

Homeowners Equipment Safety Manual

Objective: To ensure the safety of homeowners by instituting procedures and practices that help prevent accidents and injuries while they are working outdoors to increase the fire safety of their property.

Table of Contents

Hand Tools.....	1
Chopping Tools	2
Cutting Tools	3
Handsaws.....	3
Bow Saws	3
Hacksaws	3
Knives	4
Other Tools and Equipment.....	4
Pry, Digging, and Tamping Bars.....	4
Grubbing Tools.....	4
Shovels.....	4
Wheelbarrows	5
Rigging Equipment for Material Handling	5
Tree and Brush Thinning and Pruning Operations.....	6
Bucking, Brushing, and Limbing	8
Brushing and Brush Piling	8
Site Clearing.....	9
Health and Safety Hazards	9
Back Injury	9
Plant, Animal, and Insect Hazards	10
Poison Oak and Noxious Weeds	10
Ticks and Chiggers	10
Chiggers	11
Poisonous Snakes, Spiders, and Scorpions	11
Spiders	12
Scorpions	12
Insect Stings and Bites	13
Honey Bees	13
Africanized Honey Bees	14
Mosquitoes	14

Hand Tools

Because hand tools seem easy to use, people may expect them to do more than they were designed to do and frequently use the wrong tool for the job. Using wrenches as hammers and hammers for striking wrenches when working with particularly stubborn nuts are two typical examples.

Safety Practices

The following guidelines are recommended when selecting and using a tool:

1. Select ergonomically designed tools (weight, size, and type) and consider buying several versions or sizes of the same tool. Use each tool only for the job it was designed to do.

2. Keep jaw teeth, cutters, and blades sharp for better results. Sharp tools improve accuracy, lower fatigue, and lessen the risk of accident and injury. Inspect hand tools for distortion, cracks, chips, wear, or mushrooming.
3. Keep all tools clean and in working order. Protect them against corrosion damage. Wipe off accumulated grease and dirt. Lubricate moving and adjustable parts to prevent wear and misalignment.
4. Keep handles tight; secure them with wedges when necessary. Inspect wood handles for splitting, cracking, checking, warping, and splinters. Do not use a tool with a loose or damaged handle.
5. Before using a tool near electricity, shut off the current in near-by circuits.
6. In the presence of flammable materials or explosive dusts and vapors, use nonsparking tools. Do not expose tools to excessive heat or use urethane-coated tools in excessive temperatures.
7. Never throw tools under any circumstances.
8. Discard or repair damaged or abused tools promptly.

Chopping Tools

Chopping tools include axes, adzes, brush hooks, hatchets, machetes, and pulaskis.

Safety Practices

These basic safety practices are recommended for maintenance and use.

1. Be aware of proper chopping and tool sharpening techniques. When grinding, grind slowly toward the cutting edge, taper properly, avoid overheating, and use a file and stone to remove burrs or rough spots. When filing, secure work in a clamp or vise. Stroke the file across the edge. Finish the edge with a hand stone. Wear gloves and use a file equipped with a handle and knuckle guard. Replace and discard chopping tools that are excessively round-cornered. Inspect for loose or cracked heads and split, crooked, warped, or splintered handles before using.
2. Carry a chopping tool by grasping around the shoulder of the handle close to the tool head. Hold the tool so that the flat surface of the blade is vertical (parallel to your leg), with the arm hanging naturally at one's side. Never carry a chopping tool on your shoulder. Carry the tool on the downhill side so that it can be more easily discarded in case of a fall.
3. Always remove branches, underbrush, or debris that might interfere with chopping. Following these general rules is recommended:
 - a. Do not allow people to stand in the chopping area, and alert other workers of the distance chopped materials may fly.
 - b. Protect all workers against flying chips and other chopping hazards by wearing appropriate PPE.
 - c. Remove all overhead obstructions the tool might strike or hang up in. Always position your body securely while working with a tool.
 - d. Never chop cross-handed; always use a natural striking action.
 - e. Be alert when working on hillsides or uneven ground.
 - f. Be especially watchful for spring loading, if cutting a sapling that is bound down. Be alert for sudden breakage. If there is not a need to cut it, leave it.
 - g. Standing on a log to chop is not recommended. There are exceptions, exercise caution in such situations.
 - h. Never use chopping tools as wedges or mauls.

- i. Do not allow two people to chop together on the same tree.
- j. When chopping limbs from a felled tree, stand on the opposite side of the log from the limb being chopped and swing toward the top of the tree or branch.
- k. Do not allow the tool handle to drop below a plane that is parallel with the ground unless chopping on the opposite side of a tree from where your body is positioned.
- l. If the cutting edge picks up a wood chip, stop. Remove the chip before continuing.
- m. To prevent glancing, keep the striking angle of the tool head almost perpendicular to the tree trunk.
- n. Use special foot and shin/leg protection if needed.

Cutting Tools

Cutting tools include saws, knives, chisels, files, shears, and snips.

Safety Practices — General Guidelines

Cutting tools must be handled with extra care. Do not store them with other tools in a drawer where someone could be cut accidentally by inadvertently grabbing a sharp edge. Wear safety goggles or other appropriate eye/face protection and gloves when working with cutting tools. Always select the right size and type of tool for the work project or activity. The nuts and bolts on tools, such as shears and snips, require frequent adjustment. Wipe the edges of cutting tools frequently with a lightly oiled rag. Never hit a cutting tool with a striking tool.

Handsaws

Keep saw teeth sharp and properly set. Protect saw teeth with a sheath/guard when not in use. Consider the shape and correct teeth for the material to be cut. Examine materials being cut for nails, knots, and other objects that may damage the saw or cause the saw to buckle. Hold pieces being cut firmly in place. If long pieces are being cut, use a supporting bench to prevent pinching at the cut. Hold the saw firmly and begin slowly to avoid jumping the blade. Pull upward until the blade bites. Start with a partial cut; then set the saw at the proper angle.

Bow Saws

1. When inserting a blade in a bow-saw frame, keep your hands and fingers in the clear when the tension lever snaps into or against the saw frame.
2. When removing a bow-saw blade from the frame, ensure that the blade guard is in place.
3. Carry a bow saw over your shoulder with the guarded blade to the rear and on the downhill side when applicable. Ensure the cutting edge faces away from your body, even when the guard is in place.
4. Do not push or force the saw. Begin with light gentle strokes until the teeth begin forming a kerf.

Hacksaws

1. Select the proper blade for the material being cut.
2. Point the blade teeth forward. Always keep the blade taut and the frame properly aligned.
3. Use strong, steady strokes, directed away from your body. Use the entire length of the blade in a stroke. Cut hard materials more slowly than soft materials.

4. Do not cut thin, flat pieces from edge to edge, always clamp them securely and cut so that several teeth are cutting at all times.

Knives

1. Keep handles in place and cutting edges sharp and free of nicks.
2. When using drawknives, place material at working height, firmly anchor it, and hold it steady. Do not use a drawknife on material being braced by a worker's knees. When possible, use pocket knives that lock open. Keep your fingers away from the knife's edge as you close it.

Other Tools and Equipment

Safety Practices

Pry, Digging, and Tamping Bars

1. Wear appropriate PPE, such as eye/face protection, foot protection, gloves, and hardhat.
2. Transport bars separated from people and secured from movement.
3. Secure fulcrums and toeholds. When prying, push with your palms. When applying leverage, keep your feet and other parts of your body out of line with the bar.
4. When breaking, chipping, or prying rock or similar materials, ensure that other people are not within the striking distance of flying particles.
5. Carry bars at their balance point and on the downhill side.
6. Lay the bar flat and in the clear when not in use.
7. Maintain bars by keeping them straight. Sharpen the tip to retain the factory bevel.
8. Replace bent or twisted bars. Bent or twisted bars can rotate during use and strike the user.
9. Store bars so that they do not present a tip-over or falling hazard.

Grubbing Tools

Such tools include grub hoes, mattocks, picks, pulaskis, combination tools, McLeods, and various types of hoes.

1. Keep the blade eye tight-fitting and secured. Repair or replace defective or excessively worn tools immediately.
2. When working, ensure secure footing. Maintain a tight grip on the handle, and keep legs and feet in the clear when swinging. Avoid directing the tool toward the body. Keep the tool out in front. Use gentle but deliberate swinging or hoeing action.
3. Do not allow people to stand in the chopping, grubbing, or hoeing area. Alert other workers of the distance that debris may fly. Watch for rocks or objects that will cause the tool to glance, rebound, or create excessive flying material.
4. Maintain 10 feet (3 m) minimum between people when they are walking or working.
5. Remove all overhead obstructions the tool might strike or hang up in.

Shovels

1. Keep shovels sharp and replace them if they show cracks, ragged edges, or splits. Follow sharpening guides carefully. Never sharpen cutting edges all the way to the foot plate.

2. Never use a shovel as a pry bar.
3. When shoveling, support your upper body by bracing the forearm closest to your body against your thigh as you pivot the blade sideways.
4. Check handles for splits, cracks, and splinters before using. Replace defective handles.

Wheelbarrows

1. Select the appropriate wheelbarrow for the job, with a strong, straight frame and strong wheels that are well secured to the frame.
2. Keep your back straight and use your legs when lifting the handles of a loaded wheelbarrow. Never overload a wheelbarrow; keep the load evenly balanced, with weight well forward to avoid lifting strain. Push, do not pull, wheelbarrows.
3. Keep handles free of splinters, jagged edges, and burrs. Remove cracked or broken handles from service.
4. Watch for obstacles that will stop or tip a wheelbarrow. Do not run with a wheelbarrow. Check the route before moving the wheelbarrow. Allow enough clearance to avoid injuring fingers and hands. Exercise caution when ascending or descending ramps that may be wet, frosted, or snow covered.

Rigging Equipment for Material Handling

Recommended uses of fiber, synthetic, and wire ropes for lifting and structural support.

General Guidelines

1. Inspect ropes and related equipment before each use and continue to monitor ropes during use for broken strands, cuts, and worn or frayed spots.
2. Never use knots in lieu of splices. Match the type of knot to the purpose.
3. Carefully match the rope and the job:
 - a. Use manila ropes preferably on rigging and other jobs where tight bends and sharp corners occur.
 - b. Never use synthetic ropes where stretching causes problems.
 - c. Use wire ropes for running or working ropes under heavy loads; for hoisting where slings and hardware are provided; and for permanent guy wires and structured tension members. (Use chains when hooks, ratchets, and other holding devices are used.)

Natural Rope and Synthetic Fiber

1. Never overload rope.
2. Uncoil new natural fiber rope from the inside of the spool. Uncoil new synthetic rope by rolling the rope off the spool as it spins on an axle or spindle.
3. Never drag rope over rough or sharp surfaces.
4. Keep acids and acid fumes away from ropes.
5. Thoroughly dry rope after use. Coil and pile or suspend rope so air can circulate through the coils. Never pile frozen or wet rope against heat sources. When wet, natural fiber ropes are never as strong as dry ones, and wet synthetic ropes are slippery and may not hold knots well.
6. Store synthetic ropes away from sunlight, oil, and any other petroleum products that may cause deterioration.

Tree and Brush Thinning and Pruning Operations

Personal Protective Equipment

The following equipment is recommended for thinning:

1. Industry-approved hardhat.
2. Gloves.
3. Eye and face protection.
4. First aid kit.
5. Nonskid boots.

Safety Practices

Basic safety practices for thinning and pruning include:

1. Always carry pole pruners with saw pointing forward.
2. Never stand directly under limbs being pruned. Stand upwind to avoid wind-blown sawdust.
3. Regularly check saw bolts for tightness.
4. When pruning, always cut branches, do not break them. Notch larger diameter branches from below before through cutting from top to avoid breakage.
5. Suspend pruning during electrical (lightning) storms.
6. Never use metal pole pruners when working within 100 feet (31 m) of powerlines. Use only wooden or fiberglass poles within this 100-foot range. Perform no work within 30 feet (9 m) of powerlines.
7. Sheathe cutting edges when transporting or storing pruning saws.
8. When not in use, lay tools on the ground where they are not a tripping hazard.

Chain Saw Operations

Chain saw operations include, but are not limited to, felling, bucking, brushing, limbing, and specialized uses. Homeowners have the obligation to walk away from any situation they determine to be an unacceptable risk.

Spark Arresters

It is a violation of California law (Public Resources Code Section 4442) to use equipment powered by an internal combustion engine on any forest-covered, brush-covered, or grass-covered land unless the engine is equipped with a spark arrester.

Personal Protective Equipment

1. Industry-approved hardhat.
2. Eye protection.
3. Hearing protection (85 dB and above).
4. Appropriate gloves (cut-resistant gloves for chain filing).
5. Long-sleeved shirt.
6. Chain saw chaps.
7. Heavy-duty, cut-resistant or leather, waterproof or water repellent boots with nonskid soles (hard toes are optional).

Recommended chain saw features

1. Throttle interlock.
2. Falling and bucking spikes (or dogs) for falling and bucking operations.
3. Anti-vibration system.
4. Chain brake, fully functional.
5. Proper saw for the job, fully operational. A full wraparound handle bar for felling operations is recommended. The full wraparound handlebar allows the operator to use the bottom of the bar from either side of the tree; the saw then cuts, pulling the chain and the spikes into the tree. When using the top of the bar, the saw has the potential to kick out of the cut, which causes the operator to put extra effort into holding the saw. This creates fatigue and takes attention away from other safety concerns.
6. Proper bar length for the specific work project or activity.
7. Chain, filed and maintained.

General equipment

1. First aid kit.
2. Fire extinguisher.
3. Chain saw wrench.
4. Chain file with handle and guard.
5. Approved safety container for fuel.
6. Chain and bar oil container, clearly marked.
7. Proper wedges for the specific work project or activity (wooden wedges are not recommended).
8. Single-bit axe or maul, 3 to 5 pounds (1 to 2 kg).

Safety Practices

Following these basic chain saw safety and health practices is recommended:

1. Using a chainsaw at night is discouraged.
2. Be aware of the locations of people, structures, power lines, and other potential hazards such as topography and steepness of ground, low-hanging and dead limbs and rocks, wind direction and velocity such as steady versus gusting and/or changing directions, diameter and height of trees, soundness of tree i.e. split, lightning struck, broken-off top or other noticeable damage, lean direction, limb distribution and moisture in the form of rain, snow, or ice.

Chain Saw Handling Techniques

1. Carry the saw in a way to prevent contact with the chain, muffler, or bucking spikes.
2. Point the bar forward when going downhill with the saw at your side.
3. Point the bar backward when going uphill with the saw at your side.
4. When carrying a saw on your shoulder, take extra care due to the sharpness of the chain and "dogs."
4. Wear a long-sleeved shirt, gloves, and a shoulder pad.
5. Cover the bar and chain, preferably with a manufactured bar and chain guard.
6. Set the saw at idle speed and activate the chain brake when carrying a saw for short distances.

7. Shut off the saw when carrying it for a distance greater than from tree to tree or in hazardous conditions, such as slippery surfaces or heavy underbrush, and, in all cases, when carrying it more than 50 feet.

Starting/Operating a Chain Saw

The methods to safely start and operate a saw can vary with the model and size. The following basic precautions generally apply regardless of the saw model:

1. Maintain a secure grip on the saw at all times.
2. Always start the saw with the chain brake engaged.
3. Start the saw on the ground or where otherwise firmly supported.
4. Do not "drop start" a chain saw.
5. In general, throttle up to full speed before letting the chain contact the wood.
6. In general, do not throttle down before the cut has been completed.
7. Avoid cutting with the power head positioned between the waist and shoulders, which is considered a danger zone.
7. Do not cut with the power head positioned above shoulder height.

Fueling a Chain Saw

Select an area with bare ground for storing fuel and oil.

1. Allow the saw to cool at least 5 minutes before refueling.
2. Fill the tank on bare ground or other noncombustible surface.
3. Immediately clean up spilled fuel.
4. Refuel outdoors and at least 20 feet (6 m) from an open flame or other sources of ignition.
5. Start the saw at least 10 feet (3 m) from the fueling area.

Bucking, Brushing, and Limbing

Follow these basic steps:

1. Never buck a tree that is considered unusually dangerous.
2. Consider bucking hazards, including overhead hazards.
3. Anticipate the log's reaction when it is severed.
4. Select the bucking cut location very carefully.
5. Beware of other logs, branches, or rocks immediately behind the area where you are bucking, brushing, or limbing for possible kickback potential or rocking of the chain.
6. Remember that touching any object with the tip of the chain and bar can cause a kickback.
7. Know where the tip of the bar is at all times.

Brushing and Brush Piling

Personal Protective Equipment

The following PPE is recommended for brushing and brush piling:

1. Hardhat.
2. Eye protection.
3. Hearing protection (85 dB and above).
4. Long-sleeved shirt.
5. Gloves.

6. Leather lace-up boots with 8-inch (204 mm) minimum tops and nonskid soles.
7. Clothing and equipment for chain saw use as set out in previous section.

Standard procedures for brushing and brush piling

1. Keep cutting tools sharp. Guard or sheath tools when carrying them.
2. Exercise caution when: climbing or descending cut banks along roadways; moving across steep side slopes, wet grass, downed brush, snow cover, and downed timber; moving through heavy brush or low branches.

Site Clearing

Personal Protective Equipment

PPE recommended for roadside and land clearing includes:

1. Industry-approved hardhat.
2. Gloves.
3. Face and eye protection.
4. Hearing protection (85 dB and above).
5. Leather boots with 8-inch (204 mm) minimum tops and nonskid soles.

Safety Practices

1. Follow the manufacturer's recommendations for machine use.
2. Review safety-handling recommendations for chain saw operation.
3. Inspect all equipment before use.
4. Monitor equipment during use.
5. Turn off machines before inspecting them.
6. Provide guard(s) to protect equipment operators from cut or flying debris.
7. Make sure everyone involved in the site clearing operation agree on an appropriate distance to be maintained during the cutting operation.

Health and Safety Hazards

Back Injury

Suggested preventive measures include maintaining:

1. A high level of physical fitness.
2. Abdominal tone.
3. Flexibility in the lower back and hamstring muscles.
4. Regular, moderate aerobic activity.
5. Good posture and proper mechanics while lifting and carrying.
6. A routine warm-up schedule of five or ten minutes of stretching and loosening the muscles to reduce muscle tension, improve range of motion, and reduce the chance of muscle strains or other injuries.

Plant, Animal, and Insect Hazards

Poison Oak and Noxious Weeds

Be aware of poisonous plants and noxious weeds that are present in the work area. Even people having no history of reactions may become sensitized after contact and have a serious reaction.

1. When working in areas where poisonous plants or noxious weeds may be present:
 - a. Wear proper field attire.
 - b. Provide and apply a skin protectant or barrier cream. Fasten pant legs securely over boot tops (adhesive tape may be necessary).
 - c. Wear gloves and keep them away from the face and other exposed parts of the body. Do not touch skin with hands, clothes, or equipment that may have contacted poisonous plants or noxious weeds.
2. Whenever the skin contacts a poisonous plant or noxious weed, wash the area with cold water within 1 to 3 minutes or as soon as possible. Use liberal amounts of water to ensure that all poisonous oils are washed off. While working in the poisonous plant or noxious weed environment, do not use soap and/or hot water because they can remove the natural protective oils from your skin.
3. Destroy poisonous plants and noxious weeds around improved areas.
4. Avoid the smoke of burning poisonous plants. Inhaling this smoke can cause fever, malaise, tracheitis, bronchitis, and severe rash.
5. Upon returning from the field, use rubbing alcohol to cleanse skin that contacted poisonous plants.
6. Clean tools with citric-based solvent before storing (use appropriate gloves and adequate ventilation).
7. Avoid exposure through mishandling of contaminated clothes. Wash contaminated clothing separately from other clothes in hot water and detergent.

Ticks and Chiggers

Ticks are carriers of biological agents that cause Rocky Mountain spotted fever, Colorado tick fever, tick paralysis, Lyme disease, tularemia, and relapsing fever.

General Safety Procedures

When working in an area likely to have infected ticks:

1. Spray clothes with an insect repellent, which may provide an additional barrier against ticks. Repellents, such as diethyl metatoloamide (DEET), do not kill ticks. Some sprays do contain permethrin, which kill ticks on contact. Always follow the manufacturer's application instructions for insect repellents and treatments.
2. Wear light-colored clothing that fits tightly at the wrists, ankles, and waist. Each outer garment should overlap the one above it. Cover trouser legs with high socks or boots and tuck shirttails inside trousers. 3. Search the body repeatedly (such as during rest periods and lunch), especially hairy regions and inside clothing, as ticks seldom attach themselves within the first few hours.
3. Remove ticks with fine-tipped tweezers or fingers. Grasp the tick as close as possible to the point of attachment and pull straight up, applying gentle pressure. Wash the skin with soap and water; then cleanse with rubbing alcohol. Do not try to remove the tick by burning it with a match or covering it with chemical agents. If the head detaches during the removal procedure or the tick cannot be removed, seek medical attention.

4. Once the tick has been removed, place it in an empty container so it can be given to a physician should the victim experience a reaction. Record the dates of tick exposure and removal. An early warning sign to watch for is a large red spot on a tick bite. Reactions within 2 weeks include fever, chills, headache, joint and muscle ache, significant fatigue, and facial paralysis.

Chiggers

General Safety Procedures

In chigger infested areas:

1. Apply insect spray according to the manufacturer's application instructions.
2. Do not sit on the ground or on logs and avoid walking through low vegetation, when possible.
3. Bathe in hot, soapy water after spending time in these areas.

Poisonous Snakes, Spiders, and Scorpions

Rattlesnakes are common in the Sierra Foothill region.

1. Learn what poisonous snakes (if any) are native to the area you will be working in.
2. Learn how to identify whether or not a snake is poisonous. If unsure, treat all snakes as poisonous. Study field guides or text book illustrations of indigenous venomous snakes.
3. Do not assume a young snake is not poisonous, because venomous snakes are capable of inflicting a fatal bite from birth.

Precautions for Working in Snake Country

When working in snake-infested areas:

1. Wear high top boots (just below the knee is preferred) and/or protective snake-proof leggings. Use a hiking stick.
2. Although snakes are deaf, they have a good sense of smell and vision and are very sensitive to ground-conducted vibrations. Since they are defensive animals and rarely attack, they remain immobile or attempt to retreat if given the opportunity. When going through thick underbrush, be alert. Walk slowly and give snakes ample time to move out of the way.
3. Be particularly watchful in areas obscured by foliage or near ledges when walking or climbing in rocky country. Snakes have excellent camouflage ability so train your eyes to see their shape and coloration.
4. Walk on clear paths as much as possible. Be careful where placing your feet and hands at all times.
5. Probe areas with a long-handled tool or stick before stepping over logs or piles of brush and debris.

First Aid for Snake Bites

Snake bites in the United States are rarely fatal when medical care is sought early and appropriate antivenin is readily available.

1. Avoid panic.
2. Immobilize the bitten extremity and obtain medical assistance.
3. If you are alone when bitten, walk slowly, resting periodically and using a makeshift crutch if the lower extremity is involved. Again, keep activity to a minimum.

Spiders

Few spiders in the United States have venom that cause death. But the bites of the black widow and the brown recluse spiders can be fatal. Both spiders are found in most areas of the United States. The bite of the black widow is the more painful and often the more deadly of the two. Both prefer dark, out-of-the way places where they are seldom disturbed. Be alert for these spiders in basements, garages, barns and other outbuildings, woodpiles and gardens, and under stones, logs, and vegetation.

1. **Aggressive House Spider.** Another dangerous spider is the aggressive house spider. The spider got its name because it readily bites when cornered or threatened. Its bite is not fatal but is serious and requires immediate medical attention. The light brown spider's body is in two segments that together are about half an inch (12-3/4 mm) long, excluding its hairy legs. This spider is among the most common spiders found in buildings. It rarely climbs vertical surfaces and is usually found on the ground or lower floors, especially in cool moist window wells and basements.
2. **Female Black Widow Spider.** The female black widow is shiny black with a red hourglass mark on the stomach. The female's body is about half an inch (12-3/4 mm) long, and the male is less than half this size. The initial bite may be sharply painful, but many bites are not recognized initially.
3. **Brown Recluse Spider.** The brown recluse is light brown with a darker brown violin shaped marking on the top of its 1/3 inch to 2/3 inch (8-15 mm) body. Brown recluse spiders are most active at night from spring through fall, emerging from woodpiles, rat nests, and other dark, dry environments. The bite can vary from a mild and transient skin irritation to more complicated kidney and other disorders, and even death. Refer to exhibit 01 for identification.
4. **Spider Bites** -- Signals of a spider bite include:
 - a. Nausea and vomiting.
 - b. Difficulty breathing and swallowing.
 - c. Sweating and salivating profusely.
 - d. Irregular heart rhythms
 - e. Severe pain and swelling in the bite area.
 - f. A mark indicating a possible bite.
5. **First Aid for Spider Bites**
 - a. Wash the area with soap and water.
 - b. Apply a cold pack.
 - c. Seek medical care as soon as possible to receive an antivenin.

Scorpions

Scorpions in the United States are divided into two groups based on the severity of their sting. Scorpions whose venom can be lethal are found in the desert areas of Arizona, New Mexico, California, and Texas, as well as along the northern shore of Lake Mead in Nevada. The venom of these scorpions contains neurotoxins that produce systemic effects, as well as local burning and pain, which can be accentuated by tapping over the envenomed area (tap test). All other scorpions in the United States produce a local reaction that consists of painful swelling and burning with a discoloring of the skin.

Today, death from the sting of a "lethal" scorpion is preventable. Proper care includes washing the wound, applying a cold pack, and getting medical help as soon as possible to receive antivenin. Scorpions are nocturnal feeders and most live above ground and hide in old stumps, lumber piles, firewood, loose bark on fallen trees, ground debris, or crevices during the daytime. When working in scorpion and spider areas, be aware and take these precautions:

1. Always inspect in and under tarps, or other ground covers before use.
2. Always inspect and shake out clothing before wearing.
3. Do not leave work gloves, boots, jackets, or hats on the ground.
4. Always inspect outdoor toilets before use.
5. Never walk around in the dark without wearing shoes or boots.
6. Always have a flashlight for inspecting outhouses, clothing, and bedding.
7. Always inspect logs, stumps, rocks, and any other areas before sitting down.
8. When working in hot, dry areas, be especially watchful when using shady spots for rest breaks.
9. Before use, inspect those items that have been stored in the shade while working.
10. Always wear gloves (leather preferred) when moving or handling lumber, firewood, trash, or debris that could hide or contain spiders or scorpions. If an area that was stung or bitten shows rapid inflammation and pain, or the person bitten or stung develops other symptoms, such as chills, fever, joint pains, nausea, or vomiting, seek medical attention immediately.

Insect Stings and Bites

Honey Bees

The honey bee is one of the few domesticated insects that is maintained in hives. Numerous species of honey bee exist. The Italian honey bee, a common strain of Europe, is also widespread in the United States. Wild honey bee colonies usually nest in hollow trees or crevices in rocks but may nest in walls of occupied buildings. Also of considerable health concern has been the spread of the Africanized honey bee.

1. Single stings from any of these insects generally do not require medical attention. There may be an immediate sharp pain followed by redness and swelling. For mild bee stings, application of ice packs often gives relief. Honey bees and yellow jackets occasionally leave their stinger in the wound. Stingers should be scraped or brushed off with a sharp-edged instrument. Do not remove stingers with tweezers, which may squeeze the attached venom sac and worsen the injury.
2. Some individuals are sensitized to bee and wasps stings and may react with a widespread rash, asthmatic breathing, tissue swelling, a fall in blood pressure, or sometimes unconsciousness.

Safety Guidelines

1. For outdoor field work, always wear appropriate field attire – long sleeved shirts, long trousers, and appropriate boots. It is recommended to tuck trouser legs into socks.
2. Wear appropriate light-colored clothing, including socks. Avoid wearing leather. When defending their nests, bees target objects that resemble their natural predators (such as bears and skunks). They tend to go after dark, leather, or furry objects. Bees see the color red as black so fluorescent orange is a better work clothing choice than red.
3. Avoid wearing scents of any kind. Bees communicate by scent and tend to be very sensitive to odors. Avoid strongly scented shampoo, soaps, perfumes, after-shaves, and heavily scented gum. If riding, avoid the use of lemony or citrus-smelling fly control products on your horse.
4. Avoid identified nests and never poke or throw objects at nests. If attacked, shield your face with your arms and leave the area.

Africanized Honey Bees

These bees are docile when seeking out a new nest site and establishing a nest. In the field, European honey bees and Africanized honey bees are visually indistinguishable, but the following are behavioral patterns typical of the Africanized honey bees:

1. Africanized honey bees display random nest selection. They may nest in areas not normally selected by European honey bees; however, they have been known to take over European honey bee nests.
2. After developing brood and honey stores, Africanized honey bees become extremely defensive and easily agitated.
3. When in established hives, Africanized honey bees quickly respond in large numbers to nearby stimuli, such as a loud noise created by chain saws or working machinery.
4. Africanized honey bees are attracted mainly to the face and neck area. If attacked, get away quickly while covering the head and neck area. Do not stand still, swat, or try to hide underwater. Seek inside shelter, such as buildings or vehicles.
5. If stung, remove stinger(s) by scraping sideways, not pulling.

Mosquitoes

When massive flooding occurs, a significant increase in mosquito populations also increases the chances of an outbreak of encephalitis. Recent outbreaks of West Nile Virus are also of concern. Ticks that ingest mosquitoes may also transmit encephalitis to humans. Encephalitis produces influenza-like symptoms, including headaches, lethargy, fever, double vision, extreme muscle weakness, confusion, tremors, or seizures.

Use of repellents containing DEET or brand name products, such as Duranon, is recommended. Note: Duranon is applied to clothing only, not directly to the skin.

This manual was excerpted from the *Forest Service FSH 6709.11 – Health and Safety Code Handbook*. The entire Forest Service publication can be downloaded as a PDF file at <http://www.fs.fed.us/im/directives/fsh/6709.11/FSH6709.pdf>. To download this version, go to <http://arwi.us/fire/manual>.