Power Tools and Ladders

1. Identification of Workplace Hazard

Operation of power tools is a source of potential injuries due to electrical and physical hazards including lacerations, fractures and even ergonomic (repetitive motion injuries) problems. Improper ladders and misuse can result in serious falls and other injury-producing accidents. Cal/OSHA has standards for specific types of tools and equipment as well as standards for electrical power supplies for power tools. The Injury and Illness Prevention Program standard also requires employers to identify and prevent hazards associated with such equipment.

2. Management and Trainer Information

The following information describes important safety requirements for power tools and ladders of which the employer should be aware.

**Electrical Requirements**

(1) Electrical equipment and installations must be maintained in good condition and protected from environmental and mechanical damage. Covers on boxes, fittings and enclosures must be installed and closed when access is not required.

(2) Flexible cords may not be used as a substitute for installed electrical supply for any permanent use.

(3) Temporary and permanent receptacles must be grounded and capable of grounding power equipment.

(4) Powered tools and equipment with exposed metal parts must be grounded. Double-insulated powered tools do not need grounding.

(5) Groundfault circuit interrupters are required on all receptacles not permanently wired with a rating of 15/20 amp, 120 volts AC or more, with certain exceptions. Such devices are advisable for outdoor receptacles where the power supply and tools may be exposed to environmental damage.

(6) Only qualified persons (knowledgeable in electrical safety orders and building code requirements) are permitted to work on electrical systems.

**Power Tools**

(1) Power tools must be grounded or double insulated.

(2) Guards are required for cutting and sawing devices, including portable circular saws, radial arm saws, table saws and band saws. Guards provided by the manufacturer must not be removed and must be properly adjusted.

(3) Table and radial arm saws must have anti-kickback guards for ripping operations.

(4) Radial arm saws must stop at the edge of the table and automatically return to the back of the table.

(5) Tools must be kept clean and in good repair, including the power cord plug, tool body and point of operation.
Only trained or experienced employees may operate tools, machines, or equipment.

The following tools must be equipped with a constant contact "on-off" switch (a single motion lock-on control is permitted).

- Drills;
- Tappers;
- Fastener drivers;
- Grinders;
- Disc and belt sanders;
- Reciprocating and saber saws;
- Tools similar to those above;
- Circular saws;
- Chainsaws (electric, hydraulic and pneumatic).

Hoisting or lowering electric tools by their cords is prohibited.

Grinding wheels must be provided with protective face shields, tool rests and protective hoods. Tool rests must be adjusted so the distances between the rests and the grinding wheel is no more than 1/8 inch.

Other types of "floor" tools (drill presses, vises, etc.) must be secured to the floor or some other stable surface to prevent tipping or falling of the tool.

Ladder Design

Rungs must be space 12 inches apart vertically.

Step ladders must not exceed 20 feet in length.

Extension ladders shall not exceed 44 feet in length and overlapping section should not be less than 10 percent of the working length.

Ladder Safety

Employees must face the ladder while climbing and descending.

They must not stand on the top three rungs of an extension ladder or on the platform of a stepladder.

Damaged or defectively constructed ladders should be removed from use.

Ladders should not be placed where they can be accidentally struck or displaced.

Portable ladders in use must be tied, blocked, or otherwise secured to prevent displacement.
(6) Ladder side rails should extend at least 3 feet above the landing, unless handholds are provided.

(7) Ladders should lean at approximately a 75 degree pitch.

(8) Planks should not be placed across the top (platforms to create a scaffold) of stepladders.

(9) Ladders should not be spliced together.

(10) Metal ladders must not be used for electrical work or near live electrical parts.

(11) Portable metal ladders must be marked:

CAUTION - DO NOT USE AROUND ELECTRICAL EQUIPMENT

3. **Employee Safe Work Practices**

Employees should be required to comply with the following safe work practices:

**Electrical Safety**

(1) Protect electrical equipment by closing boxes and receptacles when not in use, not dropping or abusing power tools and not lowering or lifting electrical tools by their cords.

(2) Always ground equipment that is not double insulated. Never, shortcut or remove a grounding device from a plug.

(3) Do not attempt to work on an electrical system unless you are authorized and qualified to do so.

**Power Tools**

(1) Do not remove any guard installed on a piece of equipment.

(2) Make sure all guards and other safety features on powered equipment are properly adjusted. Know how these devices function and how to inspect them.

(3) Do not tamper with power switches that require constant contact.

(4) Make sure that abrasive wheel guards and tool rests are properly adjusted before use. Always wear eye and/or face protection.

**Ladder Safety**

(1) Always face the ladder when climbing and descending.

(2) Do not stand on the top three rungs of an extension ladder or the platform of a stepladder.

(3) Do not use a damaged ladder.

(4) When using an extension ladder, place it at a 75° pitch, extend it 3 feet above the landing, tie it off and block its footings.
(5) Do not use metal ladders around electrical systems or for electrical work.

4. Items Subject to Periodic Scheduled Inspections

The employer's periodic scheduled inspections should consider the following items during workplace inspections as described in Step 5:

**Electrical Requirements**

1. Are electrical systems in good condition, covers in place and no signs of damage or deterioration?
2. Are any flexible extension cords being used for permanent power supplies?
3. Are there any splices in extension or appliance power cords?
4. Is every piece of equipment or powered tool observed properly grounded if it is not double insulated?
5. Are there situations where a ground fault interrupter is required or would improve electrical safety (e.g. outdoor tool use)?

**Power Tools**

1. Are all guards in place and properly adjusted?
2. Are all safety features associated with saws and other power tools, including constant contact on-off switcher, operational?
3. Are employees observed misusing or abusing power tools?
4. Are shields and tool rests on grinding wheels properly adjusted?
5. Is pedestal-mounted equipment firmly mounted to the floor or other stable surface?

**Ladder Safety**

1. Do employees follow safety rules for ladder use?
2. Are any ladders in disrepair or damaged?
3. Are there ladders improperly suited for their use (for example, metal ladders used for electrical work)?