

Overhead Power Line Safety Training for Agricultural Workers

Presented by:



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Overhead Power Line Safety Training

Agricultural workers are essential to many aspects of our everyday lives from the food we eat to the clothes we wear. The conveniences they provide come at a cost, as they face many hazards in their workplace. Existing trainings already address the risks of heat exhaustion, dehydration, and pesticides but the industry has been less proactive about providing training regarding overhead power lines. Electricity is uniquely unforgiving when proper procedures are not followed, and it is essential that workers are informed and reminded of safe practices around power lines. This training will demonstrate the very immediate need for such trainings as well as the appropriate actions necessary to avoid injury or death caused by overhead power lines on the agricultural worksite.

We will cover the following:

- Why this training is important
- Examples of hazardous situations associated with overhead power lines
- Providing effective tips to prevent harm caused by overhead power lines
- Appropriate actions following an incident involving overhead power lines
- Avoiding complacency on the worksite

Course Objectives:

- Understand the dangers associated with overhead power lines
- Learn procedures to avoid harm from overhead power lines
- Learn what to do in the event of an incident related to overhead power lines

Key Definitions:

- Minimum Clearance Distance – Check with your service provider for exact minimum clearances you should observe, as this is dependent upon the voltage in the overhead power lines. As a rule, you and all equipment should maintain AT LEAST 10 feet away from all overhead and fallen power lines. Contact with the power lines is not necessary to cause injury or death, as arcing can still occur when minimum clearances are not observed.
- Arcing - People or equipment can become energized without touching the power lines directly. If they are working inside the minimum safe clearance distance, electricity can arc, or jump across the gap.

Why is This Training Important?

The need for overhead power line safety trainings is best summarized by some of the available data, such as:

- *Contact with overhead power lines is responsible for the highest number of workplace electrical fatalities across all industries year after year.*
- *Of the 1,001 reported power line contact incidents from 2003-2009, nearly 70% resulted in death.*
- *The leading cause of electrical fatality for agricultural workers is contact with overhead power lines.*

These findings clearly demonstrate the need for overhead power line training for agricultural workers to help reduce the incidence of injury and death at the worksite.

Avoid Harm From Overhead Power Lines

Contact with overhead power lines is the leading cause of electrical fatalities for agricultural workers. This can result from a variety of different circumstances and can occur in any location where overhead power lines exist. Below are some of the common circumstances that may result in a hazardous situation involving overhead power lines.

Farm Machinery and Overhead Power Line Clearance:

The following hazards relate to the use of farm machinery in close proximity to overhead power lines:

- Machinery that is too tall or has aerial components, such as antennas or communications equipment, may violate the minimum safe clearance distance.
- Machinery that may meet the minimum clearance distance in its lowest configuration may not do so when it is in the raised position or is extended while under the power lines.
- Moving tall machines over uneven or rough ground can cause booms to sway or bounce and reduce the normally safe operating clearance distance from overhead lines.
- Aluminum ladders that are not retracted to their shortest length before being moved or are moved while in a vertical position can violate the safe clearance distance.
- Some examples of machinery that can extend far enough to make contact with overhead power lines includes:
 - Front-end loaders
 - Bale loaders
 - Cranes
 - Tractors
 - Fork-lift trucks
 - Combines
 - Grain Augers
 - Crop sprayers
 - Excavators
 - Materials handlers
 - Dump Trucks
 - Are there others on your worksite? _____

Irrigation Systems

Water is an excellent conductor of electricity, as are the pipes used for irrigation systems. Electrical incidents can occur during installation/movement of irrigation system equipment, as well as while the system is operating. Below are some examples of hazards associated with irrigation systems and overhead power lines:

- Jets of water from irrigation guns can conduct electricity, create a circuit and energize the equipment.
- Some long-boom irrigators have booms that can be folded and raised vertically for easy movement. When a boom is moved, particularly if it is raised vertically, it can come into contact with overhead power lines or breach the minimum safe clearance distance.
- Wheeled irrigation equipment should be stored at least 100 feet from power lines.
- Lightweight irrigation pipes can contact the power lines if moved in an upright position.

Fencing

Installation and maintenance of wire fencing near overhead power lines result in unique electrical safety hazards, particularly in uneven terrain. Consider the following examples:

- While fencing wire is being stretched under or close to an overhead power line, it can spring upward create a live circuit if it is too close to the line.
- Fencing across steep hills and valleys can result in decreased power line clearances, even taking workers above overhead power lines in certain situations.
- Running electric fence wires parallel to overhead power lines can cause a power surge in the wires.

Facilities

Like equipment, facilities may also cause hazardous scenarios related to overhead power lines. Some examples include:

- Temporary structures or stacks should not be sited beneath or close to overhead power lines as this reduces clearance between the lines and the ground.
- Stacks or temporary structures should not be erected in an area where machinery has to travel beneath overhead power lines to get to them.

Tips to Prevent Injury or Death Cause by Overhead Power Lines

1. Locate all overhead power lines.
2. Keep self and equipment 10 feet away from all overhead power lines.
3. Do not touch anything that is in contact with the power line.
4. Beware of fencing near power lines.
5. Carry ladders and other equipment horizontally.
6. Lower equipment apparatus before driving.

7. Never spray near power lines with irrigation systems. Inspect irrigation lines frequently to prevent malfunction spray that may contact lines.
8. Stay **at least** 10 feet away from fallen power lines.

What to Do if a Person Becomes Energized By Overhead Power Lines

If someone comes in contact with or becomes energized via arcing from a power line, do **NOT** touch them. If you do, you will also become energized. Not only will you be unable to help them, but you will be seriously hurt or killed. Instead, you should call 911 immediately.

What to Do if a Vehicle Becomes Energized By Overhead Power Lines

If a vehicle comes in contact with a power line, the occupants should **NOT** exit. Leaving the vehicle could be dangerous, especially if not done correctly. Instead they should remain inside the vehicle and call 911. Emergency personnel will be able to turn off the power and/or help occupants exit safely.

If the occupants must exit the vehicle (i.e. due to fire), they jump out of the vehicle so that both feet leave at the same time and land on the ground at the same time. Once outside, they should then shuffle so that both feet rub against each other and also remain touching the ground as they move away from the energized vehicle. They should continue shuffling until they are **AT LEAST** 10 feet away from the power source.

What to Do if You are Near Downed Power Lines

To safely get away from downed power lines, you should shuffle so that both feet rub against each other and also remain touching the ground as you move away from the power line. Continue shuffling until you are **AT LEAST** 10 feet away from the lines.

Apply What You've Learned

- Locate all overhead power lines located on your worksite
 - Review with your crew their locations and minimum clearance distances.
 - Be sure to highlight the dangers associated with irrigation and fencing.
 - Convey the dangers of arcing to your team.
- What activities are performed near overhead power lines that may be dangerous?
 - Provide examples potentially dangerous scenarios that may involve the overhead power lines. Then provide the safe procedures they should follow instead.
 - Be vigilant for unsafe practices on the worksite.
 - Praise people observing safe procedures.
- Rehearse post-incident procedures.
 - Be sure your staff knows not to touch energized people but instead to call 911 immediately.
 - Demonstrate how to safely jump from an energized vehicle, but be sure you reiterate this is only done in certain situations (i.e. vehicle on fire or filling with smoke).
 - Demonstrate how to safely shuffle away from energized sources.

- Ask your team about locations, procedures, or tasks in which they feel unsafe and help create a safe solution.
- Make schedule to review these lessons throughout the year.
 - You may have new staff join the team.
 - Everyone needs reminders.