



WORKPLACE SAFETY & HEALTH GUIDE

Tree Work Safety Guide



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Publications Unit



This document is neither a substitute for, nor a legal interpretation of, the occupational safety and health regulations. Readers must refer directly to title 8 of the California Code of Regulations and the Labor Code for details regarding the regulations' scopes, specifications, and exceptions, and other requirements that may apply to their operations.

Workplace safety and health information is available online at:

- General information: www.dir.ca.gov/dosh
- Cal/OSHA regulations: www.dir.ca.gov/samples/search/query.htm
- Cal/OSHA safety and health publications: www.dir.ca.gov/dosh/puborder.asp
- Cal/OSHA etools: www.dir.ca.gov/dosh/etools/etools.htm

Cal/OSHA Consultation Services offers free telephone, email, and onsite assistance. Find a local office online (www.dir.ca.gov/dosh/consultation.html) or with the contact information listed in the back of this document.

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Introduction

Tree care operations include the trimming, pruning, felling, and removal of trees and their stumps. They involve climbing trees, using portable ladders, working at heights while using hand and portable power tools, working near energized overhead power lines, feeding chippers, and other hazardous operations.

Tree work accidents can result in severe traumatic injuries and deaths. The most commonly reported accidents include falls, electrical shock, being struck by falling objects, and chain saw lacerations. Most accidents are preventable through hazard recognition, hazard control, effective employee training, and the use of appropriate personal protective equipment (PPE).

This guide is intended to assist tree care companies by providing an overview of the regulatory requirements and safe work practices that can safeguard employees from injury while performing tree work.



How to Improve Tree Work Safety

- Establish, implement, and maintain a comprehensive health and safety program that includes an IIPP and written rules and safe work procedures for all tasks performed.
- Ensure qualified tree workers direct tree trimming, removal, and repair operations and immediately correct any identified hazards or unsafe work practices.

Qualified Tree Worker: An employee who, through related training and on-the-job experience, has demonstrated familiarity with the techniques and hazards of tree maintenance, removal, and the equipment used in the specific operations involved.

- Create a culture of safety in your company so that workers establish safe work habits, emphasizing the importance of working safely instead of taking chances or shortcuts.
- Provide employees with safety training that addresses the hazards associated with the tree work they perform. Safety training must be:
 - Completed prior to a job assignment.
 - Provided in the language(s) workers understand.
 - Documented.
- Provide refresher training to an employee who has done any of the following:
 - Violated the requirements of Article 12, the Cal/OSHA tree work standards.
 - Was involved in an accident or near miss incident.
 - Receives a new job assignment that includes the use of equipment, machinery, tools, or safety-related work practices that the employee is unfamiliar with.
- Require employees to demonstrate safe work practices as part of the training.
- Ensure that safety training and instruction includes all relevant areas of tree work, including at a minimum:
 - Job-specific hazards associated with tree work.
 - Identification of common poisonous plants and harmful animals, and preventive measures related to them.
 - Safe work procedures and special techniques needed to perform tree pruning, trimming, repair, and felling.
 - Fall prevention equipment and practices.
 - Methods of communication.



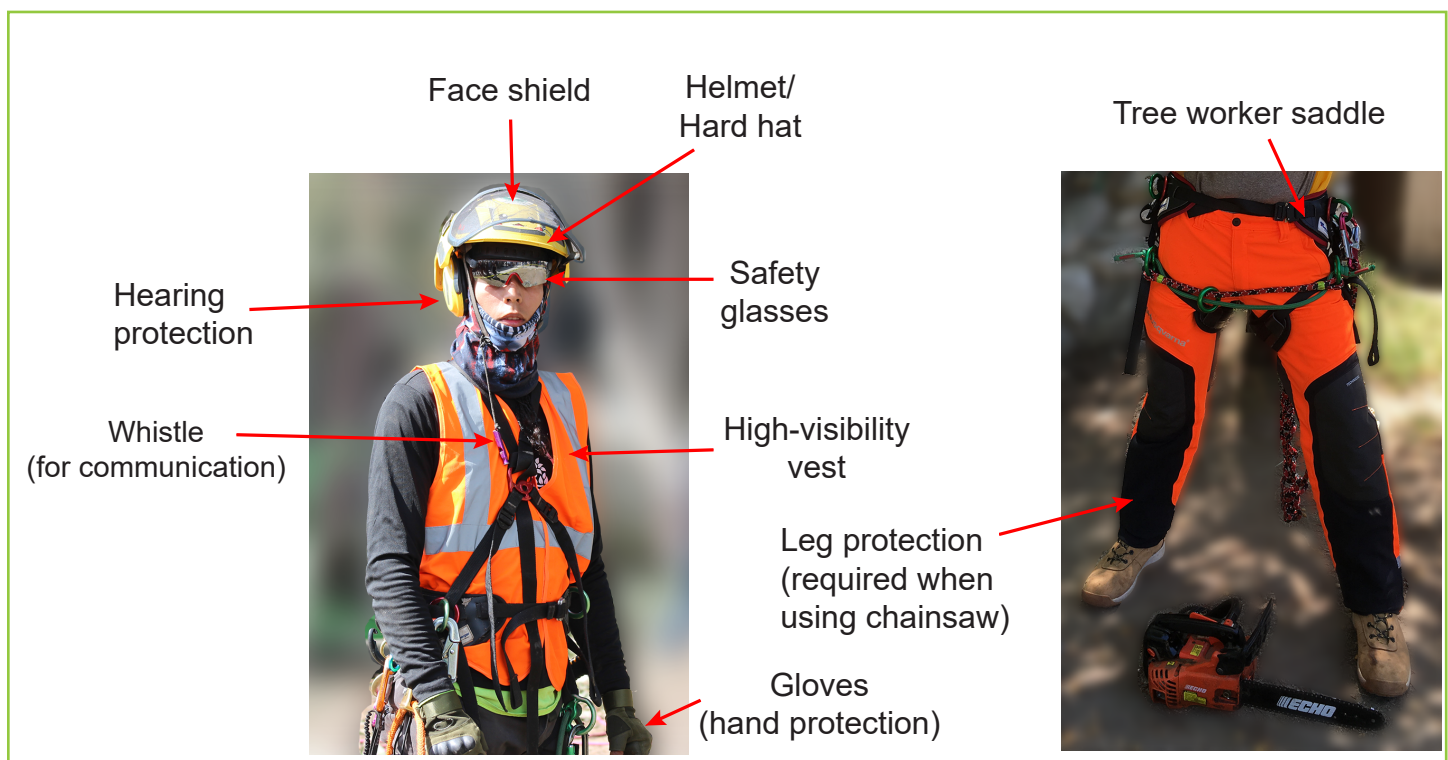
- First aid and cardiopulmonary resuscitation (CPR).
 - At least two trained workers must be available in a crew of two or more at a given work site.
 - Training must be given within 90 days of hire.
- Traffic safety.
- Rescue procedures.
- Hazards associated with pesticide and fertilizer application, if applicable to the employee's work.
- Recognition and avoidance of electrical hazards near employee job assignments.
- Proper, safe use, and maintenance of:
 - Safety equipment, including harnesses, belts, tree saddles, ropes, and lanyards. Inspect safety equipment before each use and immediately withdraw it from service if it is defective or damaged.



Practicing rescue procedures.

- PPE, such as hard hats, face shields, safety glasses, shoes, gloves, high-visibility clothing, and hearing protection.
- Equipment and tools, such as chippers, pole pruners, trimmers, and chain saws.

Safety equipment





- Conduct an initial job site inspection and perform daily hazard assessments before the start of each workday to identify all existing hazards and other potentially dangerous conditions.
- Prior to the start of a job, have a qualified tree worker conduct a job briefing to communicate and discuss with the crew:
 - The specific hazards associated with the job.
 - The appropriate work procedures to follow, e.g., safest method of entry into the tree.
 - The appropriate PPE needed to accomplish the work safely.
 - General safety precautions, including:
 - Be attentive to other workers' activities, as unexpected actions can trigger new hazards.

- Stay alert to surrounding hazards, especially uphill where gravity can send hazards down toward employees.



- Wear high-visibility attire and position themselves where others can easily see them.

- Ensure that during the course of a job, the qualified tree worker holds additional job briefings to communicate any new hazards observed while working on the job.
- Provide adequate supplies of potable drinking water for employees and encourage frequent consumption.
- Control pedestrian and vehicular traffic effectively, as needed.
- Check for weather updates and storm warnings. Take into account the additional dangers that weather conditions—such as high winds, fog, ice, rain, high heat, thunder, and lightning—can bring to the worksite and stop work, if necessary.

National Weather Service Website

www.weather.gov

Common Tree Work Safety Topics

There are many operations involved in tree work—trimming, cutting, pruning, repairing, removal, etc. Information on some of the most common safety topics applicable to tree work is provided below.

Preventing Electrical Shock and Electrocutions



**ALWAYS ASSUME THAT
POWER LINES ARE
ENERGIZED!**

When work is near overhead power lines, always assume that all power lines and any attached equipment, such as transformers, are energized. Before work begins, contact the local utility company for immediate assistance. Never approach, or work near or around downed powerlines.

The employer performing the line clearance work is required to determine the nominal voltage of the electric power lines that pose a hazard to the workers. They may opt to determine only the maximum nominal voltage instead if they choose to treat all power lines as energized at the maximum voltage.

- A worker can be electrocuted even if they are not touching the power line. This is because an electric arc can form between the power line and a nearby object, such as a pruning pole held by the worker.
- A worker can also be electrocuted when standing on the ground near a downed power line even if they are not touching the power line.



Provide specialized training to workers on the dangers of electrical shock/electrocution and the critical importance of using personal protective equipment (PPE), special tools and techniques, and other safe work practices:

- Follow the 10-foot (minimum approach distance) rule. Minimum approach distances greater than 10-feet are required for higher-voltage power lines and conductor. Never perform tree work where any part of the tree (including leaves) are within 10 feet of high-voltage energized power lines and conductors.
 - Remind employees to keep body parts, clothing, tools, and equipment, such as ladders or aerial devices, beyond this minimum approach distance and as far away as possible from all overhead

power lines. Greater minimum approach distances are required with higher-voltage power lines and conductors.

- Never touch a power line or make any contact with an object (e.g., energized tool, tree limb, equipment) that is in contact with a power line. Any contact can be fatal.
- Be alert to changing weather conditions, such as strong winds, that can cause branches to fall onto power lines, which can then contact the worker, causing shock or electrocution.
- Only use insulated (nonconductive) tools, ropes, ladders, etc., near power lines.
- Visually inspect the specialized PPE (e.g., insulating [rubber] gloves with leather protectors) for defects and damage prior to use each day, and follow proper procedures for examination, testing, cleaning, and storage to ensure it provides the needed protection.

Only certain workers who have additional training, on-the-job experience, and special skills are permitted to conduct certain activities that other tree workers cannot:

- Qualified tree workers are permitted to perform tree work within 10 feet of an energized low-voltage (600 V or less) power line but cannot work within 1 foot of the low-voltage power line.
- Qualified line-clearance tree workers are permitted to perform line-clearance tree work near high-voltage (more than 600 V) electrical lines and conductors.

Working Safely at Heights



Disabling injuries and fatalities can occur when tree care workers fall from heights. Falls can be the result of, for example, climbing rope failure, climbing safety gear malfunction, unexpected tree limb breakage, or accidentally cutting through the climbing rope. Use the following controls to help reduce these risks:

- Perform a hazard assessment of the work area before starting work.
- Closely inspect the root collar, tree trunk, and limbs for strength and stability before climbing.
 - Look for rot or signs of rot, such as mushrooms or fungi, which indicate weakness.



- Consider using equipment such as aerial devices for trees that are unsafe to climb.
- Postpone tree work under unfavorable weather conditions, such as high winds, rain or ice.
- Based on the hazard assessment, determine the safest method of entry into the tree.
- Provide appropriate personal fall protection systems and instruct employees to follow manufacturer's recommendations on the use and limitations, inspection, and maintenance procedures.
- Establish the following procedures and ensure workers integrate them into their daily work routine:
 - Store and transport rope and climbing equipment in a manner that prevents damage by contact with sharp tools and cutting edges, gas, oil and chemicals.
 - Store rope coiled in a pile or suspended so that air can circulate between the coils.
 - Inspect ropes, climbing equipment, tackle blocks, and pulleys for any kind of damage prior to each use that requires re-rigging or moving the climbing system.
 - If a climbing line has been used to raise or lower tree limbs or for some other non-approved purpose, do not use it again as a climbing line.
 - Check the condition of tree limbs before cutting them, climbing on them, or tying off safety equipment. Tie only to strong branches, limbs, or tree trunks that will not break off. If using a ladder, be sure it is tied to a secure branch.
 - Workers must be secured with at least one line when climbing, moving and working in, and descending the tree until they are safely back on the ground.
 - When working aloft, wear a tree worker's saddle and use at least a climbing line and a lanyard (two means of being secured). Using additional anchor points provides greater support.
- You must be tied off to two anchor points while using a chain saw.
- When climbing or changing positions, place hands and feet on separate branches and move only one hand or foot at a time.
- Workers should position themselves on strong limbs (close to the trunk) that can fully support their weight.
- Do not carry tools by hand when climbing into a tree.
- Identify and remove dead or weakened branches from the tree so that they are not used for support.
- Be careful not to inadvertently cut safety lines or the branch an anchor is tied to. Keep chain saws and other cutting tools away from all ropes, lanyards and harnesses.
- Communicate and coordinate work with other employees on the ground.
- Be alert for any hazards that may be uphill from you when working on sloped surfaces.
- Have at least one other employee present to render immediate assistance when a worker is working more than 12 feet high in a tree, on a ladder, or using an aerial device.

Prevent Injuries from Falling Objects

Struck-by injuries involving tree work are caused primarily by falling trees, falling branches, and hand tools, as well as “hangers” (cut branches) that become dislodged and suddenly drop onto workers below. Remember that even small objects falling great distances with accelerating force can cause a tremendous impact, which can result in serious or even fatal injuries.

Before the start of pruning and trimming operations:

Tree Work Safety Guide

- Check the local weather report for visibility, wind direction and speed, etc.
- Evaluate the work area, including terrain characteristics and the location of nearby trees.
- Before climbing or working in trees, conduct a visual hazard assessment looking for the lean of the tree, loose limbs, signs of decay, lack of stability, etc.
- Establish a two-way verbal or visual communication method and instruct workers on using it.
- Establish a drop zone and communicate the location to workers, for example, by marking the boundaries using caution tape.
- Instruct employees not directly involved in the pruning/removal work to maintain:
 - A safe distance from the drop zone until they are informed that it is safe to enter.
 - An even greater distance when trimming or felling on a slope where logs could roll or slide.
- If the drop zone interferes with vehicular traffic or pedestrians, place warning signs, barricades, and post flaggers, if needed.
- Prior to each job assignment, have a qualified tree worker brief the crew on their duties and positions, hazards unique to the work assignment, and necessary PPE. Also, discuss with your employees the safe work procedures needed to prevent injury, including the following:
 - Wear appropriate PPE.
 - Maintain open two-way communication between workers aloft and ground crew.
 - Keep in mind that the actions of an employee must not create a hazard for any other worker.
 - Do not throw tools from trees or between workers aloft. Instead carry tools in a bag or use lines to raise/lower hand tools and other equipment.



Traffic cones establish a drop zone.

- Assume that there are ground workers under the canopy of the tree. Before dropping branches or other debris, or using portable power tools, signal or communicate with ground crew for clearance.
- Do not leave cut branches in a tree. Plan each cut carefully so that the branch will either fall down safely within the expected drop zone, or be lowered safely to the ground using utility ropes. **Do not use climbing ropes for this purpose.**
- Before a tree or tree trunk is ready to fall, be attentive to the warning from the qualified tree worker, provide audible warnings, or communicate via prearranged two-way hand signals.
- Workers should not turn their backs to a tree where branches are being cut or a tree is being felled.
- Be alert and avoid objects thrown by a tree as it falls.
- Reassess a partially fallen tree that has lodged against another tree and not fallen completely to the ground.

Chain Saw Safety



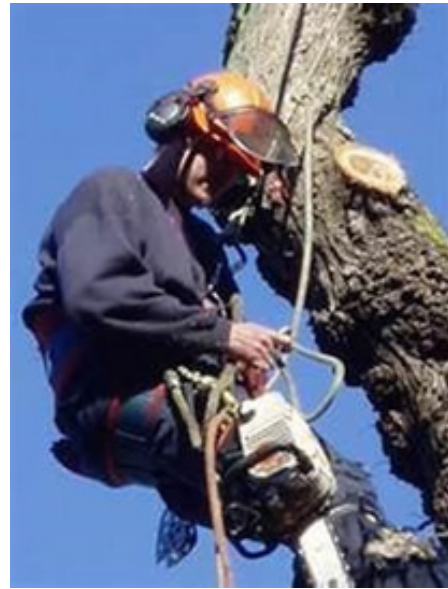
Chain saws can be extremely dangerous. They must always be operated with both hands.

Chain saws are very powerful tools used by tree care operators and loggers to trim, prune, and fell trees. Chain saws can be extremely dangerous due to the magnitude of their power. Users must be fully aware of the potential hazards involved and the importance of always using safe work practices to prevent injury, death, and property damage.

To promote safe work, employers must involve all employees and provide them with effective training before they are assigned to work with a chain saw. Ensure that employees read and understand the manufacturer's instruction manual, observe all safety rules and precautions, and follow operating instructions.

Hazards

- **Mechanical:** death or injuries, for example, lacerations or broken bones can be caused by unsafe work practices and/or faulty saws.
- **Ergonomic:** musculoskeletal disorders, such as back strains, shoulder and upper extremity pain resulting from overreaching, awkward postures, and vibration.
- **Heat:** burns caused by unsafe fueling practices, a damaged or leaky fuel cap, use of unapproved gasoline containers, the presence of an ignition source, etc.
- **Physical:** hearing loss due to inadequate or lack of hearing protection.



Personal Protective Equipment (PPE)

The use of personal protective equipment (PPE) helps to prevent or reduce the extent of an injury and includes:

- Protective eye wear, including adequate top and side protection to shield from debris, such as wood chips, snapping branches, and other flying objects. If a ventilated face shield is worn, be sure to wear safety glasses underneath.
- Earmuffs/earplugs.
- Safety hard hat to protect against branches or other objects that can fall on the worker.
- Heavy duty gloves to protect against abrasion, cold temperatures, and vibration.
- Steel-toed shoes or boots with nonslip soles.
- Cut-resistant pants or protective leg chaps.
- Reflective safety vest for high visibility.

Note: There are specialized “all-in-one helmets” that feature a face shield, earmuff, and hard hat as a single unit.

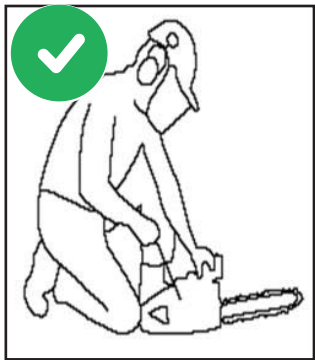
Training

Because chain saws can cause severe injuries, it is critical that employers provide specialized training on chain saws to their employees. Employees can avoid injuries only when they fully understand the potential hazards of working with a chain saw.

Starting a Chain Saw

Always start the chain saw on the ground or where it is otherwise firmly held or supported, e.g., a suitable tree stump, a stable work surface. Never start it against your body. However, you may brace it firmly between your legs to start it with the chain pointed away from you. You may only start a chain saw from an elevated position if the ground below is clear of people.

However, do not start the chain saw on the ground if debris, snow, or other obstructions make it unstable.



Never drop start a chain saw. This involves simultaneously pushing the saw away from the body (or dropping the saw) with one hand while pulling on the starter cord handle with the other. Drop starting will result in the chain saw running while dangling by its starter cord instead of being held securely by its operator.

Do not start and operate a chain saw until everyone else is clear of the saw.

Handling a Chain Saw

- Always **use both hands** to handle the chain saw.
- Never use one-handed operation for starting or cutting.
- Always remember that that single-handed chain saw use is a major cause of accidents, including amputations.
- Secure two points of attachment while using a chain saw in a tree.

Understanding Kickback and the Effects of Gravity

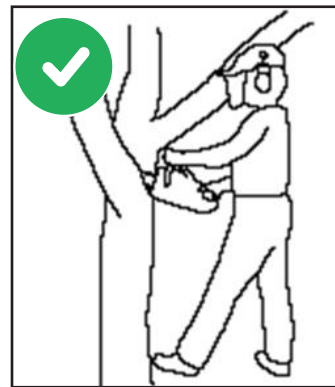
Kickback forces are extremely dangerous and the cause of many injuries, as it happens quickly, taking the operator by surprise.

There are two types of kickback:

- Rotational kickback occurs when the saw's upper nose contacts a solid object, such as nails, rocks, adjacent logs, branches, or stumps, causing the tip to be driven upward in an arc toward the operator.
- Linear kickback is a sudden reaction that occurs when the chain along the top rail gets pinched in a cut. This causes the chain saw to be pushed straight toward the operator.

Prevent kickback by training employees:

- Not to cut using the tip of the saw.



- When cutting, always hold the saw with both hands, thumbs encircling the handles and left elbow extended, body to the side—out of the path of potential kickback—watching to make sure that the nose of the saw does not make contact with solid objects or dip into the ground while the chain is rotating.
- Use a saw with an anti-kickback device.

Gravity causes everything, including tree limbs and chain saws, to fall down. This is why you should not cut above shoulder height. Train employees to operate the chain saw with an understanding of how gravity affects the work. During the process of cutting, the weight of the chain saw is supported mainly by the wood being cut. However, after the cut is completed, the saw is no longer supported, and the operator must be prepared to control the downward momentum of the chain saw plus the weight of the saw.

Other Chain Saw Training Topics

- The importance of wearing PPE.
- How to safely operate, care for, and maintain the saw following the manufacturer's recommendations, including specific work practices and safety tips.
- Emergency and first aid procedures and supplies.
- Communication with coworkers and reporting to the supervisor.
- The use of devices for effective real-time communication, such as two-way radios, walkie-talkies, and cell phones.
- Operator safety, including:
 - Physical or mental condition (being sick or fatigued, taking medication or other substances, or being under the influence of alcohol can affect mental alertness, judgment, balance, vision, or dexterity).
 - Not wearing loose clothing, shorts, or anything else that could become snagged on the chain saw.
 - Periodic rest breaks.
 - Drinking enough water.
 - Working with a straight wrist, and knowing signs and symptoms of musculoskeletal disorders, such as discomfort and swelling of the fingers, numbness, and loss of grip strength.
- Prior to starting the chain saw:
 - Check for nearby buildings, roads, bystanders, pets, and overhead hazards, such as power lines and dead or hanging limbs. Set warning signs and install barriers as needed.
 - Be aware of sloped or uneven ground.
 - Ensure the work area around the tree to be cut and surrounding grounds are free of obstructions. Clear brush and remove other obstacles around the work area, if needed.
 - Always wear the appropriate PPE.
 - Conduct a pre-start check and document your findings:
 - Examine the chain saw for damage or alterations.
 - Ensure the chain saw is in good working condition (e.g., chain is sharpened, lubricated, and tensioned correctly; air filter is clean; controls and brake function properly).
 - Be sure to report any bent or loose parts, cracks, and other problems and tag it for repair. Do not use a defective chain saw.
- When refueling, place the saw on a stable surface and be sure to keep all ignition sources at least 10 feet away.
- Follow all the manufacturer's operating instructions.

Additional Safety Tips

- Provide effective supervision, particularly to new workers.
- Do not work alone. Use a "buddy system" or team so that a supervisor/designated person



Coworker watching.



Never start a chain saw against your body.

and coworkers can watch each other and respond in case of an emergency.

- Communicate in advance with your buddy/team to discuss the work and individual responsibilities.
- Work at a safe distance from other workers and always be alert to the entire work environment.
- Work only when there is enough light.
- Make sure the chain saw is not running while you carry it into a tree.
- If the chain saw was started on the ground, raise it into the tree on its own line. Do not use a climbing line for this.
- When cutting in a tree, pay attention to where your climbing line and lanyard are so that you do not cut them or the tree limb they are secured to.
- Be sure to stand on something solid with good footing and open stance for greater stability. Avoid slippery ground.
- When cutting on a hill, stand on the side upward from the tree.
- Do not reach to cut overhead, as the cut limb or chain saw can fall on you, causing serious injuries. Keep the saw below chest height.

- Position your body to the side of the chain saw so that you are out of the cutting plane.
- Keep body parts away from a moving chain saw at all times. Do not attempt to reach or grab material you are cutting while the chain is still moving.
- For a good working height, when cutting firewood, position logs between knee and waist height.
- Cutting a “loaded” branch or tree (i.e., that has tension) may cause it to suddenly spring back and strike with tremendous force, which can cause serious or fatal injuries.
- Small chain saws can be carried by tree workers hooked to the ring on their belt. Saws weighing more than 15 pounds must be supported by a separate utility line or lanyard. **Do not use climbing line for this purpose.**
- Check the tension of the chain frequently and tighten it as needed.
- Carry the chain saw with the engine off at the side of your body with the chain facing the rear for distances greater than 100 feet or set the chain brake for distances of more than 10 feet.
- Allow the saw to cool down before refueling.

Woodchipper Safety

Mobile woodchippers and shredders commonly used in tree work operations are powerful and efficient machines designed to quickly chop and grind wood materials, such as tree limbs, brush, and scrap lumber.

Typically, wood material is fed by hand through a loading chute, which draws it to a cutting assembly. Here, sharp rotating blades spinning at very high speeds cut the material into tiny pieces, which are immediately discharged from the machine.

Chippers can be very dangerous and have caused serious injuries, such as cuts, amputations, crushing injuries, and death. To promote safety in the workplace, employers must provide effective training and ensure that employees read and understand the manufacturer's instruction manual. Employers must make employees aware of the hazards involved in chipping so that they always follow safe work practices and procedures.

Hazards

- Chipper's moving parts, where hands, clothing, climbing ropes, etc., can get caught, pulled in, and cut by the blades.
- Missing or unsecured guards, such as an unlatched hood that could fly open and injure or kill the operator.
- Inserting hands to clear a jam before the chipper comes to a complete stop.
- Kickback that turns debris or objects into projectiles that can strike the operator.
- Hearing loss due to lack of or inadequate hearing protection.



Dangling ropes worn by the chipper operator can snag on a cut limb and pull the operator into the chipper!

Ropes tangled in the cut limbs can wrap around the operator and either pull them into the chipper or cause other serious and potentially deadly injuries!

Personal Protective Equipment (PPE)

- Safety goggles to protect from debris, such as wood chips, snapping branches, and other flying objects. If a ventilated face shield is worn, be sure to wear safety glasses underneath.
- Earmuffs or earplugs.
- Hard hat to protect against materials that may be kicked out of the chipper.
- Snug-fitting leather gloves to protect against injuries to the hand, such as splinters, thorns, cuts, and cold temperatures.
- Steel-toed shoes or boots with nonslip soles.
- Reflective safety vest for high visibility.

Training

In addition to training employees on the topics listed below, it is also important to demonstrate the safe use of a woodchipper and provide the opportunity for employees to practice and ask questions.

Training Topics Include:

- Hazard recognition when working with chippers and shredders, such as nip/crush and shear points on the machine.
- The importance of wearing PPE.
- How to safely operate, care for, and maintain the chipper following the manufacturer's recommendations.
- How to use safety devices and controls, including any emergency quick stops/reverse and the emergency shutoff switch.
- Safe work practices such as:
 - Letting go of material right away as it begins to be pulled into the chipper.
 - Removing any ropes from the wood before starting to feed the latter into the chipper.
 - Always stand to the side of and never behind the chipper while feeding materials into the chipper.
- Emergency and first aid procedures and supplies.
- Operator safety, including:
 - Physical or mental condition (being sick or fatigued, taking medication or other substances, or being under the influence of alcohol can affect mental alertness, judgment, balance, vision, or dexterity).
 - If you are taking medication, discuss with your doctor whether you are capable of operating the equipment safely.
 - Not wearing loose or dangling clothing, jewelry, or hair to avoid snagging and being pulled into the chipper.

- Not wearing ropes, body belts, harnesses, or lanyards while operating a chipper.
- Being attentive and concentrating on working safely.
- Communicating with coworkers and reporting concerns to supervisor.
- Taking periodic rest breaks.
- Drinking enough water.

Other Woodchipper Training Topics

- Prior to starting the chipper:
 - Check for nearby people, pets, buildings, structures, roads, and other potential hazards. If needed, set warning signs and install barriers to keep the public away from the work area.
 - Always be sure to have good footing. Avoid slippery ground. Instead, select a grassy or earthen surface that is firm and level to operate the chipper.
 - Ensure the work area around the chipper is clear of tripping hazards, including wire or objects that could potentially become entangled with the moving parts of the machine.
 - Always wear the appropriate PPE.
- Perform a pre-start safety check before each use:
 - Inspect the chipper for damage, leaks, or alterations. Check for broken, missing, or malfunctioning pins, latches, and hinges and make sure they are replaced before use. Report leaks to your supervisor immediately. Any alterations to the chipper can potentially create new safety hazards.
 - Ensure that chipper guards and cover shields are in place and secure, and that no objects are present in the in-feed area.
 - Check the quick stop and reversing device (if chipper has an in-feed system) to ensure they are in good working order.
 - Aim the discharge chute away from people and roadway.

- Know and follow all the manufacturer's operating instructions.

Additional Safety Tips

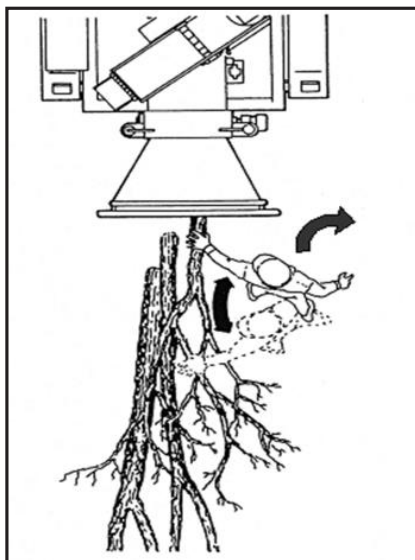
- Provide effective supervision.
- Do not work alone. Use a "buddy system" or "chipping team." Communicate in advance with your buddy/team to discuss the work and individual responsibilities.
- A team of two working together provides greater chipping efficiency and safety, as workers watch out for one another and at least one person has immediate access to the shutoff device in case of an emergency.
- Work only in daylight or with adequate lighting.
- Organize materials to be processed so there is enough room to work and employees do not need to walk in front of the feeding area or discharge chute.
- Inspect the piles of material to be fed to the chipper to make sure there are no nails, stones, or entangled rope.
- Chock the wheels of trailer chippers detached from trucks.
- Before refueling, be sure that the engine is shut down and cooled, and no sources of heat, flame, or sparks are present.



Never place any part of your body inside or near the moving parts.

- Only operate the chipper outdoors due to the potential for carbon monoxide poisoning from engine exhaust.
- Never place hands or any part of the body near rotating parts or on the feed table when the chipper is in operation or the rotor is turning.
- Never stand directly in front of the feed area. To avoid being struck by any loose debris, the operator must position their body to one side and immediately turn away from the feed table as soon as the brush is taken into the rotor.
- Always feed the large end of the branch into the chipper first.
- When feeding shorter branches, use a long and sturdy push stick to get the branches to the rollers or place the shorter branches on top of longer ones being fed into the chipper.
- If a blockage occurs, pull the emergency stop bar forward to activate the reverse gear.
- The chipper must be locked out and the key removed from the ignition when it is left unattended or before performing service/maintenance.

Load the chipper while standing to the side of the feed instead of the front.



Palm Tree Work

Palm tree work, including pruning and trimming the palm fronds, poses serious hazards. Special measures and extreme caution must be taken while performing palm tree work.

Palm Frond Pruning and Trimming

Palm trees typically retain their dead fronds in large quantities and for long periods of time. The unstable fronds make pruning and trimming palm trees extremely dangerous. Some important safety measures are:

- Always consider the dead, decayed, or damaged fronds as loose and ready to fall at any time.
- Make sure all chain saws used around dry fronds have mufflers and spark arresters in good working order.
- Keep both hands on the chain saw and pay careful attention to the location of your safety lanyards and climbing line.
- When trimming fronds, use a climbing line and a false crotch attached above the frond skirt, or an aerial device.

- Whenever possible, use elevating work platforms or aerial devices in lieu of climbing.
- Remove palm frond skirts from the top down unless a qualified tree worker demonstrates that the fronds can be removed safely below. It is considered unsafe to remove fronds with three years or more of growth.
- If you have to work under a palm frond skirt, rig the climbing line and lanyards to avoid the fronds sliding down or sloughing onto you. Just a few feet of fronds can instantly immobilize, suffocate, and kill you.

Fall Protection

Fall protection is critical in palm tree pruning and trimming work. Working at height demands special fall protection measures. Safety measures include:

- Fall protection is required at all times when in the tree (except for date palms in agriculture).
- Protect against falling by using proper fall protection systems, equipment, or devices.
- Always be aware that you are working at heights and take extreme caution.



- Be sure to maintain two points of tie-in at all times as you will be moving around the palm tree to gain access to all the fronds.
- Qualified Person must conduct a job-specific briefing before each work assignment begins.
- Qualified Person must inspect fall protection equipment prior to each use.
- Date palm saddles must be approved by a competent person and are limited to use as part of a positioning device or system.
- Wire rope lanyards used in the fall protection system must meet the 5,000-lbs. requirement, and chains used must have a safety factor of at least 10.
- Make sure shade structures are set up in advance when the temperature exceeds 80°F.
- Make sure employees are acclimatized and provide cool down rest periods.
- On hot days, take measures such as modifying work schedules, increasing the number of water and rest breaks, or stopping work early, as needed.
- During high heat (above 95°F), heat illness can develop even faster. Take additional measures:
 - Communicate more frequently with employees working outdoors.
 - Use a buddy system so employees are watching each other.
 - Supervise newly hired employees even more closely.

Heat Illness Prevention

Employers need to follow the Cal/OSHA requirements and take precautionary measures to protect their employees from heat illness. The Cal/OSHA requirements, guidelines, training materials, and other resources to prevent heat illness include:

- Implement a written Heat Illness Prevention Program (HIPP).
 - Train employees and supervisors on the HIPP.
 - Check the weather forecast ahead of time.
 - Provide at no cost to employees fresh, pure, and suitably cool potable water throughout the entire work shift.
- Refer to these online resources for detail requirements, guidelines, and measures for heat illness prevention:
- Cal/OSHA's Heat-related illness prevention website:
www.dir.ca.gov/DOSH/HeatIllnessInfo.html
 - Cal/OSHA's heat illness prevention eTool:
www.dir.ca.gov/dosh/etools/08-006/index.htm

Key Cal/OSHA Requirements

Title 8 of the California Code of Regulations has many requirements that apply to tree work and related operations. Below are selected applicable regulations. Refer to the title 8 regulations for the complete set of requirements.

Title 8 Sections on Tree Work, Maintenance or Removal

Title 8	Topic	URL
3420	Scope and definition	www.dir.ca.gov/title8/3420.html
3421	General requirements	www.dir.ca.gov/title8/3421.html
3422	Tree workers' saddles	www.dir.ca.gov/title8/3422.html
3423	General electrical hazards	www.dir.ca.gov/title8/3423.html
3424	Mobile equipment	www.dir.ca.gov/title8/3424.html
3425	Portable power hand tools	www.dir.ca.gov/title8/3425.html
3426	Hand tools	www.dir.ca.gov/title8/3426.html
3427	Safe work procedures	www.dir.ca.gov/title8/3427.html
3428	Stump cutters	www.dir.ca.gov/title8/3428.html
3458	Fall Protection for Date Palm Operations	www.dir.ca.gov/title8/3458.html

Other Commonly Applicable Title 8 Sections

In addition to the specific requirements, many other requirements that may apply to tree work operations are covered within other title 8 sections. Some of the most common ones are:

Title 8	Topic	URL
2940.2	Clearances from high-voltage power lines	www.dir.ca.gov/title8/2940_2.html
2951	Line clearance (tree trimming) operations	www.dir.ca.gov/title8/2951.html
3203	Injury and illness prevention program	www.dir.ca.gov/title8/3203.html
3328	Machinery and equipment	www.dir.ca.gov/title8/3328.html
3380	Personal protective devices	www.dir.ca.gov/title8/3380.html
3395	Heat illness prevention	www.dir.ca.gov/title8/3395.html
5141.1	Wildfire smoke	www.dir.ca.gov/Title8/5141_1.html
Article 24	Elevating work platforms and aerial devices	www.dir.ca.gov/Title8/sb7g4a24.html
Article 105	Noise	www.dir.ca.gov/Title8/sb7g15a105.html

Requirements for Tree Work in High-Voltage Line-Clearance Work

Electrocution is a key concern in tree work operations during high-voltage line-clearance work. Title 8 sections **2950** and **2951** provide requirements for this operation.

The right-hand column of the following table specifies the minimum approach distances to energized conductors for persons other than qualified line-clearance tree trimmers and trainees. See the note for exceptions applicable to qualified tree workers.

Nominal Voltage (kV)	Distance	
	Ft-in	Meters
0 to 1	10-00	3.05
1.1 to 15	10-00	3.05
15.1 to 36.0	10-00	3.05
36.1 to 50.0	10-00	3.05
50.1 to 72.5	10-09	3.28
72.6 to 121.0	12-04	3.76
138.0 to 145.0	13-02	4.00
161.0 to 169.0	14-00	4.24
230.0 to 242.0	16-05	4.97
345.0 to 362.0	20-05	6.17
500.0 to 550.0	26-08	8.05
785.0 to 800.0	35-00	10.55

Note for table below:

A qualified tree worker, as defined in section **3420(b)**, may perform tree work activities within 10 feet, but no closer than 1 foot, of energized low-voltage (600 V or less) power lines and conductors, provided the provisions in section **3423(b)(2)** related to such work are met.

Other Title 8 sections may apply to tree work depending on the type of work, tool, and equipment used, work environment, hazard exposure, and other considerations.

In addition, for most tree work, a D-49 Tree Service Contractor license from the Contractors State License Board (CSLB) is required. For more information on this license, visit **CSLB's website** at www.cslb.ca.gov.

Resources

The following websites provide helpful information on various topics related to safety and health in tree work operations, including the URLs for links used throughout this guide:

Cal/OSHA

Title 8 California Code of Regulations

www.dir.ca.gov/samples/search/query.htm

Cal/OSHA Tree Work Safety

www.dir.ca.gov/dosh/tree-work-safety.html

Heat Illness Prevention Webpage

www.dir.ca.gov/DOSH/HeatIllnessInfo.html

Heat Illness Prevention eTool

www.dir.ca.gov/dosh/etools/08-006/index.htm

NIOSH Resources

Preventing Falls and Electrocutions During Tree Trimming

www.cdc.gov/niosh/docs/92-106/

OSHA Resources

Tree Trimming Safety

www.osha.gov/OshDoc/data_Hurricane_Facts/trim.pdf

Chipper Machine Safety

www.osha.gov/OshDoc/data_Hurricane_Facts/chipper_machine.pdf

Working Safely with Chain Saws

www.osha.gov/OshDoc/data_Hurricane_Facts/chainsaws.pdf

Using Aerial Lifts

www.osha.gov/OshDoc/data_Hurricane_Facts/aerial_lifts.pdf

Other Resources

California Department of Public Health: Preventing Palm Tree Trimmer Fatalities Video

www.youtube.com/watch?v=sZoghIsJCp0

California Department of Public Health: Preventing Wood Chipper Fatalities

www.youtube.com/watch?v=7NKZM9IIEk

Contractors State License Board

www.cslb.ca.gov/

International Society of Arboriculture

www.isa-arbor.com

Tree Care Industry Association (TCIA)

<https://treecareindustryassociation.org/>

MIOSHA Fact Sheet: Tree Care Industry

www.michigan.gov/-/media/Project/Websites/leo/Documents/MIOSHA/Fact-Sheets/CET/Fact_CET175.pdf

National Weather Service

www.weather.gov



Cal/OSHA Consultation Programs

Toll-free Number: 1-800-963-9424

www.dir.ca.gov

On-site Assistance Program Area Offices



Voluntary Protection Program

Oakland, CA 94612
(510) 622-1081

This guide is available with active links at: www.dir.ca.gov/dosh/PubOrder.asp

