

Working Near Power Lines

The major hazards regarding contact with energized sources are electrical shock and burns. In the U.S., hundreds of construction workers die every year while on the job, with over 700 fatalities just in the year 2011. The third leading cause of these deaths is electrocution. Electrocutions cause one of every ten construction worker deaths, with nearly 70 deaths in 2011. Electrical shock occurs when the body becomes part of the electric circuit, either when an individual comes in contact with both wires of an electrical circuit, one wire of an energized circuit and the ground, or a metallic part that has become energized by contact with an electrical conductor.

This handout provides safety recommendations addressing contact with power lines at construction sites but should not be considered all-encompassing for compliance purposes.

Metal Ladders

The use of portable metal ladders near energized overhead power lines is a major cause of electrocution on job sites. Many electrocutions happen when workers set up or relocate ladders near overhead power lines. If non-conductive fiberglass ladders had been used instead, or if safe working clearances had been maintained, these deaths might have been prevented. Recommended actions include:

- Complete a hazard assessment prior to beginning work to identify overhead power lines and develop methods to eliminate power line hazards.
- Comply with the Occupational Safety and Health Administration (OSHA) regulation prohibiting the use of portable metal or conductive ladders for electrical work in locations where they may contact electrical conductors.
- Understand the hazards of using portable metal (including aluminum) ladders near energized power lines.

- To assure protection of anyone working near electrical power lines, make arrangements with the power company to de-energize the lines or cover the lines with insulating line hoses or blankets.

Scaffolds

Check the scaffold's distance from overhead power lines, vertical clearance between the ground and any sagging power lines, scaffold height and weight, wheel condition, obstacles, ground slope, or changes in elevation that may alter clearance distance and other ground or floor conditions. Deaths have occurred when erecting, moving, or working from metal or conductive scaffolds near overhead power lines and when working from scaffolds while using conductive tools or materials near overhead lines. Recommended actions include:

- Comply with current OSHA regulations for working with scaffolds near energized power lines.

- Understand the hazards associated with scaffolds and power lines. Special emphasis should be placed on avoiding inadvertent contact with energized power lines. Inform workers about the hazards of erecting, moving, or working from scaffolds near overhead power lines or other energized circuits. Emphasize that most overhead high voltage lines are not insulated—if there is any doubt, workers should not assume lines are insulated.
- Conduct daily hazard surveys at each job site before starting work, then implement appropriate control measures and training to address identified hazards.
- Do not use electrically conductive tools or materials in situations where they may contact overhead power lines.
- Keep all unauthorized persons away from the area.
- Monitor the clearance between power lines and the scaffold. If a scaffold is to be moved in the vicinity of overhead power lines, a competent worker should be assigned to observe the clearance and warn others if the minimum clearance distance is not maintained.
- Establish emergency procedures in case a scaffold contacts a power line.
- Comply with applicable OSHA regulations, including those that require workers and employers to consider all overhead power lines to be energized until the owner of the lines or the electric utility indicates that they are not energized, and they have been visibly grounded.
- Before beginning work near power lines, notify the owners of the lines or their authorized representatives and tell them the type of equipment (including length of boom), and date, time, and type of work involved. Request their cooperation to de-energize and ground the lines or to help provide insulated barriers. Consider de-energizing the lines, whenever possible, as the primary means of preventing injury.
- Evaluate job sites before beginning work to determine the safest areas for material storage, the best placement for machinery during operations, and the size and type of machinery to be used.
- Know the location and voltage of all overhead power lines at the jobsite before operating or working with any crane.
- Designate workers to observe clearance during crane operation, and do not give these workers any other duties or responsibilities.
- Evaluate other work methods that do not require the use of cranes.

Cranes

Electrocutions can occur when cranes, or similar boomed vehicles, contact energized overhead power lines. Among those especially at risk are workers handling taglines or crane loads, workers who are in contact with the crane, and operators who leave the crane cab. Crane workers who are around power lines should be trained and reminded of regulations designed to keep them safe. Recommended actions include:

Get Prompt Emergency Care

Regardless of how a worker comes into contact with high- or low-voltage electric energy, electrocution victims can be revived if immediate cardiopulmonary resuscitation (CPR) or defibrillation is provided within approximately four minutes of the electrocution, followed by advanced cardiac life support within approximately eight minutes. Recommended actions include:

- **Never approach an electrocution victim that is still in contact with a power line, UNLESS it has been confirmed that the line is de-energized.**
 - Everyone who works with or around electrical energy is familiar with emergency procedures that should include knowing how to de-energize the electrical system before rescuing or beginning CPR on a worker who remains in contact with an electrical energy source.
 - CPR and first aid is immediately available at each job site so prompt care (within four minutes) can be provided.
 - Provisions should be made at each job site to provide advanced cardiac life support—within eight minutes, if possible—generally by calling an ambulance staffed by paramedics. Ensure that signs are posted giving the correct emergency number to call and that workers are educated regarding what information to relay once the call is made.
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