

Overhead Powerline Awareness

Integrity maintenance Ltd.
Box 725
Carlyle, SK. S0C0R0
www.integritymark.org

Overhead Electrical Power Lines - Silent Killer

Workplace incident and injuries can be prevented or controlled by effective controlled measures, considering the health & safety rules and regulations seriously and with collective efforts.

- The significant amount of fatal electrical incidents while on the job is contact with power lines. You will learn a few real incidents in the coming slides.

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Leading causes

- Contact with heavy equipment (cranes, backhoes, dump trucks, drilling rigs etc.)
- Contact with long handled tools and hand carried items (ladders, scaffolds, metal siding, metal poles, etc.).

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CBC news: 2 dead, 2 others critically injured after a string of electrocutions in a single day.

- “The authority said in a news release that the injuries stem from three incidents where workers on job sites came into contact with overhead electrical wires.
- "This was a cluster of events that we haven't seen before, and we don't understand at this point in time if this was just an aberration," said Joel Moody, chief public safety officer with the Electrical Safety Authority (ESA).”

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Sask. company jolted by heavy fine for electrical accident.

A Saskatchewan company has been fined \$35,000 for an accident that injured a worker due to contact with a power line.

The Saskatchewan government says Venture Construction Inc., pleaded guilty Tuesday in Saskatoon provincial court to a charge laid under Occupational Health and Safety legislation.

Court heard the business, which is based in the Rural Municipality of Corman Park, was at a worksite near Peerless on July 14, 2014 when a trailer that was being raised touched the line.

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SaskPower supervisor found guilty of breaking safety rules in death of lineman

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A supervisor has been found guilty of Occupational Health and Safety violations after the death of a SaskPower lineman in 2014.

Kleon Swahn, 45, was killed while repairing a broken high-voltage power line near Wakaw, Sask.

In a written decision, a provincial court judge found that supervisor Kelvin Rowlett didn't follow safety procedures and didn't ensure that the line was safe before it was cut. On Wednesday, he was fined a total of \$28,000.

"In his decision, the judge found that an adequate safety plan hadn't been written up once the circumstances of the job had changed."

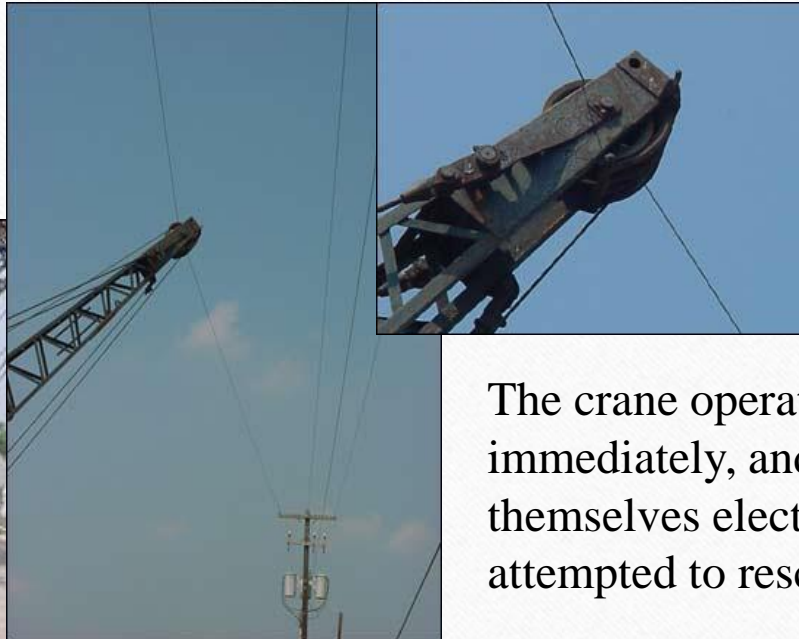
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“A 29 year old husband and father was fatally electrocuted when a crane at a construction site contacted an overhead power line.”

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“Three people were killed at a concrete plant in Telford, PA when a crane struck a 7,200 volt electrical power line.”



The crane operator was electrocuted immediately, and two co-workers were themselves electrocuted when they attempted to rescue the operator.

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On September 21, 2005, at the Hanford Central Waste Complex, the raised bed of a dump truck operated by a **subcontractor** hit an energized 240-volt power line, producing an electrical arc as the line was severed. The driver exited the truck without waiting for verification that the line was de-energized, but was **not injured**.

Be Aware of Overhead Electrical Lines When Operating Dump Trucks

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A survival guide for those in television who raise the mast.

On Feb. 22, 1994, Lloyd Alfred "Al" Battle, on assignment for CNN in Alexandria, Va., was killed after he raised the mast of his ENG van into a 19,900 volt power line.

Planning for Work Near Overhead Power Lines: Six Safety Rules

Always follow the applicable legislations along with the **Six Safety Rules** to prevent the most common mistakes near power lines.

SAFETY RULE 1: Work at a safe distance:

*Minimum distance for travel under or working nearby the power lines must comply with the OH&S Regulation(s).

“If you witness a violation of this rule, stay away from the equipment and warn the operator to move away from the power line.”

Power Line Clearances

The following minimum distances shall be maintained:

- VOLTAGE (Phase to Phase) MINIMUM DISTANCE (Feet)
- 751 V to 75 KV = min. 10' (3m)
- Over 75 KV to 250 KV = min. 15' (4.6m)
- Over 250 KV to 550 KV = min. 20' (6.1m)
- Determine your safe working clearance (the closest you can place equipment or personnel without crossing the buffer zone).

Note: High voltage means any voltage(s) over 750 volts [OH&S SK Regulation Section 450 1(e)].

Power Line Clearances

OVERHEAD ELECTRICAL LINES

Where overhead electrical conductors are encountered in proximity to a work area, the employer shall be responsible for:

1. Ascertaining the voltage and minimum clearance distance required, and
2. Maintaining the minimum clearance distance, and
3. Ensuring that the requirements of Low Voltage Lines are complied with.

LOW VOLTAGE LINES

- When work is being carried out in proximity to energized electrical conductors operating at 750 volts or less, such work shall be performed in a manner to prevent contact by any worker with the energized conductors.

Power Line Clearances

Minimum Horizontal Clearances

How Far Away Should Items be From...(metres/feet)	Overhead Lines	Buried Lines	Pad-Mounted Transformers
Fuel tanks	7.5m (25 ft)	1.5m (5ft)	7.5m (25ft)
Bales, haystacks and feedlots	15m (50 ft)	N/A	6m (20ft)
Homes	15m (50ft)	0.6m (2ft)	6m (20ft)
Barns, sheds, Quonsets and garages	15m (50ft)	0.6m (2ft)	6m (20ft)
Granaries	15m (50ft)	0.6m (2ft)	6m (20ft)
Water wells	15m (50ft)	1.5m (5ft)	1.5m* (5ft)
Antennas	3m+height of antenna	1.5m (5ft)	3m (10ft)

Planning for Work Near Overhead Power Lines: Six Safety Rules

SAFETY RULE 2: Stay Calm, Stay Away:

When operating a piece of equipment that contacts a powerline

You should:

If you are not in danger from fire or from being struck by a power line

- Stay where you are.
- Move the equipment away from the power line, if possible.
- Warn others not to approach the equipment.
- Activate jobsite ERP immediately.

Planning for Work Near Overhead Power Lines: Six Safety Rules

SAFETY RULE 2: Stay Calm, Stay Away:

If you are in danger and must get off the equipment	<ul style="list-style-type: none">• Jump as far away from the equipment as you can and land with both feet together. (No part of your body should touch the equipment and the ground at the same time.)• Hop or shuffle away from the equipment with your feet together to reduce the risk of electric shock.• Once clear, do not return to the equipment until Site supervisor/Owner's Rep. declares it safe.• Activate jobsite ERP immediately.
If a fellow worker is in danger	<ul style="list-style-type: none">• Stay away.• Warn fellow workers to stay away.• Activate jobsite ERP immediately.

Planning for Work Near Overhead Power Lines: Six Safety Rules

SAFETY RULE 3: Ladders and lines don't mix

- Before you begin working, look up and note the location of power lines. You can be seriously hurt or killed if the object you are holding or standing on contacts a power line.
- Before raising or extending any equipment capable of reaching a power line, check in all directions for power lines.
- Keep a safe distance from any power line, measuring from the end or tip of your own extended reach and including the end or tip of any object you are holding or carrying. Remember to allow even greater distance for safety near higher voltage lines such as transmission lines.
- Even non-metallic ladders and equipment can conduct electricity.

Planning for Work Near Overhead Power Lines: Six Safety Rules

SAFETY RULE 4: Call before you dig

- One easy call to Sask 1st Call to begin the process of getting underground utility lines marked for free.
- Utility company locators will mark the approximate location and type of underground utilities with paint and flags.
- Follow the OH&S legislations, Pipeline Act and Refulations and all other applicable rules and regulations seriously.
- **Activate jobsite ERP immediately.**

Planning for Work Near Overhead Power Lines: Six Safety Rules

SAFETY RULE 5: Look up and live

- Look up when working around overhead power lines, especially when trees are nearby. Branches can hide power lines from view.
- Look up for power lines when using tools of any kind. Even non-metallic tools can conduct electricity.
- Trees can conduct electric current. Look up for power lines when working on top of any equipment or structures, buildings, etc. at sites.
- Before transporting large objects, identify a safe route that avoids power lines. If you cannot avoid power lines, please SASKPOWER to coordinate transport and temporary removal* or de-energizing the power lines.
- You may need to coordinate transportation of oversized objects with local authorities.

Planning for Work Near Overhead Power Lines: Six Safety Rules

SAFETY RULE 6: Downed lines can be deadly

- Always assume that any downed power line is energized, and stay away.
- Do not touch or attempt to move any power line.
- If a worker touches a downed line or is handling equipment that contacts a power line, remember that any rescue attempt places you in danger.
- If you must rescue a person in contact with a power line, never use your hands. Use a dry, non-conductive object to move the person to safety.

Planning for Work Near Overhead Power Lines

EVERYDAY BEFORE THE TASK:

- **Initiate the Hazard Assessment:** Walk down and survey the work site before beginning the work to identify all overhead power lines. Consider equipment travel paths and movement.
LOOK UP!
- **All overhead power lines shall be considered energized** until proven otherwise.
- **Contact the owner of the lines** to determine the voltage of the lines and request the lines be de-energized and grounded.

“Never Accept Working Near An Energized Line Unless Its Not Feasible To De-Energize It.”

Planning for Work Near Overhead Power Lines

EVERYDAY BEFORE THE TASK:

- Implement a two barrier control system to maintain effective standoff distances. Examples include:
 - Use trained dedicated spotters that maintain radio contact with operator. Ensure spotters understand hand signals. Use of radios is preferred for communications.
 - Use physical barriers that prevent equipment from intrusion (insulation blankets, etc.)
 - Use stakes, cones, and painted lines to remind operators of demarcation lines.

Planning for Work Near Overhead Power Lines

EVERYDAY BEFORE THE TASK:

- Other examples of controls include:
 - Procure and use remote measurement techniques and equipment to determine actual clearance distances
 - Use reflective materials to enhance visual identification of spotter by equipment operators
 - Disable equipment functions to prevent rotation, elevation, extension or movement of components to prevent inadvertent contact.

Planning for Work Near Overhead Power Lines

EVERYDAY BEFORE THE TASK:

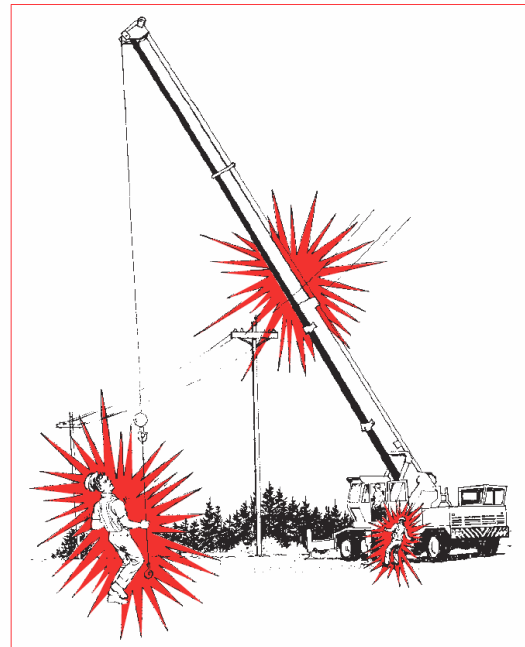
- Have a brief job site meeting to discuss the planned work as it relates to the power lines. Discuss topics such as the use of long-handled tools, and equipment (raised dump trucks, back hoes, etc.) that could come in contact with the lines. Consider the two barrier controls.
- Prohibit work when environmental conditions warrant (fog, precipitation, smoke, darkness, etc.)
- Only use nonconductive ladders and material handling equipment. Aluminum ladders and metal scaffolds or frames are efficient conductors of electricity.

Planning for Work Near Overhead Power Lines

EVERYDAY:

- Consider grounding mobile equipment
- Avoid storing materials under or near overhead power lines.
- Always STAY ALERT when working near power lines. Monitor actions of others and stop work if required to reduce risk of contact.

Electrical Hazards for Crane & Heavy Equipment Operators



If mobile equipment touches a power line, electricity can travel from the power line to a worker touching any part of the equipment, including a pendant control.

- The crane is the most common type of equipment which most often contacts overhead power lines.
- When contact happens, the rigger or ground worker is most often electrocuted (90% of time).

Safe Practices Operating Cranes and Mobile Equipment

- Make it a HABIT to look up **before** you unload or load a crane from a truck or lowboy. Make sure there are no overhead lines before you start.
- Operate equipment at a slower-than-normal rate in the vicinity of power lines.
- Exercise caution near long spans of overhead power lines, since wind can cause the power lines to sway laterally and reduce the clearance between the crane and the power line.
- Mark safe routes where equipment must repeatedly travel beneath power lines.
- Exercise caution when traveling over uneven ground that could cause the crane to weave or bob into power lines.
- Keep all personnel on ground well away from the crane whenever it is close to power lines.
- Prohibit persons from touching the crane or its load until a signal person indicates that it is safe to do so.

Electrical Hazards for Painters and Material Handlers



- Material Handling is such a common activity on a job site that most workers don't give it a second thought.

Safe Practices Handling Material and Ladders

- When working around overhead electric lines or with electrical equipment, use non-conductive ladders and tools
- Never attempt to carry a ladder in a vertical position. Ladders should be lowered and turned horizontally when transported from one location to another.
- Extension ladders should be collapsed before lowering from a vertical position.
- Unload materials from trucks and flatbeds away from overhead lines.

If Your Equipment Makes Contact with Power Line

- Stay on the equipment and wait until the line is de-energized by the power company.
- If you must leave the equipment, such as in a fire, jump clear and attempt to land with both feet together.
 - Do not touch any part of the equipment when contacting the ground.
 - Shuffle away from equipment in small steps while keeping feet together.

If Your Equipment Makes Contact with Power Line

- **DO NOT** allow anyone on ground to come near or touch the machine.
Warn personnel to stay away from the machine.
- Never touch a person who is in contact with a live power line. Call for help and get power line de-energized.

If Your Equipment Makes Contact with Power Line

- Report any damage to SaskPower immediately by calling **310-2220**.
- Before digging contact Sask 1st Call for underground line locating services – 1-866-828-4888 or www.sask1stcall.com/.
- Use extreme caution when moving tall equipment around power lines.

Overhead Powerline Awareness

Power Line Hazard Awareness

https://www.youtube.com/watch?v=7VXEb3_apOc

SaskPower Orientation

https://www.youtube.com/watch?v=1kUjrmL_dJA&feature=youtu.be

Thank you!