



TOOL SAFETY PROGRAM

Tate Engineering Systems, Inc. employees who use hand and power tools and are exposed to the hazards of falling, flying, abrasive, and splashing objects, or to harmful dusts, fumes, mists, vapors, or gases must be don the appropriate personal protective equipment for the hazards they are exposed to. All electrical connections for these tools must be suitable for the type of tool and the working conditions. Conditions at a client site that may impact the safe use of powered tool, sites that are wet, areas where combustible dust or flammable vapors are present, must be considered before work begins. When a temporary power source is used for construction a ground-fault circuit interrupter must be used.

Tate employees will be trained in the proper use of all tools required for the their job by their supervisor or designated co-worker, named by their Supervisor. Workers should be able to recognize the hazards associated with the different types of tools and the safety precautions necessary.

BASIC SAFETY RULES TO PREVENT HAZARDS ASSOCIATED WITH THE USE OF HAND AND POWER TOOLS:

1. Read the manual for all powered tools and operate tools according to the manufacturers' instructions.
2. Keep all tools in good condition with regular required maintenance from manufacture.
3. Use the right tool for the job as the tool was intended to be used
4. Examine each tool for damages before use and do not use damaged tools.
5. Always use the right personal protective equipment: eye protection. Optionally: hearing protection, face shields, hand protection, based on hazard assessment
6. If a hazardous situation is encountered, it should be brought immediately to the attention of your Supervisor.

HAZARDS OF HAND TOOLS

Hand tools include anything from axes to wrenches. The greatest hazards posed by hand tools result from misuse and improper maintenance.

- If a chisel is used as a screwdriver, the tip of the chisel may break and fly off, hitting the user or other employees.
- If a wooden handle on a tool, such as a hammer or an axe, is loose, splintered, or cracked, the head of the tool may fly off and strike the user or other employees.
- If the jaws of a wrench are sprung, the wrench might slip.
- If impact tools such as chisels, wedges, or drift pins have mushroomed heads, the heads might shatter on impact, sending sharp fragments flying toward the user or other employees.

Tate Branch Managers are responsible for the safe condition of tools and equipment used by their branch employees. Employers shall not issue or permit the use of unsafe tools. Employees will be trained in the proper use and handling of tools and equipment by their Supervisor and or designated co-workers.



TOOL SAFETY PROGRAM

Appropriate personal protective equipment such as safety goggles/glasses and face shields must be worn to protect against hazards that may be encountered while using tools that may create chips, dust or flying particles.

Workplace floors shall be kept as clean and dry as possible to prevent accidental slips and trips with or around tools.

TOOL SAFETY TRAINING WILL INCLUDE THE FOLLOWING TOPICS FOR HAND TOOLS:

- **CUTTING TOOLS:** like saw blades and knives, use should be directed away from aisle areas and away from other employees working in close proximity. Knives and scissors must be sharp; dull tools can cause more hazards than sharp ones. Cracked saw blades must be removed from service.
- **WRENCHES:** must not be used when jaws are sprung to the point that slippage occurs.
- **IMPACT TOOLS:** such as drift pins, wedges, and chisels must be kept free of mushroomed heads.
- **WOODEN HANDLES:** of tools must not be splintered.
- **IRON OR STEEL HAND TOOLS:** that may produce sparks can be an ignition source around flammable substance. Where this hazard exists, spark-resistant tools made of non-ferrous materials should be used where flammable gases, highly volatile liquids, and other explosive substances are stored or used.

HAZARDS OF POWERED TOOLS

Power tools must be used with fitted guards, hand holds, and safety switches as manufactured; they are extremely hazardous when used improperly or in an altered condition. The types of power tools are determined by their power source: electric, pneumatic, liquid fuel, hydraulic, and powder actuated.

TOOL SAFETY TRAINING WILL INCLUDE THE FOLLOWING TOPICS FOR POWERED TOOLS:

- Never carry a tool by the cord or hose.
- Never yank the cord or the hose to disconnect it from the receptacle.
- Keep cords and hoses away from heat, oil, and sharp edges.
- Disconnect tools when not using them, before servicing and cleaning them, and when changing accessories such as blades, bits, and cutters.
- Keep all people not involved with the work at a safe distance from the work area.
- Secure work with clamps or a vise, freeing both hands to operate the tool.
- Avoid accidental starting. Do not hold fingers on the switch button while carrying a plugged-in tool.
- Maintain tools with care; keep them sharp and clean for best performance.
- Follow instructions in the user's manual for lubricating and changing accessories.
- Be sure to work on a stable level surface in an ergonomically neutral position with power tools.
- Wear proper apparel for the task. Loose clothing, ties, or jewelry can become caught in moving parts.
- Remove all damaged portable electric tools from use and tag them: "Do Not Use."
- ALWAYS plug your GFCI into the site power then plug your power tool into the GFCI



TOOL SAFETY PROGRAM

MACHINE/TOOL GUARDS

The exposed moving parts of power tools need to be safeguarded. Belts, gears, shafts, pulleys, sprockets, spindles, drums, flywheels, chains, or other reciprocating, rotating, or moving parts of equipment must be guarded. Safety guards must never be removed when a tool is being used, only when being serviced for maintenance or cleaning.

MACHINE GUARDS PROTECT THE OPERATOR AND OTHERS FROM THE FOLLOWING:

- Point of operation
- In-running nip points
- Rotating parts
- Flying chips and sparks

OPERATING CONTROLS AND SWITCHES: on the following hand-held power tools must be equipped with a constant-pressure switch or control that shuts off the power when pressure is released: drills; tappers; fastener drivers; horizontal, vertical, and angle grinders with wheels more than 2 inches (5.08 centimeters) in diameter; disc sanders with discs greater than 2 inches (5.08 centimeters); belt sanders; reciprocating saws; saber saws, scroll saws, and jigsaws with blade shanks greater than 1/4-inch (0.63 centimeters) wide; and other similar tools.

These tools also may be equipped with a "lock-on" control, if it allows the worker to also shut off the control in a single motion using the same finger or fingers. The following hand-held power tools must be equipped with either a positive "on-off" control switch, a constant pressure switch, or a "lock-on" control: disc sanders with discs 2 inches (5.08 centimeters) or less in diameter; grinders with wheels 2 inches (5.08 centimeters) or less in diameter; platen sanders, routers, planers, laminate trimmers, nibblers, shears, and scroll saws; and jigsaws, saber and scroll saws with blade shanks a nominal 1/4-inch (6.35 millimeters) or less in diameter. It is recommended that the constant-pressure control switch be regarded as the preferred device.

Other hand-held power tools such as circular saws having a blade diameter greater than 2 inches (5.08 centimeters), chain saws, and percussion tools with no means of holding accessories securely must be equipped with a constant-pressure switch.

ELECTRIC TOOLS: employees using electric tools must be aware of several dangers. Among the most serious hazards are electrical burns and shocks. Electrical shocks, which can lead to injuries such as heart failure and burns, are among the major hazards associated with electric-powered tools. Under certain conditions, even a



TOOL SAFETY PROGRAM

small amount of electric current can result in fibrillation of the heart and death. An electric shock also can cause the user to fall off a ladder or other elevated work surface and be injured due to the fall.

ELECTRIC TOOLS MUST HAVE:

- a three-wire cord with a ground and
- be plugged into a grounded receptacle
- be double insulated, or
- be powered by a low-voltage isolation transformer

Three-wire cords contain two current-carrying conductors and a grounding conductor. Any time an adapter is used to accommodate a two-hole receptacle, the adapter wire must be attached to a known ground. *The third prong must never be removed from the plug.*

Double-insulated tools are available that provide protection against electrical shock without third-wire grounding. On double-insulated tools, an internal layer of protective insulation completely isolates the external housing of the tool.

TOOL SAFETY TRAINING WILL INCLUDE THE FOLLOWING TOPICS FOR ELECTRIC TOOLS:

- Operate electric tools within their design limitations.
- Use gloves and appropriate safety footwear when using electric tools.
- Store electric tools in a dry place when not in use.
- Do not use electric tools in damp or wet locations unless they are approved for that purpose.
- Keep work areas well lighted when operating electric tools.
- Ensure that cords from electric tools do not present a tripping hazard.
- In the construction industry, employees who use electric tools must be protected by ground-fault circuit interrupters or an assured equipment-grounding conductor program.

PORTABLE CIRCULAR SAWS: having a blade greater than 2 inches (5.08 centimeters) in diameter must be always equipped with guards. An upper guard must cover the entire blade of the saw. A retractable lower guard must cover the teeth of the saw, except where it contacts the work material. The lower guard must automatically return to the covering position when the tool is withdrawn from the work material.

PORTABLE ABRASIVE WHEEL TOOLS: Portable abrasive grinding, cutting, polishing, and wire buffing wheels create special safety problems because they may throw off flying fragments. Abrasive wheel tools must be equipped with guards that: (1) cover the spindle end, nut, and flange projections; (2) maintain proper alignment with the wheel; and (3) do not exceed the strength of the fastenings.

Before an abrasive wheel is mounted, it must be inspected closely for damage and should be sound- or ring-tested to ensure that it is free from cracks or defects. To test, wheels should be tapped gently with a light,



TOOL SAFETY PROGRAM

non-metallic instrument. If the wheels sound cracked or dead, they must not be used because they could fly apart in operation. A stable and undamaged wheel, when tapped, will give a clear metallic tone or "ring."

To prevent an abrasive wheel from cracking, it must fit freely on the spindle. The spindle nut must be tightened enough to hold the wheel in place without distorting the flange. Always follow the manufacturer's recommendations. Take care to ensure that the spindle speed of the machine will not exceed the maximum operating speed marked on the wheel.

An abrasive wheel may disintegrate or explode during start-up. Allow the tool to come up to operating speed prior to grinding or cutting. The employee should never stand in the plane of rotation of the wheel as it accelerates to full operating speed. Portable grinding tools need to be equipped with safety guards to protect workers not only from the moving wheel surface, but also from flying fragments in case of wheel breakage.

WHEN USING A POWERED GRINDER:

- Always use eye protection with face protection
- Turn off the power when not in use
- Never clamp a hand-held grinder in a vise

PNEUMATIC TOOLS: Pneumatic tools are powered by compressed air and include chippers, drills, hammers, and sanders. There are several dangers associated with the use of pneumatic tools. First and foremost is the danger of getting hit by one of the tool's attachments or by some kind of fastener the worker is using with the tool.

Pneumatic tools must be checked to see that the tools are fastened securely to the air hose to prevent them from becoming disconnected. A short wire or positive locking device attaching the air hose to the tool must also be used and will serve as an added safeguard.

If an air hose is more than 1/2-inch (12.7 millimeters) in diameter, a safety excess flow valve must be installed at the source of the air supply to reduce pressure in case of hose failure.

In general, the same precautions should be taken with an air hose that are recommended for electric cords, because the hose is subject to the same kind of damage or accidental striking, and because it also presents tripping hazards.

When using pneumatic tools, a safety clip or retainer must be installed to prevent attachments such as chisels on a chipping hammer from being ejected during tool operation.

Pneumatic tools that shoot nails, rivets, staples, or similar fasteners and operate at pressures more than 100 pounds per square inch (6,890 kPa), must be equipped with a special device to keep fasteners from being ejected, unless the muzzle is pressed against the work surface.



TOOL SAFETY PROGRAM

Airless spray guns that atomize paints and fluids at pressures of 1,000 pounds or more per square inch (6,890 kPa) must be equipped with automatic or visible manual safety devices that will prevent pulling the trigger until the safety device is manually released.

WHEN USING A PNEUMATIC TOOL

- Eye protection is required with face protection, hard hats are recommended
- Screens must also be set up to protect nearby workers from being struck by flying fragments around chippers, riveting guns, staplers, or air drills
- Compressed air guns should never be pointed toward anyone. Workers should never "dead-end" them against themselves or anyone else. Compressed air cannot be used for cleaning a jobsite or ones own self or others.

Use of heavy jackhammers can cause fatigue and strains. Heavy rubber grips reduce these effects by providing a secure handhold. Workers operating a jackhammer must wear safety glasses and safety shoes that protect them against injury if the jackhammer slips or falls. A face shield also should be used.

Noise is another hazard associated with pneumatic tools. Working with noisy tools such as jackhammers requires proper, effective use of appropriate hearing protection.

LIQUID FUEL TOOLS: Fuel-powered tools are usually operated with gasoline. The most serious hazard associated with the use of fuel-powered tools comes from fuel vapors that can burn or explode and also give off dangerous exhaust fumes. The worker must be careful to handle, transport, and store gas or fuel only in approved flammable liquid containers, according to proper procedures for flammable liquids.

Before refilling a fuel-powered tool tank, the user must shut down the engine and allow it to cool to prevent accidental ignition of hazardous vapors. When a fuel-powered tool is used inside a closed area, effective ventilation must be utilized to avoid breathing carbon monoxide. Air monitors may be used to verify a safe condition when ventilation is needed. Fire extinguishers must also be available in the area.

POWDER-ACTUATED TOOLS

TATE DOES NOT USE NOR ALLOW THE USE OF POWDER-ACTUATED TOOLS ON CLIENT WORK SITES BY TATE TECHNICIANS.

When working in the vicinity of other contractors or client employees using powder-actuated tools, Tate employees must be informed of their use and cleared from the area while they are in use or protected from the range of fire. Safety features must be in place on powder-actuated tools that are used on a client job site.



TOOL SAFETY PROGRAM

WHEN USING A POWDER-ACTUATED TOOL:

- The muzzle end of the tool must have a protective shield or guard centered perpendicular to and concentric with the barrel to confine any fragments or particles that are projected when the tool is fired
- A tool containing a high-velocity load must be designed not to fire unless it has this kind of safety device
- The tool must not be able to operate until it is pressed against the work surface with a force of at least 5 pounds (2.2 kg) greater than the total weight of the tool
- If a powder-actuated tool misfires, the user must hold the tool in the operating position for at least 30 seconds before trying to fire it again
- Do not use a tool in an explosive or flammable atmosphere
- Inspect the tool before using it to determine that it is clean, that all moving parts operate freely, and that the barrel is free from obstructions and has the proper shield, guard, and attachments recommended by the manufacturer
- Do not load the tool unless it is to be used immediately
- Do not leave a loaded tool unattended, especially where it would be available to unauthorized persons
- Keep hands clear of the barrel end
- Never point the tool at anyone

HYDRAULIC POWER TOOLS: The fluid used in hydraulic power tools must be an approved fire-resistant fluid and must retain its operating characteristics at the most extreme temperatures to which it will be exposed. The exception to fire-resistant fluid involves all hydraulic fluids used for the insulated sections of derrick trucks, aerial lifts, and hydraulic tools that are used on or around energized lines. This hydraulic fluid shall be of the insulating type.

The manufacturer's recommended safe operating pressure for hoses, valves, pipes, filters, and other fittings must not be exceeded.

ALL JACKS: including lever and ratchet jacks, screw jacks, and hydraulic jacks -- must have a stop indicator, and the stop limit must not be exceeded. Also, the manufacturer's load limit must be permanently marked in a prominent place on the jack, and the load limit must not be exceeded. A jack should never be used to support a lifted load. Once the load has been lifted, it must immediately be blocked up. Put a block under the base of the jack when the foundation is not firm and place a block between the jack cap and load if the cap might slip.

TO SET UP A JACK, MAKE CERTAIN OF THE FOLLOWING:

- The base of the jack rests on a firm, level surface
- The jack is correctly centered
- The jack head bears against a level surface; and



TOOL SAFETY PROGRAM

- The lift force is applied evenly

Proper maintenance of jacks is essential for safety. All jacks must be lubricated regularly. In addition, each jack must be inspected according to the following schedule: (1) for jacks used continuously or intermittently at one site -- inspected at least once every 6 months, (2) for jacks sent out of the shop for special work -- inspected when sent out and inspected when returned, and (3) for jacks subjected to abnormal loads or shock -- inspected before use and immediately thereafter.

EMPLOYEE-OWNED TOOLS

Each Technician must work with their Branch Manager on the approval to use their own tools while at work.