

Tree Trimming & Removal Safety Fact Sheet

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Tree care workers have one of America's most dangerous jobs¹ in an industry with one of Texas' highest rates of reported injury.² Tree trimmers regularly encounter heights, slippery conditions, falling limbs, sharp equipment, and electrical wires. Injuries from tree care work often increase after storms when unqualified landscapers with chainsaws offer their services to uninformed homeowners.

Each year, tree care injuries account for about 80 worker deaths and at least 23,000 chainsaw injuries treated in hospital emergency rooms across the U.S.³ While landscape service workers comprise less than 1% of the total workforce, they account for about 3.5% of all workplace fatalities.⁴ Fortunately, tree trimming injuries and deaths are preventable with proper training and equipment.

Recommendations for Prevention & Protection

The dangers of tree trimming are many. Using chainsaws in trees requires caution and skill. Working on the ground beneath a climber requires task awareness and communication to prevent a drop-zone injury. Working with woodchippers requires



constant concentration and attention to detail. However, the three types of incidents that cause most of the industry's total injuries are falls, being struck by trees, and electrocution.

Although there is no current Occupational Safety and Health Administration (OSHA) standard for tree trimming, employers must comply with all [general industry standards](#). Developing and implementing a comprehensive safety training program that includes written rules and procedures for employers, supervisors, and employees can reduce injuries and help keep workers safe.

Employers:

- Provide employees free personal protective equipment (PPE), including hardhats, climbing spurs, harnesses, saddles, and climbing lines.
- Develop a job-specific training program with input from workers in a language and vocabulary all employees understand. Ensure all employees:
 - ❑ can identify and avoid hazards;
 - ❑ use proper fall protection and climbing techniques; and
 - ❑ know to stand clear of drop zones.

- Conduct daily job site surveys to identify risks, ensure safety compliance, and monitor workers for signs of exhaustion or heat-related illness.

Supervisors:

- Assess the job site for workplace and fall hazards before starting the job.
- Evaluate whether a worker needs to climb or use an aerial lift.
- Ensure that the climbing gear provided matches the tree size.
- Check equipment to ensure it is in good working condition.
- Ensure ground and elevated workers can see and hear each other.
- Secure and mark a drop zone that is at least two times the height of the tree.
- Keep work at least 10 feet away from electric power lines.
- Assume all power lines are energized or call the power company to de-energize and ground the power line.



Employees:

- Use climbing belts, harnesses, and saddles properly. Inspect and maintain them before each shift of use.
- Make a drop zone marked with cones or other objects to avoid working in an area where trimmings or tree removal may fall.
- Identify and avoid power lines and other energized objects.
- Know the capabilities and limitations of all equipment and machinery.
- Keep saws sharp. Sharpen blades and chainsaw cutters. Replace them when necessary.
- Recognize the signs of [heat-related illness](#), like cramps, dizziness, weakness, confusion, or lack of sweat on a hot day.
- Drink water and stay hydrated.
- Speak out if there are on-the-job safety concerns. The [Occupational Safety and Health Act of 1970](#) states that each employer "shall furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employee." Contact OSHA or the DWC [Safety Violations Hotline](#) at **1-800-452-9595** for job safety concerns.

Safe Tree Felling

To **"fell a tree"** means more than just cutting it down. Felling means to cut the tree so that it falls in the desired direction, resulting in the least damage to the tree and surrounding structures. Fatal incidents from felling trees occur primarily because of two reasons: 1) The chainsaw operator fails to follow a retreat path as the tree lifts, or 2) The ground workers are standing too close to the tree when it begins to fall.



Chainsaw Operators

It takes less than five seconds for a mature tree to hit the ground once the back-cut opens. In that time, a chainsaw operator can run about 20 feet. Most fatalities among chainsaw operators occur within 10 feet of the felled tree's stump, often resulting from the trunk kicking back or rolling. Start moving the second the back-cut starts to open and keep moving until the tree is on the ground. Every foot away from a falling tree a worker can get reduces the chance of a fatal incident.

Ground Workers

Standing less than one-and-a-half times the tree height for ground workers who hold the lines OR less than two times the tree height for uninvolved ground workers is hazardous. If ground workers wait to move until they realize they are in the shadow of a falling tree's arc, it is too late. A falling tree moves faster than the average person runs.

These steps can help workers safely fell a tree:

- Remove [potential hazards](#) around the tree and in the surrounding area.
 - Determine the felling direction and how to deal with any leaning.
 - Provide a retreat path so the worker can reach safety while the tree is falling.
 - Determine the proper hinge (the front cut when felling a tree) to guide the tree safely to the ground.
 - Know the location of everyone before felling a tree.
 - Use PPE -- eye, face, head, hand, hearing, and foot protection -- as recommended in the manufacturer's operating manual.
- Watch for branches or other objects that may fly back towards the worker as the tree falls. Take refuge behind a standing tree for protection, if possible.
 - Prepare for potential hazards when removing dead or leaning trees, broken or hanging branches, or attached vines.
 - ⊠ The top of dead trees can break off and, if under pressure, make it difficult to know which way a tree will fall. Release some of the pressure by making small slashes in the tree before cutting the section.
 - ⊠ A tree may get lodged and lean among other trees when cut. Young trees can act like spring poles, propelling the felled tree in another direction.
 - ⊠ When a tree is cut, it may fall through other trees, branches, vines, or objects throwing material back towards the worker. Avoid felling a tree into other trees or structures.

Natural Disasters, Power Lines, & Tree Care



Damaged and uprooted trees following hurricanes and tornados create hazards for workers responsible for recovery and cleanup. Often after natural disasters, massive trees damaged by powerful winds can take power lines and transformers down with them. When cleaning up trees after a storm, always assume power lines are energized and practice the following safety tips:

- Perform a hazard assessment of the work area before starting work.
- Contact the utility company to discuss de-energizing and grounding or shielding power lines before clearing trees.
- Wear the appropriate PPE, including hardhats and safety glasses. Wear insulated footwear and gloves to protect against unexpected electrical surges. Never rely solely on PPE for protection.
- Maintain a distance of at least 10 feet from overhead lines (and more than 10 feet if the voltage to ground is over 50 kilovolts).
- Use extreme caution when moving ladders and other equipment near downed trees and power lines.
- Ensure all employees know the risks of tree work near sources of electricity. *(Continued on page 5)*

[A 26-year-old landscaper](#) was electrocuted while using a pole saw from a portable work platform to trim tree branches. The pole saw came in contact with energized overhead power lines, electrocuting, then igniting the landscaper. No co-workers or supervisors were on site when the incident occurred. He died later that day.

[A tree trimmer was electrocuted](#) while trimming tree branches in a residential front yard. A homeowner hired him to trim the branches of a tree growing into utility lines. He was attached to the tree with climbing spurs and fall protection. While cutting the tree with a chainsaw, a branch did not fully detach and struck an energized power line sending an electric current into his body. The investigation determined that the worker did not follow requirements for [power line clearance and proximity to energized lines](#).

In New Jersey, [a 21-year-old landscaper](#) was electrocuted when a felled tree landed on an overhead power line causing it to drop on him. The investigation determined that the family-owned business had no written safety and health policies.

- Ensure that workers have no direct contact with an energized conductor, such as a power line, and no indirect contact with an energized conductor, such as a tree limb or metal tool touching a power line.
- Ensure workers do not stand close to grounding elements.
- Provide fall protection for climbers.
- Provide insulated rope free of moisture and contaminants when electrical hazards are present.
- Attempt to anticipate when limbs might fall onto power sources.
- Have an emergency plan.
- Follow applicable OSHA requirements [29 CFR 1910.268](#), [29 CFR 1910.269](#), and [29 CFR 1910 Subpart S](#) when hired to trim trees near power lines.



Tree Trimming & Falling Object Hazards



Falls, specifically falls to lower levels, account for about 44% of all fatal injuries among tree workers.⁵ Most falls occur because climbers either disconnect from their climbing lines while repositioning or changing climbing systems OR experience failure of their anchors (the branch for their tie-in point).

Falls from aerial lifts are most commonly caused by workers not properly wearing [fall protection systems](#). Regardless of its comfort, wearing proper fall protection is an aerial-lift operator's last line of defense. Proper use of fall protection equipment can be the difference between a minor incident and death.

Other less common causes for falls result from tree trimmers misjudging a tree's structural integrity or the rigging forces. Injury prevention requires workers to always assess a worksite for fall or falling object risks.

- Have a qualified arborist survey the worksite to identify the types of trees involved and possible hazards related to the tree structure. A qualified arborist can identify fall and falling object hazards due to tree conditions.
- Consider weather-related hazards before trimming.
- Avoid sloped ground that may cause equipment to overturn or ladders to slip.

- Determine if rigging is necessary to prevent sections of the tree from falling while trimming the tree.
- Determine if workers need to climb or use aerial lifts. Never use an aerial lift without fall protection equipment.
- Use fall protection and climbing spurs with gaffs that are compatible with the tree if climbing. Use secondary fall protection as needed, such as a work-positioning lanyard or second climbing line in addition to an arborist's climbing line. Only carry hand tools and equipment required for climbing.
- Before each use, inspect ladders and remove any with damaged, defective, or worn rungs, cleats, bracing, footpads, or side rails.
- Ensure equipment is well maintained and free of missing or broken parts. Use all equipment according to the manufacturer's instructions.
- Do not use aerial lifts as cranes to lift or hoist tree parts or materials unless designed for that purpose.
- Establish drop zones where there is a hazard of objects falling. Ensure that all workers receive training on procedures for entering the drop zone.
- Establish a visual or audible communication system between overhead workers and ground workers before starting the rigging and cutting operations on a tree taller than 12 feet.
- Provide vehicle and pedestrian traffic control around worksites before the start of tree trimming.
- Have emergency procedures in place before the start of the tree care operation. Determine if the worksite location has cellphone coverage and verify that every worker knows the worksite's address in case emergency services are needed.

More information on tree trimming safety is available at <https://www.osha.gov/pls/publications/publication.AthruZ?pType=AthruZ#T>.

[A tree care worker was dragging trimmed branches to a mobile woodchipper.](#) A second worker, a trimmer, was working from a mobile bucket truck. The trimmer cut a large maple tree limb that was approximately one foot in diameter and 20 inches long. When the limb fell, it struck the tree care worker on the head, killing him. An investigation of the incident determined that ground personnel (the tree care worker) should not have been in the drop zone while trimming was performed overhead. The employer was required to establish a verbal and visual communication system that the trimmer could use to inform ground personnel to stand clear when an overhead hazard existed.

[A worker climbed a large hickory tree to remove the tree's top.](#) After he cut one section off the top of the tree and began lowering it down with a rope, the tree's trunk snapped in half. The worker and the top of the tree fell about 65 feet to the ground killing the worker. This incident was preventable if the employer had assessed the tree before starting the work. A preliminary examination would have shown that the tree could not support the rigging force and the weight of lowering the tree section.

References

¹Science Daily. "Tree Care Workers Need Better Training to Handle Dangers on the Job." [2018] Website. <https://www.sciencedaily.com/releases/2018/03/180316153856.htm>. Accessed January 7, 2021.

²Bureau of Labor Statistics. "Injuries, Illnesses, and Fatalities: Incident rates by industry and case types, 2019." Website. https://www.bls.gov/web/osh/summ1_00.htm. Accessed January 12, 2021.

³Science Daily. "Tree Care Workers Need Better Training to Handle Dangers on the Job." [2018] Website. <https://www.sciencedaily.com/releases/2018/03/180316153856.htm>. Accessed January 7, 2021.

⁴Ball, John. Tree Care Industry Association, TCI Magazine. "Tree Worker Safety Update." [2020] Website. <https://tcimag.tcia.org/tree-care/tree-worker-safety-update/>. Accessed January 7, 2021.

⁵Ball, John. Tree Care Industry Association, TCI Magazine. "Tree Worker Safety Update." [2020] Website. <https://tcimag.tcia.org/tree-care/tree-worker-safety-update/>. Accessed January 7, 2021.



Safety Violations Hotline

1-800-452-9595

safetyhotline@tdi.texas.gov

The Texas Department of Insurance,
Division of Workers' Compensation (DWC)
E-mail resourcecenter@tdi.texas.gov
or call 1-800-687-7080 for more information.

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