High Voltage Lines

GENERAL DISCUSSION

Electricity jumps. Always keep yourself and your equipment a safe distance from high voltage lines. Even low voltage can injure or kill you, but today we'll be talking about high voltage. About 700 U.S. workers are killed by electricity each year, many because they got too close to a high voltage line. We' all explain some steps to take if someone gets an electric shock but even the best emergency care can' t always save a life. It's best not to get too close to electricity in the first place. You or a crewmember may want to add a personal story about high voltage electricity.

Next, discuss with the crew where there may be danger from high voltage lines at this particular job site:

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Ask the Crew these Questions

After each question, give the crew time to suggest possible answers. Use the information following each question to add points that no one mentions.

1. Electricity can be dangerous at any voltage, but our subject today is high voltage. Does anyone know what we mean by high voltage electricity?

- Over 600 volts.

2. How far away should you stay from an overhead high voltage line?

- People should stay between 6 and 20 feet away, depending on the voltage. The higher the voltage, the farther electricity can jump. No part of your body should come within this minimum clearance distance.
- Most tools, equipment, and machinery should also stay between 6 and 20 feet away.
- Lifting and hoisting machinery (like cranes) should stay between 10 and 42 feet away from the line, depending on the voltage.
- An electric line might move (due to strain on the supporting structures, etc.). Your clearance distance must also allow for this possible movement.

3. What if you have to work within the minimum clearance distance?

- Make sure the electric line is de-energized.
- Consider any line to be live unless:
    - The owner or operator of the line verifies that it is de-energized.
    - The line is visibly grounded at the work site.

4. Keep all tools and equipment away from high voltage lines. You can get a serious shock if anything you're using or carrying accidentally contacts a line. What are some tools and equipment that you should be especially careful with?

- Metal ladders, long pipes, tree trimming equipment cranes
- Scaffolds, antennas, extension rollers used in painting lifting equipment

Watch clearance whether you're using the equipment, transporting it, or storing it. Never use tools or equipment above a high voltage line regardless of the distance.

5. According to OSHA, there should be two signs on all cranes, derricks, power shovels, pile drivers, and similar machinery, warning about the clearance distance from high voltage lines. What information is on these signs?

- They say that operators should keep this equipment at least 10 feet from high voltage lines that carry 50,000 volts or less. The clearance distance is more if the line carries higher voltage. These signs are required let your supervisor know if they're not there.

6. If you're electrical resistance is low when you get a shock, more electricity will flow through your body. That will usually cause more injury. What are some things that can lower your resistance?

- Working in a wet or damp location.
- Using wet tools.
- Sweating.
- Working in contact with good grounding materials like metal pipes, tanks, or boilers.

7. What kinds of injuries can you get from a high voltage electric shock?

- High voltage can stop your heart or your breathing.
- It can also cause fibrillation a fast, irregular heartbeat.
- You can get a serious burn external or internal.
- You can fall off a ladder or scaffold and get injured.

- Even if you're not on a ladder or scaffold, high voltage can throw you causing fractures or broken bones.

8. What should you do if someone gets an electric shock?

- Don't touch the person until power has been disconnected.
- Call 911.
- Notify the first aid provider, clinic, or supervisor. Describe the extent of injuries. Name and location of on-site first aid provider or designated local clinic: _____
- Give first aid or CPR if necessary, but only if you know what you're doing.
- Keep people out of the area.
- Calm and reassure the injured person. Don't move them until trained help arrives.
- Speed is critical. The highest success rate is when people are given CPR within 4 minutes and Advanced Cardiac Life Support (ACLS) within 8 minutes.

OSHA Regulations

OSHA requires most of the safety measures we've talked about. We have to take these precautions, it's the law. I have a Checklist of the OSHA regulations on high voltage electricity. If you'd like to know more, see me after the meeting.

Company Rules

(Only if applicable.) Besides the OSHA regulations, we have some additional company rules about high voltage electricity.

Discuss company rules

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GENERAL SAFETY REVIEW

This is a time to review all safety concerns, not just today's topic. Keep your notes on this page before, during and after the safety meeting.

Are you aware of any safety hazards from any other crews? Point out any hazards other crews are creating that this crew should know about. Tell the crew what you intend to do about those hazards.

Do we have any other safety business? Discuss any past issues or problems. Report any progress of investigations and action taken.

Have there been any accidents, near misses or complaints? Discuss any accidents, near misses, and complaints that have happened since the last safety meeting. Also recognize the safety contributions made by members of the crew.

Please remember, we want to hear from you about any health and safety issues that come up. If we don't know about problems, we can't take action to fix them.

ENDING THE MEETING

Circulate Sign-Off Form.

Assign one or more crew member(s) to help with next safety meeting.

Refer action items for follow-up.

Do you have any Safety Recommendations?

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Do you have any Job Specific Topics you would like us to discuss?

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Comments

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SAFETY TALKS REVIEW

Hazard Identification:

The company has a written Safety and Health Program that meets all OSHA requirements. It includes identification of high voltage electrical hazards on the site, regular inspections, accident investigation, and correction of hazardous conditions.

Notification and Responsibility

0. Before any work begins within the minimum clearance distance of an overhead high voltage electrical line, the owner/operator of the line is notified.
0. Any overhead line is considered energized unless the owner verifies it is not energized and the line is visibly grounded.
0. Only qualified persons do work near energized overhead lines unless steps are taken to guard against accidental contact.

Warning Signs

0. There are signs in plain view on all cranes, derricks, power shovels, pile drivers, and similar machinery, reading as shown below:
    - Unlawful to Operate This Equipment Within 10 Feet of High Voltage Lines of 50,000 Volts or Less.

Minimum Clearance

Unless an overhead high voltage electrical line is de-energized and visibly grounded, nothing comes within the minimum clearance distance at any time:

Clearances from Energized High Voltage Lines

Normal Voltage (Phase to Phase	Minimum Clearance for People and Most Equipment (Feet)	Minimum Clearance for Lifting and Hoisting Machinery (Feet)
600.....50,000	6 ft.	10 ft.
over 50,000.....75,000	10ft.	11 ft.
over 75,000.....125,000	10 ft.	13 ft.
over 125,000.....175,000	10 ft.	15 ft.
over 175,000.....250,000	10 ft.	17 ft.
over 250,000.....345,000	10 ft.	21 ft.
over 345,000.....370,000	16 ft.	21 ft.
over 370,000.....550,000	16 ft.	27 ft.
over 550,000.....750,000	16 ft.	42 ft.
over 750,000...1,000,000	20 ft.	42 ft.

Use the table on the previous page to determine required minimum clearances on this job site. If voltages are different on different parts of the site, list them separately for each area.

Area on Site	Line Voltage	Clearance for People and Most Equipment	Clearance for Lifting and Hoisting Machinery

1. Tools, machinery, equipment, supplies, materials, or apparatus are stored beyond the required clearance distance from overhead high voltage electrical lines.

2. Workers and/or their equipment or materials are never over or above an energized overhead high voltage electrical line.
0. Calculation of clearance distances from overhead high voltage lines take into account possible line movement due to strains on the supporting structures or attachments.

Personal Protective Equipment and First Aid

0. Workers exposed to possible electric shock are provided and use suitable protective equipment or devices, such as insulated rubber gloves.
0. Workers exposed to possible electric shock or burns are provided and use approved head protection. For under 600 volts, head protection meets the requirements for Class A or B in American National Standards Institute (ANSI) standard Z 89.1 1986, Requirements for Protective Headwear for Industrial Workers. For over 600 volts, head protection meets the requirements for Class B.
0. First aid equipment is available. There are personnel trained in first aid on-site. The site also has an effective communications system for contacting help.