equipment to farmers and orchard growers however misuse can be deadly. Demonstrate the safe use of a rotary mower. Present the demonstration in the farm shop or in open field. Ask an employee who normally operates the rotary mower to assist with the session.

Background

Knowing the capabilities of the mower allows for the use of the right mower for the job. The operator's manual will help determine if the mower is designed for the job. Keep bystanders away from the mowing and never allow riders on the tractor.

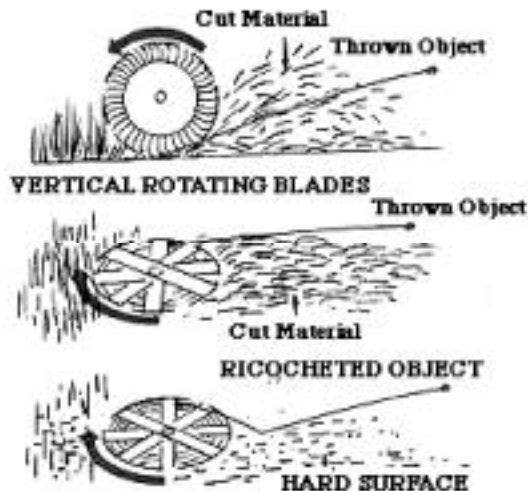
Remove all litter and debris from the area to be mowed. Stones, tin cans and wire can be deadly when thrown by a mower blade. Be alert for holes and ditches; these hazards may cause the driver to lose control of the mower. Wear a seat belt when the tractor is equipped with a roll over protective structure (ROPS).

Before dismounting from the tractor always disengage the power take off (PTO), turn off the engine and set the brakes. When approaching the mower, make sure that the blades are not rotating. Be aware that the blades will continue to rotate for awhile after the power has been shut-off.

Be cautious while making turns. If the rear tractor wheel of a pull type mower catches the mower frame, it could throw the operator. The three-point-hitch mounted mower can swing outward when turning. Adding front wheel weights for balance and control and a wide-setting for the rear tires enhances tractor stability and reduces the chance of a tractor overturn.

Hazard risks increase when equipment is not well maintained. Know the proper maintenance procedures. Check machinery for loose parts and blade sharpness. Replace blades that are too dull to sharpen. Rotary mowers are equipped with runners and safety guards. To avoid excessive wear on the runners, keep the mower just high enough to avoid riding on the runner shoes.

Keep all guards in place and well maintained. Use chain or belt guards to reduce the possibility of objects being thrown from under the mower. PTO's must be shielded.



A child working for a parent or guardian on a farm owned or operated by that person, is permitted to operate a tractor with over 20 PTO horsepower. These jobs can be started at age 14 and require special training. Know the child labor laws.

Safety tips:

- Keep all guards in place.
- Drive cautiously and know the area.
- Always read the owner's/operator's manual.
- Keep others away from the area being mowed.
- No riders.
- Know the child labor laws.
- Wear a seat belt when the tractor is equipped with ROPS.

Review The Following Points

- Know the capabilities of the mower.
- Check for debris, holes and obstacles prior to mowing.
- Add tractor weights and wider tires if needed.
- Know and follow maintenance procedures.
- Keep all guards in place at all times.
- Know the Law when hiring youth to drive tractor mowers.

True or False Answer Key
1. F, 2. F, 3. F, 4. T, 5. T

Rotary Agricultural Mower Safety Quiz

True or False

Name _____

- | | | |
|---|---|---|
| 1. Riders can safely ride on a tractor. | T | F |
| 2. There is no need to check the area before mowing. | T | F |
| 3. If maintenance is required, guards do not need to be replaced. | T | F |
| 4. Always disengage the PTO before dismounting from the tractor. | T | F |
| 5. Knowing the capabilities of the mower is important. | T | F |

Training Module: Silo Fires

Objective: To be able to recognize the safety hazards that cause silo fires.

Trainer's Note: Knowing the correct silo maintenance and filling procedures can prevent silo fires.

Background

The critical stage of the ensiling procedure begins with cutting the silage crop while it continues to breathe. This respiration produces enough heat to make the silage hot to the touch for up to a week after being stored, causing the silage to ferment. The silage product should be between 45 and 65 percent moisture when it is put into the silo. When silage is very moist, the moist product conducts heat to the silo walls and spontaneous combustion will not take place.

There is a greater risk for storage problems in a drier season than in a normal growing season. Farmers must remember that if they start filling silo in the morning at the correct moisture temperature, by the afternoon, conditions may become too dry to safely continue. The key to a silo fire not occurring is proper silo management.

Spraying water on already stored, dry silage, or piling wet silage on top of too-dry silage does not increase the moisture content of the product. If the material is dry, below 20 percent moisture content, microorganism will be relatively dormant, so little heat will be produced and spontaneous combustion will not occur. The problem occurs when a crop's moisture level stays between 20 and 40 percent. The temperature inside the silo rises too quickly for sufficient heat dissipation. When the temperature continues to climb, the silage will ignite with the presence of oxygen. A fire may be sustained by an undetected air pocket and camouflaged for weeks by surrounding layers of silage.

Most fires start in the top eight to ten feet of silage where most of the oxygen is trapped.



The following recommendations can prevent silo fires:

Crop Condition Before Storage

- Cut grass between 45-65 percent moisture.
- Chop grass between 1/4 to 1/2 inch long for closely packed silage.
- Continually check moisture content of silage materials throughout the day.

Silo Maintenance

- Keep all doors, walls and seals in proper working condition.
- Minimize airflow in conventional and sealed silos.
- Use a silo distributor to uniformly spread silage.

Storage Procedures

- Empty silos every two years regardless of usage.
- Follow silo builder's recommendations for storage.

If smoke is pouring out of the silo or silo chute, or hot embers are falling down the chute, the farm operator **should not** enter the silo chute to examine the fire. **Call the fire department immediately.** After the fire department is notified, the farm operator should attempt to close the bottom of the silo chute to prevent air movement through the chute. The operator should protect against dangerous gases that are likely to be present. The use of a face respirator is recommended. In the conventional silo fire, dangerous gases will be less of a concern than with a sealed silo fire, where toxic gases are always present.

Review The Following Points

- Seek help from the fire department immediately after detecting a silo fire.
- Do not enter a silo that is on fire.
- Toxic gases are always present with a sealed silo fire.
- Maintaining silos prevents fires. Keep doors, walls and seals in proper working condition.
- Monitoring the moisture content of silage materials can prevent silo fires.
- Providing for the close packing of silage will prevent silo fires.

True or False Answer Key

1. T, 2. T 3. T, 4. F, 5. T

Silo Fires Quiz

True or False

Name _____

- | | | |
|---|---|---|
| 1. The critical stage of the ensiling procedure begins immediately after cutting the plants. | T | F |
| 2. Seek help from the fire department immediately when a silo fire is detected. | T | F |
| 3. Materials put into the silo should be cut between 1/4 and 1/2 inch for better packing. | T | F |
| 4. The use of a silo distributor will does not help pack the silage. | T | F |
| 5. Keep all doors, walls, and seals in proper working condition to help prevent silo fires by eliminating oxygen. | T | F |

Training Module: Silo Safety

Objective: To know the safety guidelines for working around silos to prevent accidents and diseases associated with silo gases or dust.

Trainer's Note: Breathing silo gases can cause lung disease or death. Review the Respiratory Problems Module. Teach employees to recognize this danger and to avoid exposure. Conduct this session near a silo. Have a respirator to show employees. Also reviewing the Lockout/ Tagout Module could be helpful.

Background

Silos are an important part of many farming operations. However, they are also the cause of many accidents. These accidents include falls, electrocution, entanglement in augers and silo gas inhalation.

Silo gases are heavier than air and usually orange to yellow in color. They escape from the silo through chutes, cracks and drains, usually within 48 hours of filling the silo, but may continue for three weeks or longer. The gases can kill birds, livestock, and humans. The silage is safe to use as feed because the gas lowers the nitrate level.

Safety guidelines for silos:

- Silos should be off limits to children and unauthorized personnel. Barricade or lock up silos.
- Feed storage ladders should end at least seven feet off the ground.
- Keep these ladders in good condition.
- When filling or emptying, never allow people in or around the silo.
- Easily recognizable warning decals should be on all silo filling equipment.
- Lockout the power supply on all unloading mechanisms. (Refer to Lockout/Tagout Module.)

Silo Repair Safety

If the silo needs repairs, and there is no other way of getting the job done expect to enter the silo, there are some safety measures that should be taken.

- Apply lockout/tagout procedures.
- There should be ladders on the inside and outside of the silo.
- The person entering a silo should always use a rope and safety harness.
- When one person enters the silo, there should be two other people on the outside to provide rescue aid if needed.
- A respirator approved for toxic dust should be worn when handling moldy silage.

Silo hazards

Silos can contain deadly gases. These gases are nitrogen dioxide (NO₂) and carbon dioxide (CO₂). NO₂ is heavier than air and may be seen as a reddish to yellowish-brown haze. Since it is heavier than air, it can be found near the base of a recently filled silo. It has a bleach-like smell and you will experience a burning sensation in your nose, throat, and chest. Instant death may be a result of nitrogen dioxide inhalation. CO₂ on the other hand, fills the headspace of the silo, replacing the air. Exposure to these two gases happens most often in the first three weeks after the silo is filled. Due to this risk of exposure, it is suggested that you stay out of the silo for the first three weeks, unless wearing a self-contained breathing apparatus.

When gases might be present:

- Wear a self-contained breathing apparatus when entering a silo within the first four to six weeks after it has been filled.
- Keep a hatch door open close to the level of silage in the silo.
- Run the blower for at least 15 minutes before entering, and keep it running to provide air movement.

Mold spores produced by spoiled hay or silage can also create a dangerous situation. When inhaled, these mold spores can irritate the tissues in the mouth and nose. The reactions can be harsh enough to cause hospitalization. A respirator that can filter fine dust particles should be worn at times when around moldy hay or silage.

To avoid inhalation of mold spores:

- Prevent mold growth by following proper filling and chopping techniques.
- To prevent moldy dust from becoming airborne, wet the top layer of silage down before moving anything.
- By handling dusty materials mechanically, it may keep you far enough away or create less dust.
- Always wear a properly fitted mechanical filter respirator. (Refer to respirator fit module.)

Review The Following Points

- Silos should be off limits to unauthorized personal.
- Keep ladders inside and outside of the silo in good condition.
- Follow lockout/tagout procedures.
- If entering a silo, use a safety rope and harness, and there should be at least two people on the outside in case of an accident.
- If there is a chance silo gases are present or when working with moldy hay or silage an appropriate respirator should be worn.
- Silo gases are deadly.

True or False Answer Key

1. F, 2. T, 3. T, 4. T, 5. F

Silo Safety Quiz

True or False

Name _____

- | | | |
|---|---|---|
| 1. Silo gases are usually blue or green in color. | T | F |
| 2. When one person enters a silo to make a repair, there should be at least two people on the outside of silo. | T | F |
| 3. Feed storage ladders should end at least seven feet off the ground. | T | F |
| 4. If you inhale nitrogen dioxide, you will experience a bleach-like smell and a burning sensation in your nose, throat, and chest. | T | F |
| 5. It is not necessary to have the blower running while a person is in the silo. | T | F |

Training Module: Skin Irritants

Objective: To be able to describe the hazards that can occur when solvents and acids come in contact with the skin, and to know how to prevent this exposure.

Trainer's Note: It will be important to have employees understand that skin is a valuable body tissue that must be protected from danger. The following discussion questions will help serve as an employee training tool and familiarize employees with the proper procedures to follow in the event that skin is contacted with solvents and acids. Ask the employees to identify the protective equipment and devices used in the operation. Include the importance of proper maintenance. Identify and review the operation of emergency showers, eyewash fountains, emergency hand/face spray units and other emergency equipment. Review procedures for reporting accidental exposures to hazardous substance.

Background

Solvents affect the skin differently. Because they are usually used to remove grease and oil in industrial processes, it is not surprising that these solvents also remove fats and oils from the skin. When this occurs, water is also lost and the skin becomes cracked and dry. On the other hand, prolonged exposure to oils and waxes can plug the skin's hair follicles and sweat ducts, causing inflammation and acne.

Dermatitis is an inflamed and irritated skin condition. There are two types of dermatitis: Primary irritation and sensitization.

Primary irritation: Occurs from contact with a substance in sufficient quantity. Strong acids, caustics and solvents are example of primary irritants.

Sensitization: Occurs as a result of an allergic reaction to a substance. The sensitivity is usually established over a long period, and once established, exposure to just a small amount of the substance can produce a severe case of dermatitis. In addition to chemical substances, physical agents, such as heat, cold, water, sunlight and radiation, can also injure skin.

The following chart will help you organize the session:

DERMATITIS			
Primary Irritants	Example Exposure	Duration	Effect of Exposure
Strong Acids	Hydrochloric Acids Sulfuric Acids Nitric Acids	Brief	Severe Burns
Strong Caustics	Sodium Hydroxide Potassium Hydroxide	Brief	Severe Burns
Strong Solvents	Paint Remover Alcohol	Prolonged	Inflammation Acne

Ways to Prevent Dermatitis:

- Before working with a process involving hazardous substances, make sure of the hazards.
- Read the labels on the containers and learn the emergency procedures in case an accident occurs.
- When working with primary irritants, try to avoid contact, especially when strong corrosive materials are involved.
- Use personal protective equipment, such as proper gloves, sleeves, aprons, shields and footwear, and barrier creams.

Review the Following Points:

- Be familiar with all types of skin irritants.
- Know what substances used in your operation are dangerous.
- Know the correct procedures to follow during an emergency.
- Wear protective equipment when on the job.
- Call for help when needed.

True or False Answer Key

1. T, 2. T, 3. F, 4. T, 5. T

Skin Irritants Quiz

True or False

Name _____

- | | | |
|--|---|---|
| 1. Solvents are used to remove grease and oil in the industrial process, and can remove fats and oils from the skin. | T | F |
| 2. Skin is a valuable body tissue. | T | F |
| 3. When working with primary irritants, it is not necessary to try to avoid direct contact. | T | F |
| 4. Strong caustics can cause severe burns. | T | F |
| 5. Sensitization is the result of an allergic reaction to a substance. | T | F |

Training Module: Safety Means SMV (Slow Moving Vehicle)

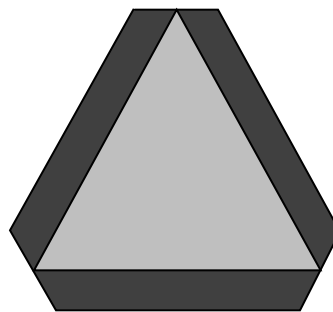
Objective: To know the proper use of the Slow Moving Vehicle (SMV) sign.

Trainer's Note: By law, farming equipment must display a Slow Moving Vehicle sign (SMV) when moving on roadways at less than 25 miles per hours. Point out the advantages of using the SMV. Demonstrate how to attach the sign correctly. Compare SMV signs in good repair with unacceptable damaged or faded signs.

Background

SMV signs are required by law on farm machinery and equipment traveling on roadways at speeds of 25 m.p.h. or less and must be visible for at least 500 feet to the rear. In Ohio, approved SMV signs have a front label identifying the manufacturer and documenting that the sign meets the American Society of Agricultural Engineers' (ASAE) standards for durability and longevity.

Properly mounted, the sign is centered, two to six feet above the ground, pointed up and in a place perpendicular to the direction of travel.



Slow Moving Vehicle Sign
(SMV)

Traffic studies show that two out of three highway accidents involving slow moving vehicles are rear-end collisions and that ninety percent of these accidents happen during daylight hours. The use of the SMV sign reduces accidents and saves lives. Signs in poor condition provide little or no protection in traffic. Keep the sign clean for maximum visibility. Replace damaged or faded signs immediately. A faded sign will not be visible for the required 500 feet. When this occurs, the tractor or farm machinery and the operator's life are in danger and the law is violated. To extend the life of the SMV, always cover or keep the sign out of the sun when not using the piece of machinery.

The **bright, fluorescent orange triangle** of the SMV sign is visible for more than 1,000 feet (one-fifth mile) providing motorists ample time to slow down. At night the **reflective red border** of the SMV sign is illuminated by approaching headlights, immediately identifying a slow moving vehicle.

Review The Following Points

- Keep the sign clean to enhance visibility.
- Replace faded or damaged signs.
- Mount the sign, point up, between two and six feet above the ground.
- Place the sign close to the center of the equipment.
- Ohio law defines a slow moving vehicle as traveling at speeds of 25 m.p.h. or less.

True or False Answer Key
1. T, 2. T, 3. T, 4. T, 5. T

True or False

Name _____

- | | | |
|--|---|---|
| 1. Ohio law requires the use of the SMV sign on farm machinery and equipment operating on streets and highways at speeds of 25 m.p.h. or less. | T | F |
| 2. The sign must be firmly mounted, point up. | T | F |
| 3. A faded sign has limited daytime visibility. | T | F |
| 4. An SMV sign must be visible for 500 feet. | T | F |
| 5. When used as specified, the SMV sign can reduce accidents and save lives. | T | F |

Training Module: Spraying Paint

Objective: To observe the needed safety precautions when spray painting.

Trainer's Note: Discuss the importance of wearing a face respirator while spraying paint. Ask an experienced worker to demonstrate the proper way to adjust the respirator. For more information on personal protective clothing or respirators refer to (Tailgate Training Module - Respirator Fit Test).

Background

Take the following precautions when spraying paint, lacquer, varnish, or other like coatings.

Spraying paint in a specially constructed and ventilated booth or in the open air protects workers from hazardous fumes and reduces the chance of a fire or explosion. Ventilate spray booths so that fresh air moves from the worker to the exhaust outlet. The linear air movement in a small booth must be at least 100 feet per minute; in larger booths the rate is at least 150 linear feet per minute. This is the standard ventilation rate. Monitor the movement with gauges. Wear an appropriate face respirator. In some cases, a respirator helmet fed by an air line may have to be worn.

Commonly Overlooked Safety Precautions:

- Heat sources combined with paint can be very dangerous because heat can increase the likelihood of fumes and vapors.
- Do not use electrical extension cords in or around spray booths.
- Remove or repair any object that could produce a spark in the painting area. Cover exposed light bulbs.
- Wear protective clothing.
- Wash thoroughly after each painting session.

Review The Following Points

- Use ventilated booths if available, if not paint in open spaces.
- Wear proper protective clothing.
- Use a respirator face mask.
- Do not use any electric cords in or near the paint booth.

True or False Answer Key

1. T, 2. T, 3. T, 4. T, 5. F

Spraying Paint Quiz

True or False

Name _____

- | | | |
|---|---|---|
| 1. Avoid sparks or electric arcs in or around paint spray booths. | T | F |
| 2. Use a spray booth if available, if not spray in open well ventilated areas. | T | F |
| 3. In some cases, a respirator helmet fed by an air line should be worn. | T | F |
| 4. Wear protective clothing while spraying paint. | T | F |
| 5. There is no need to worry about heat when spray painting because it poses no danger. | T | F |

Training Module: Skid-Steer Loaders

Objective: To understand and know how to prevent the dangers associated with the skid-steer loader.

Trainer's Note: Inappropriate use of the skid-steer loaders causes accidents. Demonstrate the do's and don'ts of skid steer safety in the barn or out in the field. Discuss potential and past skid-steer loader accidents.

Background

Circle the machine checking for bystanders and to ensure that the lift arms are lowered or restrained by a lift arm restraint device. When getting on or off the loader, face the machine and use the grab handles as contact points. Do not use a steering or control levers as a hand hold. Never jump on or off the machine. Never attempt to mount or dismount a moving machine. Know the exact starting procedure for your machine (consult manufacture's manual). Start the engine from the operator's seat only. Do not start the engine by shorting across starter terminals.

Different attachments can change the weight distribution.



Safe Operation

Different attachments can change the weight distribution of the loader and effect its stability and handling response. Be sure to keep the loader under control.

- Never use the bucket for a work platform or personnel carrier.
- Check for bystanders before backing up, or swinging an attachment. Never lift, swing, or move a load over anyone.
- Knowing the location of pinch points and rotating parts prevents accidents.
- Never overload the bucket.
- Keep the body inside the operator's cab while operating the skid-steer loader.
- Travel or turn with lift arms down. Load, unload and turn on flat level ground.
- Never ram the bucket into a material pile. Most loaders have more force at slow speeds.
- Decrease speed on rough terrain to increase operator control.
- Raise loads slowly and evenly, and be ready to lower load quickly to correct for instability.
- Never allow riders.
- Keep view free from obstruction and carry loads low.
- Have a fire extinguisher (minimum size of 5 lb) in quick release mount on the machine.
- Travel up and down slopes with the heavy end of the loader pointed uphill.

Review The Following Points

- Start the engine from the operator's seat.
- Keep the body inside the operator's cab while operating the skid-steer loader.
- Never ram the bucket of the skid-steer in the material pile being moved.
- Raise loads slowly at an even rate and be ready to lower loads quickly.
- Never carry riders.

True or False Answer Key

1. T, 2. T, 3. T, 4. T, 5. T

Skid-Steer Loaders Quiz

True or False

Name _____

- | | | |
|---|---|---|
| 1. Never use the bucket for a work platform. | T | F |
| 2. Keep the body inside the operator's cab while operating the skid-steer loader. | T | F |
| 3. Start the engine only from the operator's seat. | T | F |
| 4. Always look around before backing up, or swinging an attachment. | T | F |
| 5. Never travel with a load obstructing your vision. | T | F |

Training Module: Understanding Livestock Behavior

Objective: To know the animal's natural instincts and follow them to enhance personal safety.

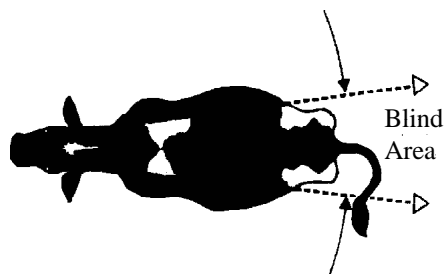
Trainer's Note: Poor judgment and lack of understanding contribute to accidents with livestock. Knowing how and why livestock react leads to a safer work environment. To avoid accidents, develop workers' competencies in the following areas of animal behavior: Practice livestock handling procedures. Evaluate employee knowledge of animal behavior.

Background

Beef, swine, sheep, and dairy cattle are generally colorblind and have poor depth perception. This can cause the animal to balk or resist when handled. Sheep have difficulty seeing small details like an open gate.

Cattle, horses, and mules have a **panoramic field of vision**.

This means they can see everywhere but behind them. Approach these animals from the side or front to prevent startling them. Horses and mules commonly kick toward their hindquarters, while cows kick forward and out. Injured cows will kick from the side of the injury.



Livestock with young exhibit strong maternal instinct, and can be difficult to handle. Let the young stay close to the mother when handling or moving. Always move with caution when working with a mother and her young.

Most animals exhibit strong territorial instinct and will develop a sense of "homeland" in their pens, corrals and pastures. Considering these traits, it becomes easy to understand why animals hesitate when moving through unfamiliar surroundings. Forcible removal can cause unpredictable behavior. Animals are sensitive to noise and become easily frightened. Move quietly and slowly when handling livestock. Animals remember past experiences and respond accordingly. Animals that have been chased, slapped, kicked or frightened when young will fear being approached.

Animal behaviors:

- Most animals respond to calm, gentle, and consistent handling.
- Livestock become skittish when their ordinary routines or familiar surrounding change.
- Animal have a definite social order.
- Domestic livestock, especially cattle and sheep, are herd animals. They may become agitate when isolated and will try to return to the group.
- Livestock detect people by their movement, which is much more important to animals than what is moving.

When working with animals:

- Move calmly, deliberately, and patiently. Avoid quick movements or loud noises that may startle animals.
- The daily routine or the animals' living conditions should not be altered. Animals often balk at anything out of the ordinary.
- Always leave an escape route when working in close quarters with animals.
- Avoid startling the animal. Make it aware of your approach before getting too close to it.

Review The Following Points

- Beef, swine, sheep, and dairy are colorblind.
- Cattle, horses, and mules have a panoramic field of vision.
- Livestock have strong maternal instinct.
- Livestock develop a strong bond to pens and pastures.
- Animals respond to the way they are treated by humans in past experiences
- Livestock are sensitive to noise and frightened easily

True or False Answer Key

1. T, 2. F, 3. T, 4. T, 5. T

Understanding Livestock Behavior Quiz

True or False

Name _____

- | | | |
|---|---|---|
| 1. Cattle, horses, and mules have a panoramic field of vision. | T | F |
| 2. Employees don't need to understand animal behavior. | T | F |
| 3. Most animals exhibit a strong territorial instinct and will develop a sense of homeland in their pens, corrals and pastures. | T | F |
| 4. Work cautiously with a mother and her young. | T | F |
| 5. Animals respond to the way they are treated and will draw upon past experience when reacting to a situation. | T | F |

Training Module: Safety in Livestock Facilities

Objective: To apply safe working practices when in and around livestock facilities.

Trainer's Note: Present this module at the corrals or pens. Focus on working safely in the facility and identifying escape routes. Ask staff to suggest ways to update current facilities for optimal safe working conditions.

Background

Corrals confine cattle for observation and to perform routine health and management procedures. To accomplish these goals, the corral and working facility design must match the needs of the producer. It should be labor efficient, reduce animal stress and minimize the risk of injury to workers and cattle.

Animal psychology is used in designing new systems and accounts for many of the improvements in modern corral plans. After the lot gate has been closed on a set of cattle, their first and strongest desire is to find their way out of confinement. Modern corral designs take advantage of natural instinct by offering the animal a false escape route through curved, solid-enclosed crowding areas and chutes.

To be able to safely work in these facilities, workers and ranchers must know certain patterns of cattle behavior. (Refer to the module: Understanding Livestock Behavior) When working with livestock keep these safety procedures in mind. Proper gates and corrals makes working with livestock more manageable. Knowing how to escape from facilities and corrals when animals become excited may prevent a serious accident.

Site Selection: For easy movement of cattle, corrals should be accessible to most pastures and by trucks and trailers, even under adverse weather conditions. Because of their physical layout, some operations may need more than one set of working facilities. Good drainage is also important. It prohibits mud build up and promotes sanitation. Hauling in gravel or other fill materials may be necessary.

To help prevent accidents, keep walk and work surfaces properly lighted and clear of any debris or obstructions that could cause a fall. Provide slip-resistant footing, such as roughened concrete. Keep work areas manure-free.

Properly designed treatment stalls and appropriate animal-restraint equipment and facilities can reduce accidents and injuries. All pens, chutes, gates, fences, and loading ramps should be strong and work properly. Fences and gates should be strong enough to withstand crowded conditions. Livestock areas should be free of sharp projections such as broken boards, nails or wire. Worker passes should be provided for emergency exit.

Ventilation is extremely important for the health and safety of workers and livestock. Inadequate ventilation can cause dangerous buildups of toxic gases, including ammonia, carbon dioxide, hydrogen sulfide, and methane.

Review The Following Points

- Well constructed and designed corrals and pens are the first defense against accidents.
- Remember to keep animal psychology in mind when working with livestock.
- Keep areas well-lighted for safety and free of debris and manure.
- Good drainage is a must to prevent falls. Add gravel or other filler if needed.
- Provide slip-resistant footing in all areas. Roughen concrete when appropriate.

True and False Answer Key

1. T, 2. T, 3. T, 4. F, 5. T

Safety in Livestock Facilities Quiz

True or False

Name_____

- | | | |
|---|---|---|
| 1. Knowing Livestock psychology is important for safely working in corrals and barns. | T | F |
| 2. All pens, chutes, gates, fences and loading ramps should be strong and work properly. | T | F |
| 3. Walks and work surfaces should be properly lighted and clear of any debris to prevent accidents. | T | F |
| 4. Worker passes are not needed if the employee can jump over fences and gates. | T | F |
| 5. Drainage is an important part of corral design. | T | F |

Training Module: Safe Use of Livestock Medications

Objective: To demonstrate how to handle and store livestock medications.

Trainer's Note: The livestock producer needs to handle needles and medicines and this can be dangerous. An employee responsible for administering medication might assist with this demonstration. Highlight the proper usage and disposal of needles.

Background

Livestock medicines, vaccines, syringes, and needles should be stored in a locked cabinet. Medicines requiring refrigeration should be stored away from food in a child proof area. Live vaccines are hazardous and can potentially cause disease. Purchase vaccines on an “as needed” basis. Disposal should comply with infectious waste requirements. Check with the local waste disposal management office.

EPA regulations require that sharp objects be disposed of in sturdy plastic containers such as a laundry detergent bottle, a two liter soda container or a coffee can with a heavily taped plastic lid. Check for additional local regulations.

Storing uncapped or recapping used sharps is risky. Drop used needles or syringes directly into the disposal container without recapping them.

If someone is stuck by a needle, clean the wound and then cover it with a bandage. See a physician immediately. A tetanus injection may be needed.

When working with animal health care medicines:

- Store all livestock medical supplies in a locked cabinet.
- Store medicines away from food and children.
- Be careful not to stick yourself or anyone else when using a needle.
- Discard all used needles and syringes in an approved method.
- Seek medical attention if stuck by a used needle.
- Never reuse medical supplies. It may spread disease.
- Wash hands with hot water and a disinfectant when finished with health tasks.
- Purchase drugs only as needed.

Review The Following Points

- Keep all livestock medications stored in locked cabinet.
- Never store medicines with food, and wash hands immediately after completing health task.
- Reusing medical supplies can spread disease.
- Seek medical attention if stuck with a needle.

True or False Answer Key

1. F, 2. F, 3. T, 4. T, 5. T

Safe Use of Livestock Medications Quiz

True or False

Name _____

- | | | |
|---|---|---|
| 1. It is a good idea to store some livestock medical supplies with food. | T | F |
| 2. If accidentally stuck by a needle, you do not need to see a physician. | T | F |
| 3. Wash hands in hot, soapy water after completing health care tasks. | T | F |
| 4. Live vaccines are considered hazardous. | T | F |
| 5. Lock all livestock medical supplies in a cabinet away from children. | T | F |

Training Module: Protective Clothing in Livestock Facilities

Objective: To wear the necessary Personal Protective Equipment (PPE) when working with livestock.

Trainer's Note: Wearing the correct PPE and using the correct equipment while working with livestock can protect a worker from injury. To reduce exposure to disease, clean contaminated sites and use PPE. During the session, show examples of the proper PPE to wear during various tasks involving livestock.

Background

Follow safety precautions. PPE (safety glasses, gloves, long trousers, steel-toed shoes or boots, shin guards and a hard hat) should be a part of the employee's work clothing. The correct PPE prevents accidents and increases worker and livestock safety. Loose, ripped or baggy clothing can catch on livestock or machinery. Jewelry should be kept to a minimum. It can get caught in machinery, and metal is also an excellent conductor of electricity. Pull back long hair so it doesn't interfere with work or get caught in machinery.



When working in buildings with low ceilings, repairing machinery, or running off-road vehicles, head protection is needed. There are different types of hats to provide different types of protection. (Refer to the module, Protecting the Head.)

Steel-toed or hard toed shoes help prevent foot injuries that commonly occur when working with animals and machinery. Make sure footwear is in good working condition by inspecting it regularly. Check to be sure that shoe laces are not fraying and cannot be caught in equipment. When shoes wear out they can become hazardous, get rid of them.

Moving, handling, and feeding animals creates dust problems. Inadequate or improper ventilation in confinement compounds this problem. Dust masks are good defenses against inhaling the dust in the air.

Use rubber gloves and splash goggles when mixing and spraying pesticides or insecticides. Breathing insecticide fumes can be hazardous, so use a respirator. (Refer to the module, Protecting Against Pesticide Exposure.) Wear protective clothing to reduce absorption through the skin. Rubber, rubberized fabrics, neoprene, and plastics are clothing items that give protection against absorption into the skin.



Eyes and open wounds allow some livestock diseases to be introduced into humans. Use eye protection and gloves when working with a sick animal or giving a shot. Wear gloves that match the job and fit properly. Tight gloves limit movement, and gloves that are too big can interfere with work. (Refer to the module, Protecting Your Hands.)



Review The Following Points

- Always wear the correct protective clothing for the job.
- Wear hard or steel-toed work boots/shoes at all times.
- Wash all chemicals or vaccines off of your skin immediately.
- Use a face respirator when hazardous fumes are a concern.

True or False Answer Key
1. T, 2. F, 3. T, 4. T, 5. T

Protective Clothing in Livestock Facilities Quiz

True or False

Name _____

- | | | |
|---|---|---|
| 1. Wear hard or steel-toed work boots/shoes at all times. | T | F |
| 2. Contact with vaccines, sprays, or chemicals is harmless and can be ignored. | T | F |
| 3. Hazardous fumes require the use of a face respirator. | T | F |
| 4. Loose and baggy clothing may cause the employee to become entangled with livestock or machinery. | T | F |
| 5. Wear rubber gloves and splash goggles when mixing sprays used for livestock. | T | F |

Training Module: Properly Cleaning and Storing Respirators

Objective: To be able to clean and store respirators according to the presented guidelines.

Trainer's Note: Using proper cleaning and storage practices ensures that respirators remain effective and uncontaminated. Present the following scenarios and discuss the storage practices. Review, demonstrate, and practice the proper cleaning and storage procedure.

Common mistakes that limit the effectiveness of respirators.

1. Upon returning from the field on a hot and humid day, a worker haphazardly removes the personal protective clothing. The worker pulls off the respirator and hangs it on a nail in the barn, next to a pesticide container.
2. Rather than taking the time to put the respirator away, a worker tosses it on the dashboard of the truck. The truck is parked in a very sunny spot.
3. A respirator is in an enclosed cab. The cartridge is inside the sleeve of a plastic glove. The respirator has been there for two months.

Background

Respirators should be stored away from dust, sunlight, heat, extreme cold, excessive moisture and damaging chemicals. Respirators, a piece of personal protective equipment (PPE), must be stored away from personal clothing and pesticide-contaminated areas.



Dust Filter Mask: Traps particles out of the air.



Cartidge Respirator: Uses an absorbent material plus dust filters to purify the air.

Clean a dual cartridge using the following procedures:

- Following the manufacturer's instructions, wash reusable respirator face pieces. The face pieces should be cleaned with disinfecting soap, thoroughly rinsed and dried.
- Dispose of cartridges and prefilters when you smell or taste contaminants, or if your eyes, nose, or throat become irritated (they cannot be cleaned). They must also be replaced if they show any sign of damage.
- Disassemble the respirator, following the manufacturer's instructions.
- Inspect the parts and replace damaged or worn parts.
- Wash hands before and after cleaning.
- Clean the inhalation and exhalation valves in a mild soap. Don't damage or distort the valves during cleaning.
- Air dry the parts that have been cleaned. They must be completely dry before they can be reassembled.
- After reassembling, check seals and gaskets for tightness and leaks.

**Respirators should be cleaned after each use, except disposable respirators. Non-alcohol wipe pads can be used to supplement cleaning during intermittent use.

Storing Respirators:

Clean respirators should be stored in nonporous, sturdy, airtight containers (like a "Ziploc" plastic bag). To avoid collecting dust, the respirator should be put away as soon as it is dry. Respirator face pieces and valves should be stored in a manner that does not distort the shape. Keep the respirator in a cool, dry cabinet specifically designated for storage.

Review The Following Points

- Clean respirators after each use.
- Cartridges and prefilters should be disposed after they are "used up" and cannot be cleaned.
- After cleaning, store respirators in a cool, dry place.

True or False Answer Key

1. F, 2. F, 3. T, 4. T, 5. F

True or False

Name_____

- | | | |
|---|---|---|
| 1. Respirators do not have to be cleaned. | T | F |
| 2. Store respirators in the cab of a tractor. | T | F |
| 3. Sealing respirators in an airtight plastic bag prevents it from
collecting dirt and dust. | T | F |
| 4. Cartridges that have been "used-up" make respirators ineffective. | T | F |
| 5. The respirator can be cleaned in one piece. | T | F |

Training Module: Stress Management

Objective: To learn to manage stress on the farm or workplace.

Trainer's Note: Learning to manage stress can improve mental and physical health. Identify the stress factors in the workplace. Discuss how to manage or eliminate those factors. Invite a mental health or time management professional to speak.

Background

Farming is one of the most stressful occupations in the United States. It is important to know how to manage stress levels and to reduce the effects of unwanted stress. One way to manage stress is to talk to other people. This support might come from family, church members, friends, or other farmers and ranchers. There are also several organized self-help groups that offer emotional support and practical help. Consult a family doctor, mental health professional, or religious leader for additional help.

Three Ways to Help Manage Stress:

- Manage mental and physical health.
- Know the warning signs of stress and monitor stress levels.
- Change your reaction to stressful events.

Stress can be reduced by making lifestyle changes.

- Keep a positive attitude.
- Accept that stress is a part of life.
- Clearly define home and work responsibilities.
- Manage time.
- Set realistic goals.
- Learn to relax. Employees who take mid-morning and afternoon breaks will be able to get more accomplished.

Eat an adequate and nutritious breakfast each day. Hunger can make people less able to cope with stress. High blood pressure and cholesterol levels increase the chances of a stroke and heart attack. Caffeine (coffee, tea, soft drinks, and some drugs) stimulates the nervous system and can cause nervousness and tension. Alcohol and drugs can be addictive and may reduce the ability to cope with stress. A basic exercise program, in addition to farm work, is likely to lessen stress. The exercise will produce healthier heart, lungs, arteries and will elevate your mood and encourage a healthy self-concept. Have a complete medical exam before beginning a program.

****Know the warning signs of stress related problems and seek help.**

Early Warning Signs of Stress-Related Problems:

- Moodiness
- Withdrawing from responsibility
- Trouble falling asleep
- Poor emotional control
- Severe feelings of helplessness and dependency
- Chronic fatigue and susceptibility to illness
- Marked change in appetite or sex drive

Review The Following Points

- Stress can be managed.
- Seek help when a problem is discovered.
- A positive attitude makes a difference.
- Eat a well balanced diet.

True or False Answer Key

1. T, 2. T, 3. T, 4. T, 5. T

True or False

Name_____

- | | | |
|---|---|---|
| 1. Controlling the diet can control stress. | T | F |
| 2. Exercise may help to manage stress. | T | F |
| 3. Setting realistic goals helps reduce stress. | T | F |
| 4. Stress is a part of life that everyone must deal with to be active and productive. | T | F |
| 5. Seek help for stress management before it gets out of control. | T | F |

Training Module: Struck-By Accidents

Objective: To know the common hazards associated with falling objects so that accidents can be prevented.

Trainer's Note: Poor housekeeping and messy work areas contribute to struck-by accidents. Demonstrate the right method to handle materials. Brainstorm for some possible injuries that could occur as a result of flying or falling objects or moving vehicles. Suggest ways to eliminate or lessen these problems. Suggest appropriate Personal Protective Equipment (PPE). Encourage workers to practice safe material handling.

Background

“Struck-by” accidents are related to material handling and housekeeping. Poorly stacked material may fall or slide and objects blocking aisles could cause bumps or tripping. Keep aisles and passageways clear and well marked. Allow safe aisle and door clearance to prevent getting caught or knocking down material.

Tools or loose parts should not be left on window ledges, shelves, cranes or working platforms since they can fall and cause damage or injury to a fellow worker. If there is a potential danger from overhead hazards, wear an approved hard hat (Refer to the module: Protecting the Head). Be alert and report these hazards.

Potential Struck-By Accident Hazards:

- No side barriers on conveyors.
- Objects leaning against walls, racks, posts or equipment.
- Inadequate guarding on belts or other conveyors traveling from one level to another.
- Unmarked low beams or pipes.
- No screen guard on equipment, or poor or incomplete screening to guard against objects flying off the equipment.

These potential hazards can be eliminated by:

- Leaving guards or screens in place on equipment as it was manufactured.
- Marking low beams, pipes, and ceilings.
- Proper stacking and storing of objects.

Avoid careless work habits:

- Doors—Never stand in front of a windowless, swinging door. Before working near a door, post a warning sign or prop the door open. This is especially important if working from a ladder. Do not push the door open rapidly or forcefully. When approaching double doors, follow signs indicating which door to use.

- Inattentiveness—Watch where you are going. Do not get distracted by conversations. Approach a corner or intersection from the center of the hall. Plan to walk to the right, reducing the chance of collisions.

Review The Following Points

- Wear the correct PPE for the job.
- Watch for falling objects or items that block aisles.
- Keep all screens and guards in place.
- Use safe storage and handling procedures.

True or False Answer Key

1. F, 2. F, 3. T, 4. T, 5. T

Struck-By Accidents Quiz

True or False

Name _____

- | | | |
|--|---|---|
| 1. It is acceptable to remove machine guards if they are in the way. | T | F |
| 2. Objects leaning against walls, racks, posts or equipment pose no potential hazards. | T | F |
| 3. Wear the correct Personal Protection Equipment (PPE) for the job. | T | F |
| 4. Do not leave tools or loose parts on window ledges or other working areas. | T | F |
| 5. Many accidents occur from careless work habits. | T | F |

Training Module: Substance Abuse and Accidents

Objective: To know the effects of alcohol and drugs on the body and be aware of the on-the-job problems substance abuse can cause.

Trainer's Note: Review the case studies or create others. Divide the workers into two groups to discuss scenarios. Identify the primary ways substance abuse can affect performance.

Background

Drugs and alcohol have many detrimental effects on the body, and increases the possibility of accidents in the workplace.

Alcohol:

Alcohol, a drug, is a central nervous system depressant. With moderate drinking a person may experience:

- dizziness
- dulling of senses
- impairment of coordination
- impairment of reflexes
- impairment of memory
- impairment of judgement.

When alcohol is consumed in larger quantities over a long period of time, death may occur due to depression of the parts of the brain that control breathing and heart rate. Alcohol in large amounts, or over a long period of time, may cause damage to the:

- liver
- heart
- pancreas

Drugs:

Drugs, which include Marijuana, Cocaine, Crack Cocaine, Heroin, LSD (Lysergic Acid Diethylamide), PCP (Phencyclidine), and many others, can last for several months in the body. They can cause:

- decreased long and short term memory
- decreased concentration
- distorted senses
- impaired perception of time and space
- slowed reaction time
- temporary blindness
- hallucinations

Substance Abuse and Job Performance:

- Alcohol can affect job performance for up to 14 hours.
- The combination of alcohol and drugs multiplies their effects and increases the risk of injury and death.
- Drug and alcohol use increases the possibility of an on-the-job accident.

Case Study 1

Joe drank beer and wine in high school and started using other drugs as a young adult. While working on the Miller farm, he started taking speed (amphetamines) to get going in the morning. The drugs interfered with Joe's ability to make safe judgments and caused a series of on-the-job injuries to himself and others.

Case Study 2

Molly, a forklift operator, drank alcohol during her lunch hour. During a 16 hour shift, she drank on two occasions and then went back to work. Molly knew she was "high," but felt that she could work. Before the shift ended, Molly struck a barrier with the forklift and was thrown from the vehicle. She lost work as a result of the injury.

After each case study, discuss the following points:

- The immediate cause of the incident and/or series of incidents.
- Contributing factors that led to the incident and/or series of incidents.
- Similar situation(s) that could result in illness or injury.
- How these situations could be prevented.

Review The Following Points

- Alcohol is a drug.
- Even with moderate drinking a person experiences impairments.
- Drugs can last several months in the body.
- Working under the influence of drugs and/or alcohol can cause a serious accident.
- The effects of alcohol can last up to 14 hours.
- Using both alcohol and drugs increases the problem and can lead to a serious accident.
- If you have a problem, tell someone who can help.

True or False Answer Key

1. T, 2. T, 3. F, 4. F, 5. T

Substance Abuse and Accidents Quiz

True or False

Name_____

- | | | |
|---|---|---|
| 1. Drinking alcohol will affect job performance. | T | F |
| 2. Job performance may be impaired up to 14 hours after drinking alcohol. | T | F |
| 3. The combination of drugs and alcohol has little to no effect on working. | T | F |
| 4. If a co-worker is affected by drugs/alcohol, it is not a problem. | T | F |
| 5. With moderate drinking a person may experience impairments in coordination, reflexes, judgement, and memory. | T | F |

Training Module: Sun Exposure

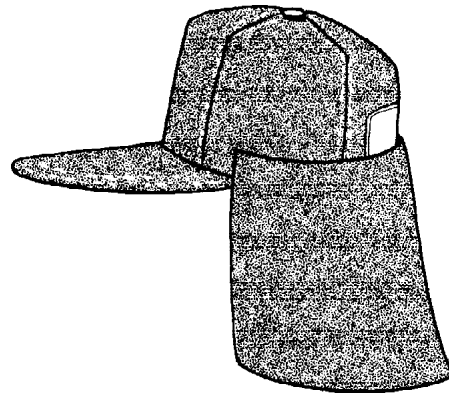
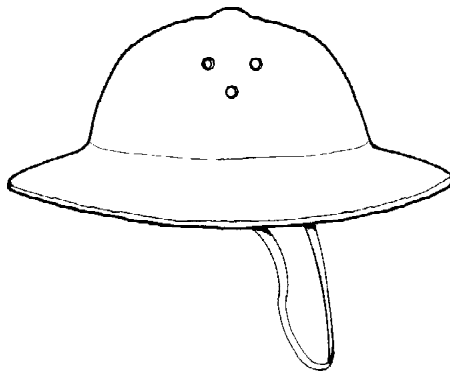
Objective: To learn the possible outcomes of overexposure to the sun, and how to prevent overexposure.

Trainer's Note: Sun exposure is a hazard that farmers cannot avoid. Overexposure to the sun can cause skin cancer. The American Cancer Society estimates that 800,000 new skin cancer cases are diagnosed each year. Discuss wearing protective clothing and sunscreen to guard against overexposure.

Background

Proper personal protection must be used to limit skin exposure. Farm workers are continually at risk of developing skin cancer of the head, face, ears, or neck. Using a hat, and sunscreen, reduces the chance of getting skin cancer.

Sun exposure is a key factor in the development of skin cancers. Skin cancer is not associated with a single event (for example, a painful sunburn), but with progressive exposure over years. People who burn easily, rarely tan, freckle or have a fair complexion, blonde or red hair, or blue or gray eyes, experience greater skin changes with sun exposure.



Skin Cancer: Be on the look out for three types of changes:

- *Basal cell* -shiny appearance. It usually can be removed by excision or topical treatments. If it is diagnosed and treated early, it can be cured. It is more of a later life concern.
- *Squamous cell* -rusty, warty appearance. It usually can be removed by excision or topical treatments. If it is diagnosed and treated early, it can be cured. More of a later life concern.
- *Melanoma* -dark mole-like appearance. However, malignant melanoma carries more significant, even fatal implications. Melanoma's incidence has been steadily rising, affecting people of all ages.

In order to minimize risk of skin cancer, there are a few basic recommendations to follow:

- Avoid sun exposure between 10:00 am and 3:00 pm, whenever possible.
- Protective clothing such as long sleeves, long pants, high socks and gloves act as a barrier between the skin and the sun.
- Wear a wide brimmed hat, cap flap or the flap on cap. A baseball type hat will offer the least amount of protection. (Baseball hats do not protect ear tips, temples or back of the neck.)
- Use a sunscreen with sun protection factor (SPF) of 15 or more while working outdoors. Reapply the sunscreen every two hours.

Review The Following Points

- Skin cancers are the most common cancers experienced in the United States.
- The major cause of skin cancers is due to the amount of time a person is exposed to the sun.
- Avoid sun exposure between 10:00 am and 3:00 pm and wear sunscreen.
- Wear protective clothing that serves as a barrier between the sun and the skin.

True or False Answer Key

1. T, 2. T, 3. T, 4. T, 5. T

True or False

Name_____

- | | | |
|--|---|---|
| 1. Wear protective clothing that serves as a barrier between the skin and the sun. | T | F |
| 2. Use a sunscreen with sun protection factor of 15 or more if outdoors during the midday. | T | F |
| 3. Melanoma incidence has been steadily rising, affecting people of all ages. | T | F |
| 4. Farm workers are continually at risk of developing skin cancer of the head, face, ears, or neck. | T | F |
| 5. Skin cancer cannot be associated with a single event, such as a painful sunburn, but rather with the progressive changes in the skin's makeup over years of sun exposure. | T | F |

Training Module: Towing Anhydrous Ammonia Tanks

Objective: To learn the necessary safety precautions for towing anhydrous ammonia tanks.

Trainer's Note: Review this module in advance. A demonstration of the proper way to tow anhydrous ammonia tanks can be done at the training session. Point out the selection of the proper hitch pin for the tank, SMV signs and other warning signs. If your nurse tanks are equipped with running lights make sure they are working properly during this demonstration. This module is intended as a refresher for employees who work with NH_3 and is not intended as a sole source of information on the safe use of this product. Contact your dealer for more information on in-depth training for your employees.

Background:

Highway and towing safety are important for the safe transport of anhydrous ammonia. Check the following items before towing the tanks to the field.

- **Running Gear** - Inspect the wagon frame tongue, reach poles, anchor devices, wheel bearings, knuckles, ball joints and pins for structural damage, cracks, excessive wear and/or needed adjustments.
- **Tires** - Check for proper inflation, cuts, bald spots, and signs of weathering. Assure that lug nuts are tight.
- **Lubrication** - Knuckles, wheels, tongues, or other applicable farm wagon equipment should be lubricated annually.

Follow these safety rules:

- **Towing Vehicle** - The towing vehicle should weigh at least as much as the tank. This balance of weight increases the driver's ability to control the vehicles, minimizing the potential for an accident. If the towing vehicle is a tractor **two** tanks may be towed at a time, but if it is a pick-up truck only **one** tank may be towed at a time.
- **Speed Limit** - The speed limit for anhydrous ammonia tanks is 25 M.P.H.

Important information regarding the use of anhydrous equipment:

- **Operator's Manual** - This should be obtained and kept with the equipment for easy reference
- **Safety Type Hitch Pin** - A hitch pin with a safety chain attachment is essential for the tank wagons or running gear.

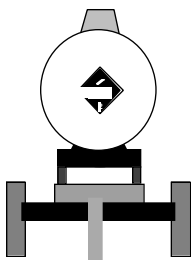
Safety Signs and Lighting:

- **SMV Sign** - With the mounted point up, place the sign on the vehicle 2-6 feet above the ground. Place the perpendicular plane to the direction of travel (+ -)10 degrees. Place the sign as near to rear center as possible.
- **Warning Lights** - Turn signals, flashing warning lights and a red brake light are recommended when towing an anhydrous ammonia tank wagon on public roadways. A standard seven terminal break-away connector plug should be used on the tank wagon to accommodate these lights.

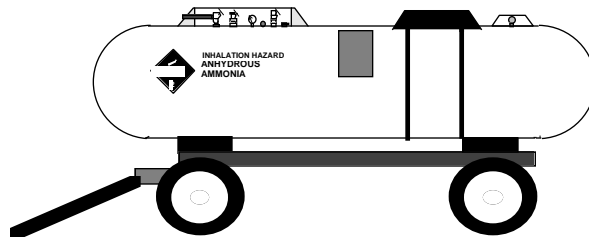
Appropriate lighting for roadway travel includes at least one red tail lamp and two amber flashing warning lamps. These lights must be on the towing vehicle or the tank wagon and visible from the rear. Additionally, the tank wagon must have at least two red reflectors visible to the rear.

- **Safety Sign** - At least one safety sign should be located between the control valves and the 5 gallon water supply.

Proper safety and warning signs - Tanks operating on the highway must have the proper safety markings. Regulations require that a SMV sign be attached to the rear of the vehicle and visible from at least 500 feet. The words Anhydrous Ammonia (4 inches high) and Inhalation Hazard (3 inches high) must be placed on both sides of the tank. In addition, the anhydrous ammonia label must be placed on the rear of the tank. The words should appear in a color that contrast with the tank. The Dot placard (1005) for nonflammable gas should be placed on the front, back and sides of the tank.



Front



Side



Back

Review The Following Points

- Upkeep is mandatory for tanks.
- Know Ohio's highway requirements.
- Know the number of tanks which may be towed behind each vehicle.
- Keep the operator's manual with the equipment.
- Use safety signs and lighting.

True or False Answer Key

1. F, 2. T, 3. F, 4. F, 5. T

Towing Anhydrous Ammonia Tanks Quiz

True or False

Name _____

- | | | |
|---|---|---|
| 1. There are no standardized safety markings when towing NH ₃ . | T | F |
| 2. It is acceptable to tow more than one NH ₃ tank at a time depending on the type of vehicle towing it. | T | F |
| 3. The speed limit for a NH ₃ tank is 35 mph. | T | F |
| 4. The towing vehicle should be lighter than the tank. | T | F |
| 5. Keep the operator's manual near the equipment. | T | F |

Training Module: Tractors and Highway Safety

Objective: To use safe highway procedures for tractors.

Trainer's Note: Accidents occur because highway safety precautions are not followed. It is difficult to avoid highway travel when going between farm sites. Discuss procedures for traveling on highways with agricultural equipment. Common sense and good judgment should be emphasized. Discuss driving safely on highways.

Background

When hauling a tractor for some distance, it is best to transport it on a truck or trailer.

Safe highway procedures for hauling include:

- Haul tractors and implements on a flatbed.
- Obey the laws for height and width regulation.
- Remove, cover or turn SMV signs when tractors are transported on another vehicle.
- Use the correct flags, lights, and reflectors on the transport vehicle to warn other drivers.

For shorter distances, tractor highway travel is appropriate. For the safety of everyone on the road, some safety provisions should be followed. Only operate machinery in good repair on the highway. Properly hitch implements with adequate safety chains before beginning the journey. Do not use makeshift hitch pins.

Before traveling on public roads remember:

- Lock brake pedals.
- Adjust mirrors for good vision.
- Make sure that all warning flashers, lights, and SMV emblems are in proper operating condition, clean, and easily visible.
- Check tire inflation pressures. Inflate the tires to the maximum recommended pressure for long distance travel.
- Check the wheels to see if the bolts are tight.
- Make sure the tractor is balanced properly.

When pulling onto a public road, use a wide shoulder if available. If the shoulder is not wide enough, stay on the road. Allow extra time to reach full speed. Tractors do not accelerate rapidly, especially when towing equipment.

When traveling on public roads:

- Watch for pot holes or obstacles that could tip tractor.
- Listen for cars. Often vehicles will rapidly approach from the rear at 3 to 4 times the speed of the tractor.
- Stay alert at all times to avoid a serious accident.
- Keep a constant lookout for pedestrians, animals, and road obstacles.
- Slow down for sharp curves.
- Slow down when going down a hill.

Vehicles traveling on public roads at 25 mph or less are legally required to have a slow-moving vehicle sign. Equipment traveling faster than 25 mph is defined as a trailer and is not permitted to display the SMV emblem, but must be equipped with turn signals, brakes, and lights. Lighting regulations for slow-moving vehicles vary. Before installing any warning light system on a tractor, check the regulations. Generally the lighting and marking laws for tractors or self propelled machines are consistent with the recommendations by the American Society of Agricultural Engineers (ASAE) and the Society of Automotive Engineers (SAE). Only one vehicle classified as farm machinery may be towed by the licensed motor vehicle.

ASAE recommendations include:

- Two headlights.
- At least one tail lamp, mounted on the left side facing the rear of the tractor.
- At least two amber warning lights, visible from front and rear, mounted at the same level at least 42 inches above ground level.
- At least two red reflectors, visible from the rear and mounted on either side.

Lights and emblems must be clearly visible. If lights or emblems are blocked during towing, attach lights and emblems to the rear of the implements. Most tractors can be equipped with auxiliary connectors allowing implement electrical systems to be plugged into the circuit operating the tractor lights.

Review The Following Points

- Know the Law concerning highway travel for tractors.
- Watch for highway traffic.
- Use common sense and obey traffic patterns when traveling on the highway with a tractor.

True or False Answer Key

1. T, 2. T, 3. F, 4. T, 5. T

True or False

Name_____

- | | | |
|--|---|---|
| 1. When tractors or implements must be transported long distances, it is safest to haul them on a flatbed. | T | F |
| 2. Stay alert at all times to avoid a serious accident. | T | F |
| 3. There is no need to use an SMV sign if traveling only five miles. | T | F |
| 4. Slow the tractor speed down when going through a sharp curve or down a hill. | T | F |
| 5. Make sure that all lights and warning signals are in working order before traveling on the road. | T | F |

Training Module: Loader Safety

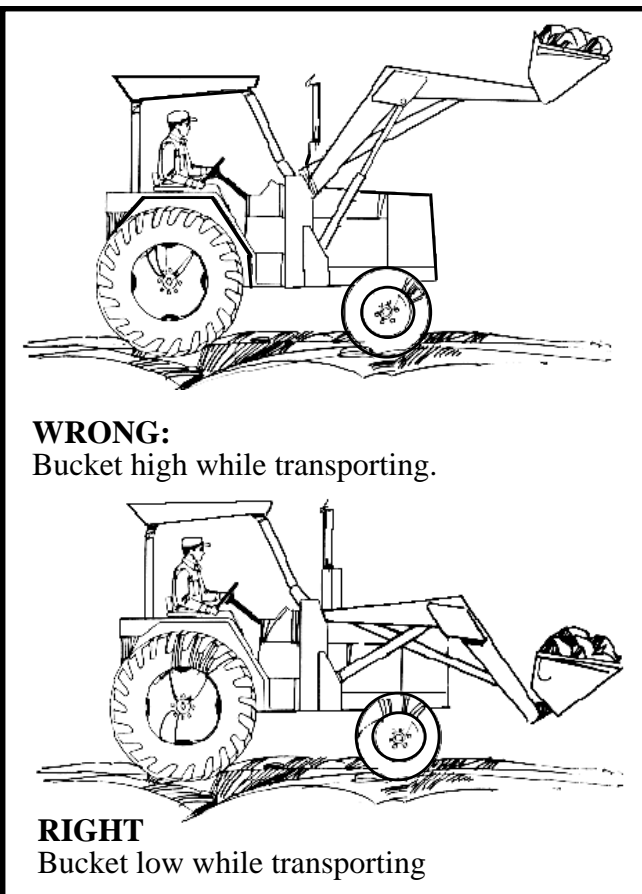
Objective: To be able to operate a tractor loader according to safe standards.

Trainer's Note: For this training session ask an experienced worker to demonstrate the equipment. Trainees should practice moving materials with the tractor loader. Each worker who uses the tractor loader should be checked to ensure that they are qualified to operate the equipment.

Background

Tractor loaders are helpful for moving farm materials from one place to another, however, when fully loaded, they make the tractor “front heavy” and could cause an accident. Only install loaders designed specifically for the tractor to reduce the chances of an accident.

An elevated loader changes the center of gravity of the tractor and can cause the tractor to tip under conditions that would normally be safe. Also, tractor loaders often operate in confined areas that make short turns unavoidable. Both of these factors make loader-equipped tractors susceptible to rollovers caused by centrifugal force. (Centrifugal force: the force that resists change in direction).

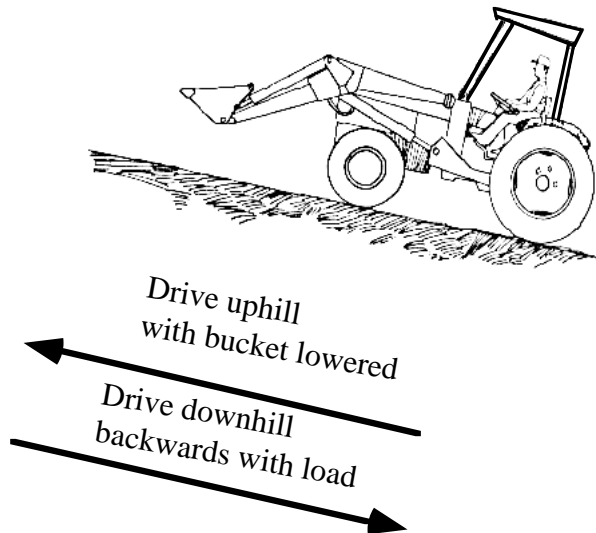


To avoid a rollover:

- Watch carefully for obstructions and depressions.
- Handle the rig smoothly, avoiding quick starts, stops, and turns.
- Keep the bucket as low as possible when turning and transporting.
- Ballast the tractor loader combination as recommended by the manufacturer, or wheel weights attached to the rear axles or wheel rims. Weight may also be carried by a three-point hitch.
- The width of the tractor should be adjusted to as great a width as is practical.
- Use a front end loader only for its specific purpose. It should not be used to remove fence posts, towing or knocking something down.

Additional Safety tips for working with loaders:

- Lower loader arms slowly and steadily.
- Keep travel speed slow.
- When turning, adjust for the extra length of the loader.
- Raise the loader in an area free of overhead obstacles, such as power lines.
- Keep the loader low while carrying loads and/or while driving on an incline.
- Drive loaded buckets uphill rather than downhill, and stay off steep slopes to prevent bouncing and loss of control.
- Back filling (replacing dirt), can cause new construction to collapse.
- Watch for falling rocks and cave-ins when undercutting.
- Stay away from the outer edge of banks and slopes.
- Load the bucket evenly from side to side and keep within the normal capacity of the tractor and loader.
- Use the recommended amount of ballast to give the tractor extra stability.
- Never tow a tractor by attaching a tow chain or cable to the loader.
- Never allow people to ride in the bucket.
- A load should not be moved or swung with people in the work area.
- Operate controls only when seated on the tractor.
- Remove the loader from the tractor when loader is not in use.
- Physically block the bucket and/or arm if they have to be raised for maintenance.
- Never walk or work under a raised loader.
- Put the loader on the ground, turn off the engine/electric power, then dismount.



Bale handling tips:

- Round bales should not be handled without the attachments recommended by the manufacturer, such as, bale forks, spears, grapples, or huggers.
- Bales that exceed the weight limitations of the loader should not be handled by the loader.
- Carry the bale slowly and as low as possible to the ground.
- When handling round bales on a slope, always approach the bale with the tractor facing uphill.
- Never use the tractor loader to stop a rolling bale.

Review The Following Points

- Tractor loaders can be dangerous because they effect a tractor's center of gravity.
- Watch out for others when working with a loader.
- If the tractor is suitably ballasted and adjusted for the load being handled, many accidental rollovers can be prevented.
- Operate controls only when seated on the tractor.
- Keep travel speeds slow.

True or False Answer Key

1. T, 2. T, 3. T, 4. F, 5. T

Loader Safety Quiz

True or False

Name _____

- | | | |
|--|---|---|
| 1. The bucket should be kept as low as possible when turning and transporting. | T | F |
| 2. Stay away from the outer edge when working along high banks and slopes. | T | F |
| 3. Never walk or work under a raised loader. | T | F |
| 4. Drive loaded tractors with the bucket pointing downhill rather than uphill. | T | F |
| 5. Raised loaders can be dangerous because the center of gravity is changed. | T | F |

Training Module: Safe Use of Tractors and Self-Propelled Farm Equipment

Objective: To be able to safely operate tractors and other self-propelled farm equipment.

Trainer's Note: Summarize and present the information below. Let each worker practice the safety techniques on the equipment. Provide feedback to ensure that the worker clearly understands the safe operation of each piece of equipment. Let an experienced worker be the trainer. DURING TRAINING it is acceptable for the trainer to ride on the tractor with the trainee.

Background

Read and follow the equipment operations and safety manuals. Keep safety signs in good repair and replace them as needed. When replacing a part, be sure to transfer the safety equipment to the new part. Replacement safety signs are available from the dealer.

Knowing how to use and operate all controls on each piece of machinery is the first step towards hazard free operation. Keep the machines in proper working condition. Do not modify equipment. Unauthorized modifications impair the function, safety and affect machine life.

Tractors are large, heavy and powerful machines which require careful attention to operate and service. New tractors are equipped with safety devices to provide a reasonable amount of protection. Practice good safety habits and be aware of hazardous situations.

Safe Operation of Farm Equipment:

- Safe operation depends on alert, efficient handling, most accidents occur when the operator is tired or not alert.
- Limit use of equipment to those qualified.
- Wear safety glasses to prevent eye damage due to flying debris. Wear snug fitting clothing to decrease the chance of catching something on a moving part.
- Never ride double on farm equipment.
- Prior to working in a field, check the field for debris, obstacles, ditches and holes that could cause the tractor to overturn.
- Adjust operating procedures to environmental conditions. Control is more difficult in mud, snow or ice.
- For protection from an overturn, the tractor should be equipped with a rollover protective structure (ROPS) Fasten the seat belt only if there is a ROPS. (Refer to ROPS module).
- A first aid kit should be on or near all major equipment (Refer to First Aid Kit module).

When operating machines with mounted equipment, use adequate ballast for stability. Hitching loads to the draw bar prevents turning over backwards. Back out of deep ditches, up slopes and out of mud holes, to avoid overturning. Slow down and begin turning the wheels before applying the brake to assist in turning. This helps avoid overturns, skidding and bouncing. Sitting down when traveling over rough terrain lessens the chance that the driver could be thrown from the implement.

Review The Following Points

- Stay alert.
- No riders (except during training session).
- First aid should be readily available
- Follow recommended procedures in different terrains and weather conditions.
- Read and follow operators manual and safety precautions.

True or False Answer Key

1. T, 2. F, 3. T, 4. T, 5. T

True or False

Name _____

- | | | |
|---|---|---|
| 1. Always read the operator's manual before working with any piece of farm equipment. | T | F |
| 2. If driving a piece of self-propelled farm equipment, wear the seat belt even if there is no Rollover Protective Structure. | T | F |
| 3. The tractor is designed for only one person, the driver. | T | F |
| 4. Always check the field for ditches, fences or other obstacles. | T | F |
| 5. Let only qualified people operate the tractor or self-propelled equipment. | T | F |

Training Module: Safely Starting and Stopping a Tractor

Objective: To be able to start and stop a tractor the proper way.

Trainer's Note: Have an experienced tractor operator demonstrate the proper techniques for safely starting and stopping a tractor. An extra rider is only allowed for training purposes.

Background

Before mounting the tractor, make sure guards and shields are in place and in good working condition. Use provided handrails for mounting and dismounting. Adjust the operator's seat for fit and easy access to controls.

Before starting the engine remember to:

- Place the gearshift lever in "neutral" or "park."
- Place all hydraulic controls in neutral.
- Disengage the PTO.
- Apply the brakes.
- Depress the clutch pedal.



Tractors will start in gear if normal starting circuitry is bypassed. Start the engine from the operator's seat with the transmission in park. Do not start the engine by shorting across starter terminals. **Never** start the engine while standing on the ground.

If jumper cables are needed to start the engine, make sure polarity is correct. Reversed polarity will damage electrical system. Always connect the positive cable first and then the negative cable. Avoid sparks around the battery because escaping gas can cause an explosion. Avoiding sparks is difficult, so position the ground connection away from battery. This will help keep sparks away from the battery. Follow the instructions in the tractor operator's manual. Always wear eye protection when working around batteries.

Stopping the tractor safely involves more than just applying the brakes and turning off the engine. Use the following safety suggestions to avoid accidents:

- Apply the brakes evenly.
- Disengage the PTO.
- Lower all hydraulically powered equipment to the ground.
- Put the gearshift lever in "park" or "neutral", and set the brakes.
- Turn the ignition key off and remove it to prevent tampering or accidental starting.

Additional Safety Hints:

- Keep a copy of the operator's manual on the tractor.
- To prevent falls, keep the surface area of the tractor free of oil, grease, and mud.
- Keep trash away from the exhaust system to prevent a fire.
- Keep tires properly inflated.
- Maintain control lights and gauges.
- Ventilate to avoid asphyxiation, when operating tractors indoors.

Review The Following Points

- No extra riders (except for specific training purposes).
- Never start the engine by shorting across starter terminals.
- When jump starting an engine, avoid sparks around the battery, and wear eye protection.
- Always apply brakes evenly and disengage the PTO before when stopping the tractor.

True or False Answer Key

1. T, 2. T, 3. T, 4. T, 5. F

Safely Starting and Stopping a Tractor Quiz

True or False

Name _____

- | | | |
|--|---|---|
| 1. Never start the engine by shorting across starter terminals. | T | F |
| 2. If jumper cables are needed to start the engine, avoid sparks around the battery. | T | F |
| 3. Follow the instructions in the operator's manual. | T | F |
| 4. Never start the engine when standing on the ground. | T | F |
| 5. To stop the tractor just apply the brakes and quickly shut off the engine. | T | F |

Module Title: Trenching and Excavation Safety

Objectives: To understand and practice safe trenching and excavation.

Trainer's Note: Although farmers are generally exempt from the state trenching and excavation statutes, they may still be held liable for accidents and loss of life resulting from trenching and excavation activities conducted under their direction. The purpose of this module is to increase your awareness of excavation and trench safety, and is not intended as a strict legal interpretation of Ohio's trenching and excavation laws. For additional information consult the *Trenching and Excavation: Safety Principles* Fact Sheet provided through the Ohio State Extension Service.

Background

Taking safety precautions during farm trenching jobs may seem to waste valuable time and money, but accidents that occur because safety precautions were not taken can be costly. In addition to the loss of human life, the possible financial costs of a trenching accident include: Work delays to rescue the victim; additional time and labor to re-excavate the collapsed trench; workers compensation costs and increased insurance premiums; and additional paperwork resulting from the investigation of the accident. Sometimes, fines may also be imposed.

Soil is an extremely heavy material, and may weigh more than 100 pounds per cubic foot. A cubic yard of soil (3ft x 3 ft x 3 ft), which contains 27 cubic feet of material, may weigh more than 2,700 pounds. That is nearly one and a half tons (the equivalent weight of a car) in a space less than the size of the average office desk. Wet soil, rocky soil or rock is usually heavier. A person can easily be crushed under this weight.

General Requirements:

- Contact the Ohio Utility Protection Service (OUPS) at 1-800-362-2764 and the Oil and Gas Producers Protection Service at (614) 587-0486 to identify the location of any underground cables, pipes or utility installations in the area of the proposed excavation.
- Ohio law requires excavators to call OUPS two working days before breaking ground.
- Once these areas are located and marked, avoid them.
- When working in areas where there is a backfilled trench, railroad, highway, source of vibration or other unstable condition, take additional precautions to properly shore and brace the excavation to help prevent cave-ins.
- Undercutting of exposed vertical faces is prohibited unless supported by one or more of the methods prescribed in the Ohio Administrative Code, Chapter 4121:1-3, for exposed faces of trenches.
- All excavated or fill materials should be placed at a minimum of two feet away from the top edge of the trench.
- If materials need to be placed closer than two feet from the edge of the trench, install an effective barrier to prevent them from falling into the excavation.
- For further details consult the Ohio Administrative Code, Chapter 4121:1-3.

Key points to remember:

- The soil characteristics at the work site should be identified to help provide a safe work place.
- For each trenching or excavation situation, you should employ the proper sloping, shoring and bracing structures and measures designed specifically for the particular situation.
- Proper design, construction and placement of support structures will allow employees to work in a safe environment.
- Trench failures often occur in multiples, starting with a movement of soil material near the bottom of the trench wall. After the failure of the base, the support of the wall will quickly erode and the wall will collapse.

Mechanics of a trench failure:

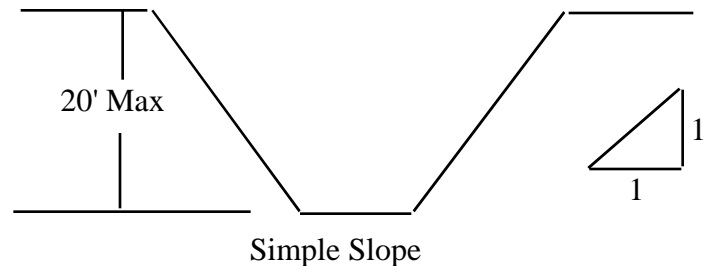


Three safety techniques used to control earth movement:

Shoring: Wood or metal sheets braced tightly against the vertical walls of the trench will protect the workers in the ditch, and prevent the collapse of adjacent structures. To reduce movement outside of the sheeting, push sheets against the soil with struts, cross braces, or hydraulic trench jacks.

Shielding: Trench shields or portable trench boxes surround the workers with a strong wall of steel or concrete. There is no support for adjacent structures using this method.

Sloping: Moving the earth away from the sides of the trench until the walls are at a safe angle from the floor of the trench. The soil will remain at rest at angles ranging from 90 degrees to 26 degrees.



Review The Following Points

- Soil is an extremely heavy material.
- It is necessary to know the characteristics of the soil at the particular job site.
- The OUPS and the Oil and Gas Producer Protection Service should be contacted before breaking ground.
- Precautions need to be taken to prevent cave-ins.

True or False Answer Key

1. T, 2. F, 3. F, 4. T, 5. T

Trenching and Excavation Safety Quiz

True or False

Name _____

- | | | |
|--|---|---|
| 1. Soil may weigh more than 100 pounds per cubic foot. | T | F |
| 2. It not necessary to contact the Ohio Utility Protection Service, only the Oil and Gas Producers Protection Service needs to be contacted. | T | F |
| 3. Identification of the soil characteristics at the work site is not important. | T | F |
| 4. Trench failures often occur in multiples. | T | F |
| 5. Proper design, construction and placement of support structures will allow employees to work in a safe environment. | T | F |