FACE/WA
Fatality Assessment & Control Evaluation

Fatal Facts

SHARP

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Electrocution Hazards Working Near Overhead Power Lines

Many occupations may require workers to perform their job tasks near overhead power lines.

Construction workers, truck drivers, tree service workers, mobile equipment operators, agricultural workers, and others find themselves carrying-out their work in the vicinity of energized overhead power transmission lines. They may not be trained to recognize the dangers of electrocution if their bodies, equipment, tools, work materials, or vehicles come near to an overhead line. Electrical utility workers are generally highly trained to recognize and manage electrical hazards – other workers are less so.

Most high voltage electrocutions in Washington State do not involve power line workers. Both national and Washington State data show a high number of fatalities for workers in construction, tree trimming, agriculture, and others who frequently work near overhead power lines. The following information is primarily intended for workers other than electrical utility employees but may benefit anyone working around power lines.

Working Near Overhead Power Lines: Stay Away! Stay Alive!

These are brief case descriptions of selected fatalities that happened during work near energized overhead power lines in Washington State during the years 1998-2005:

Case1	On August 19, 1998, a painter moving a 32-foot aluminum extension ladder received a fatal electric shock when the ladder contacted one phase of a 3-phase system of 13,200 volts.
Case 2	On February 7, 2000, a carpenter was in a scissor lift taking measurements of a roof with a tape measure when the lift contacted a 72 KV power line. He was electrocuted and another worker on the roof suffered severe burns.
Case 3	On April 6, 2005, a cement truck driver was electrocuted when his truck's boom contacted an overhead power line while transferring concrete from his truck to a pumper truck.
Case 4	On June 29, 2005, a tree trimmer was electrocuted when a tree branch which he had just cut touched a high voltage power line as he was trying to remove it.

Always Assume Power Lines are Energized and Avoid all Contact, Unless Verified as De-energized

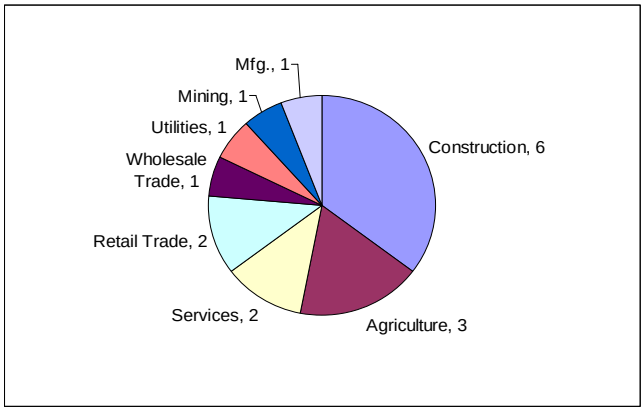
Washington State Workers and Power Line Electrocutions

Washington State commonly experiences fatal incidents from power line electrocutions. These events are devastating to the survivors and companies involved. **However, high risk activities have been identified and interventions are readily available to prevent future fatalities.**

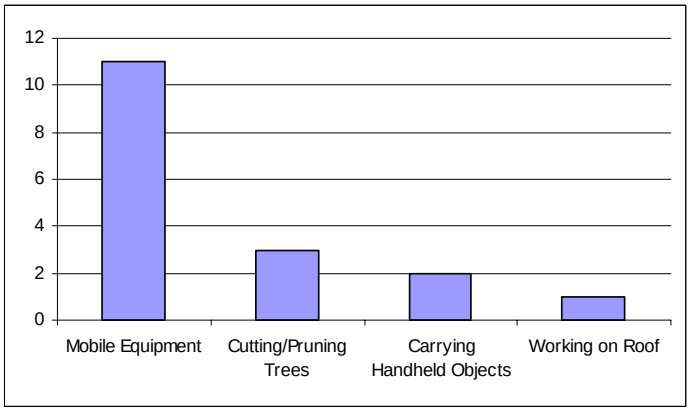
- Seventeen electrocution fatalities of victims working near overhead power lines occurred between 1998 and 2005.
- Six of the 17 incidents involved workers in construction trades.
- Eleven fatalities involved the use of mobile equipment such as boom cranes, cherry pickers, log loaders, scissor lifts and articulating boom lifts.
- Sixteen of the 17 victims were not electrical or utility workers – they were performing some other task when they accidentally came into contact with electrical current.

Workers doing construction work and using mobile equipment account for the highest number of fatalities. Agricultural work and pruning or falling trees also resulted in several fatal electrocutions.

Fatalities by Industry Sector in Washington State from 1998-2005



Fatalities by Activity in Washington State from 1998-2005



Proper Equipment for the Job is Critical to Minimize the Risk of Electrocution

How to Prevent Electrocutions When Working Near Overhead Power Lines

1. **Employee and supervisor training:** Employers should ensure that their employees and supervisors are trained to recognize the hazards of working near overhead power lines and how to use proper procedures to eliminate or minimize these hazards. Supervisors and employees should know the location of all overhead power lines before starting work.

    - **Traveling Under** - Check the height of your vehicle's load and the height of the power lines before you go under.

2. **Safe distances:** Maintain safe working distances from all overhead wires and power transmission lines. When operating mechanized equipment make sure that the equipment, or material being moved, is at least 10 feet away from power lines. Very high voltage levels (over 50 kv) require distances greater than 10 feet.

One successful way to promote safe distances is by having the utility install warning lines and flags on the utility poles that maintain a 10 foot separation between the warning and high voltage lines.

3. **De-energize or insulate:** Contact utility company or owner of overhead power lines prior to the start of work to de-energize and ground the lines or install insulation, if feasible. Work closely with the utility company throughout the project to eliminate or minimize the risk of contact with energized power lines.

4. **Ladder, tools, and equipment:** Employees should be aware of the hazards of working with ladders near power lines. Ensure that ladders, scaffolds, pipes, window washing rollers, and other types of tools and materials do not come within 10 feet of power lines.

    - **Pruning or Falling Trees** - Only qualified workers conducting work in a safe manner should perform work where power lines are a potential hazard. For line clearance work refer to WAC 296-45-455 for specific guidance.

5. **Spotter:** A trained, qualified worker should be assigned to observe the clearance of equipment operating near power lines when it is difficult for the operator to judge and maintain the required distance.

6. **Warning devices:** Electronic warning devices installed on cranes or other equipment can be used to alert the operator if the boom is coming too close to an energized line.

Prevention ideas taken in part from Janicak CA (1997), "Occupational Fatalities Caused by Contact With Overhead Power Lines in the Construction Industry," *JOEM*, 39(4), pp. 329-332.

WISHA Consultation Program
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http://www.LNI.wa.gov/Safety/KeepSafe/Assistance/Consultation

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Spokane (Region 6, Eastern Washington): 509-324-2600

WISHA Policy & Technical Services

Tumwater Central Office – Safety/High Voltage: 360-902-5562

Other Resources

- NIOSH ALERT: Preventing Electrocutions of Crane Operators and Crew Members Working Near Overhead Power Lines, DHHS (NIOSH) Publication No. 95-108 www.cdc.gov/niosh/crane.html.
- NIOSH ALERT: Preventing Falls and Electrocutions During Tree Trimming, DHHS (NIOSH) Publication No. 92-106 www.cdc.gov/niosh/92-106.html.
- NIOSH ALERT: Preventing Electrocutions During Work with Scaffolds Near Overhead Power Lines, DHHS (NIOSH) Publication No. 91-110 www.cdc.gov/niosh/91-110.html.
- NIOSH ALERT: Preventing Electrocutions of Workers Using Portable Metal Ladders Near Overhead Power Lines, DHHS (NIOSH) Publication No. 89-110 www.cdc.gov/niosh/89-110.html.
- NIOSH ALERT: Preventing Electrocutions from Contact Between Cranes and Power Lines DHHS (NIOSH) Publication No. 85-111 www.cdc.gov/niosh/85-111.html.
- NIOSH ALERT: Preventing Electrocutions by Undetected Feedback Electrical Energy Present in Power Lines, DHHS (NIOSH) Publication No. 88-104 www.cdc.gov/niosh/88-104.html.
- OSHA Employer Kit (website) Overhead Power Lines – Don't Get Zapped! (construction industry focus) http://www.osha.gov/Region7/overheadpowerline

FACE Fatal Facts

Produced by the **Washington State Fatality Assessment & Control Evaluation (FACE) Program**, which is managed by the Safety and Health Assessment and Research for Prevention (SHARP) Program.

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