



Process Name • Hand/Power Tools Program

(06/27/2018 Revision)

Overview of Hand/Power Tools Program

Purpose: To provide establish requirements for the safe operation of hand and power tools and other portable tools, including proper guarding.

Scope: This program is applicable to all CNM employees who utilize hand or power tools, at any of the CNM campuses.

CNM Way Expert: Safety and Environmental Health Department

Functional Units Involved-Responsibilities:

- A. Managers/Supervisors
 - 1. Ensures that all employees using portable tools have been trained and fully understand the operations and maintenance procedures of such tools, including their proper uses.
 - 2. Provides and trains employees with all additional PPE that may be needed for the safe operation of portable tools.
 - 3. Removes any tool which is not in compliance with any applicable requirement of this plan.
- B. Employees
 - 1. Ensures they have and properly use the correct tool for each task.
 - 2. Follows manufactures safety and operating instructions before using.
 - 3. Tags out and report any damaged tools to manager/supervisor.
- C. Safety Director/Designee: Develops and maintains the hand/power tools program and reviews it annually.

Beginning of Process: Development of the Heat/Cold Stress program.

End of Process: Dynamic & continuing.

Process:

- 1) Requirements
 - a) General
 - i) All tools must be maintained and in good condition.
 - (1) Tools are subject to inspection by supervisor or safety at any time.
 - (2) All employees have the authority and responsibility to condemn unsafe tools, regardless of ownership.
 - ii) Unsafe tools shall be tagged with a “DO NOT USE OR OPERATE” tag to prevent their use.
 - iii) Employees shall always use the proper tool for the job. Makeshift and substitute tools shall not be used.
 - iv) Hammers with metal handles, screwdrivers with metal continuing through the handle, and metallic measuring tapes shall not be used on or near energized electrical circuit or equipment.

- v) Tools shall not be thrown from place to place or from person to person; tools that must be raised or lowered from one elevation to another shall be placed in tool bags/buckets firmly attached to hand lines.
 - vi) Tools shall never be placed unsecured on elevated places.
 - vii) Impact tools such as chisels, punches, and drift pins that become mushroomed or cracked shall be dressed, repaired, or replaced before further use.
 - viii) Chisels, drills, punches, ground rods, and pipes shall be held with suitable holders or tongs (not with the hands) while being struck by another employee.
 - ix) Shims shall not be used to make a wrench fit.
 - x) Wrenches with sprung or damaged jaws shall not be used.
 - xi) Tools shall be used only for the purposes for which they have been approved.
 - xii) Tools with sharp edges shall be stored and handled so that they will not cause injury or damage. They shall not be carried in pockets unless suitable protectors are in use to protect the edge.
 - xiii) Wooden handles that are loose, cracked, or splintered shall be replaced. The handle shall not be taped or lashed with wire.
 - xiv) Tools shall not be left lying around where they may cause a person to trip or stumble.
 - xv) When working on or above open grating, a canvas or other suitable covering shall be used to cover the grating to prevent tools or parts from dropping to a lower level where others are present or the danger area shall be barricaded or guarded.
- b) Portable Electric Tools
- i) The non-current carrying metal parts of portable electric tools such as drills, saws, and grinders shall be effectively grounded when connected to a power source unless:
 - (1) The tool is an approved double-insulated type, or
 - (2) The tool is connected to the power supply by means of an isolating transformer or other isolated power supply.
 - ii) All powered tools shall be examined prior to use to ensure general serviceability and the presence of all applicable safety devices.
 - iii) Powered tools shall be used only within their design and shall be operated in accordance with manufacturer's instructions. The use of electric cords for hoisting or lowering tools shall not be permitted.
 - iv) All tools shall be kept in good repair and shall be disconnected from the power source while repairs or adjustments are being made.
 - v) Electrical tools shall not be used where there is hazard of flammable vapors, gases, or dusts without a valid Hotwork Permit.
 - vi) Ground fault circuit shall be used with portable electric tools when working outdoors or in a wet/damp location.
- c) Pneumatic Tools
- i) Pneumatic tools shall never be pointed at another person.
 - ii) Pneumatic power tools shall be secured to the hose or whip by some positive means to prevent the tool from becoming accidentally disconnected.
 - iii) Safety clips or retainers shall be securely installed and maintained on pneumatic impact (percussion) tools to prevent attachments from being accidentally expelled.

- iv) Compressed air shall not be used for cleaning purposes, except where reduced to less than 30 psi and then only with effective chip guarding and personal protective equipment (safety glasses, face shield)
 - v) Compressed air shall not be used to blow dust or dirt from clothing.
 - vi) The manufacturers stated safe operating pressure for hoses, pipes, valves, filters, and other fitting shall not be exceeded.
 - vii) The use of hoses for hoisting or lowering tools shall not be permitted.
 - viii) Before making adjustments or changing air tools, unless equipped with quick-change connectors, the air shall be shut off at the air supply valve ahead of the hose. The hose shall be bled at the tool before breaking the connection.
 - ix) Compressed air tools, while under pressure, must not be left unattended.
 - x) All connections to air tools shall be made secure before turning on air pressure.
 - xi) Air at the tool shall not be turned on until the tool is properly controlled.
 - xii) All couplings and clamps on pressurized air hose shall be bridged (pinned) with suitable fasteners.
 - xiii) Hose and hose connections used for conducting compressed air to utilization equipment shall be designed for the pressure and service to which they are subjected.
 - xiv) Use only approved end-fitting clamps (screw type heater hose clamps are not acceptable).
 - xv) Power tools are to be operated only by competent persons who have been trained in their proper use.
 - xvi) Conductive hose should not be used near energized equipment.
 - xvii) All pneumatically driven nailers, staplers, and other similar equipment provided with automatic fastener feed, which operate at more than 100 psi. pressure at the tool shall have a safety device on the muzzle to prevent the tool from ejecting fasteners, unless the muzzle is in contact with the work surface.
 - xviii) Airless spray guns of the type which atomize paints and fluids at high pressures (1,000 pounds or more per square inch) shall be equipped with automatic or visible manual safety devices which will prevent pulling of the trigger to prevent release of the paint or fluid until the safety device is manually released.
 - xix) In lieu of the above, a diffuser nut (which will prevent high pressure), high velocity release (while the nozzle tip is removed), plus a nozzle tip guard (which will prevent the tip from coming into contact with the operator), or other equivalent protection, shall be provided.
- d) Fuel Powered Tools
- i) All fuel-powered tools shall be stopped while being refueled, serviced, or maintained.
 - ii) When fuel powered tools are used in enclosed spaces, the applicable requirements for concentrations of toxic gases and use of personal protective equipment, shall be adhered to.
 - iii) A fire extinguisher must be made available when working with fuel powered tools.
- 2) Hydraulic Jacks
- a) Loading and Marking

- i) The operator shall make sure that the jack used has a rating sufficient to lift and sustain the load.
 - ii) The rated load shall be legibly and permanently marked in a prominent location on the jack by casting, stamping, or other suitable means.
- b) Operation and Maintenance
- i) In the absence of a firm foundation, the base of the jack shall be blocked. If there is a possibility of slippage of the cap, a block shall be placed in between the cap and the load.
 - ii) The operator shall watch the stop indicator, which shall be kept clean, in order to determine the limit of travel. The indicated limit shall not be overrun.
 - iii) After the load has been raised, it shall be cribbed, blocked, or otherwise secured at once.
 - iv) Hydraulic jacks exposed to freezing temperatures shall be supplied with adequate antifreeze liquid.
 - v) All jacks shall be properly lubricated at regular intervals.
- 3) Automotive Lifts
- a) Operator Requirements
- i) An automotive lift operator shall have the following qualifications:
 - (1) Ability in written or oral communications as demonstrated by one of or a combination of, the following; high school diploma or certificate of equivalency, aptitude test or job experience.
 - (2) Ability to understand the mathematical, mechanical and electrical principals of automotive lifts as demonstrated by one of, or a combination of the of, the following; aptitude test, training program, technical-vocational school, school of higher learning or job experience.
 - (3) Demonstrated physical ability to carry out lift operator responsibilities in a safe manner.
 - ii) CNM management/supervision/instructors shall ensure that operators of automotive lifts are instructed in the safe use and operation of the lift using the manufacturer-provided instructions and warning labels and the Automotive Lift Institute publications.
- b) Operator Responsibilities/safety requirements
- i) The operator shall operate the automotive lift only after being properly instructed or trained in accordance with this standard and manufacturer supplied instructions.
 - ii) The operator shall use all applicable safety features provided on the automotive lift, and operate the lift in accordance with the instructions furnished by the lift manufacturer.
 - iii) Operating controls are designed to close when released. Don't prop them open or override them.
 - iv) Know the weight limit, and never overload your lift. Manufacturer's rated capacity is typically displayed on the nameplate.
 - v) Only trained and authorized personnel should position vehicles or operate the automotive lift.
 - vi) Never raise a vehicle with anyone inside it. Non-operators should not be in the lift area during operation.

- vii) Always keep lift area free of obstructions, grease, oil, trash and other debris.
 - viii) Before driving vehicle into position, move arms and supports to provide unobstructed clearance.
 - ix) Load vehicle on lift carefully. Position lift supports to contact at the vehicle manufacturer's recommended lifting points. Raise lift until supports contact vehicle. Ensure the lift supports make full contact with vehicle then raise lift to desired working height. CAUTION: If you are working under vehicle, lift should be raised high enough for locking device to be engaged. Never work under a vehicle without engaging the locking device.
 - x) In some cases, the removal (or installation) of components may cause a major shift in the vehicle's center of gravity and result in instability. Make sure to reference the manufacturer's service manual for recommended procedures when vehicle components are removed (or added).
 - xi) Before lowering the vehicle lift, be sure tool trays, stands, etc. are removed from under the vehicle. Remember to release locking devices before attempting to lower lift.
 - xii) Prior to removing vehicle from lift, situate lift and support to provide unobstructed exit.
- c) Inspections
- i) Inspections shall follow the recommendations of the lift manufacturer as to frequency. Without regard to the frequency of inspection specified by the lift manufacturer, whether it be weekly, monthly, semi-annually, annually or on some other basis, CNM shall ensure that the points presented in ANSI/ALI ALOIM regulation 5.6 are inspected by a qualified lift inspector as a minimum annual requirements.
 - ii) Lifts shall be inspected daily before use. Never operate if it malfunctions or if lift has broken or damaged parts. Repairs must be made with the original equipment parts.
- 4) Portable Abrasive Wheels
- a) Safety Guards
 - i) Guards shall be made of steel or other material with adequate strength.
 - ii) A safety guard shall cover the spindle end, nut and flange projections. The safety guard shall be mounted so as to maintain proper alignment with the wheel, and the strength of the fastenings shall exceed the strength of the guard.
 - b) Mounting and Inspection of Abrasive Wheels
 - i) Immediately before mounting, all wheels shall be closely inspected and a ring test performed, to make sure they have not been damaged in transit, storage, or otherwise.
 - ii) Ring test – "tap" wheels about 45 degrees each side of the vertical centerline and about 1 or 2 inches from the periphery; then rotate the wheel 45 degrees and repeat the test; a sound and undamaged wheel will give a clear metallic tone - If cracked, there will be a dead sound and not a clear "ring."
 - iii) The spindle speed of the machine shall be checked before mounting of the wheel to be certain that it does not exceed the maximum operating speed marked on the wheel.
 - iv) Grinding wheels shall fit freely on the spindle and remain free under all grinding conditions.

- v) A controlled clearance between the wheel hole and the machine spindle (or wheel sleeves or adaptors) is essential to avoid excessive pressure from mounting and spindle expansion.
- vi) The machine spindle shall be made to nominal (standard) size plus zero minus .002 inch, and the wheel hole shall be made suitably oversize to assure safety clearance under the conditions of operating heat and pressure.
- vii) All contact surfaces of wheels, blotters, and flanges shall be flat and free of foreign matter.
- viii) When a bushing is used in the wheel hole it shall not exceed the width of the wheel and shall not contact the flanges.

5) Portable Grinders

- a) Special "revolving cup guards" which mount behind the wheel and turn with it shall be used. They shall be made of steel or other material with adequate strength and shall enclose the wheel sides upward from the back for one-third of the wheel thickness. It is necessary to maintain clearance between the wheel side and the guard. The clearance shall not exceed one-sixteenth inch.
- b) Vertical portable grinders, also known as right angle grinders, shall have a maximum exposure angle of 180 degrees and the guard shall be located between the operator and the wheel during use. Adjustment of the guard shall ensure that pieces of an accidentally broken wheel will be deflected away from the operator.
- c) The maximum angular exposure of the grinding wheel periphery and sides for safety guards used on other portable grinding machines shall not exceed 180 degrees and the top half of the wheel shall be enclosed at all times.

6) Guarding Portable Tools

- a) Guards shall be in place and operable at all times while the tool is in use. The guard may not be manipulated in such a way that will compromise its integrity or compromise the protection in which intended.
- b) Portable Circular Saws
 - i) All portable, power-driven circular saws having a blade diameter greater than 2 inches shall be equipped with guards above and below the base plate or shoe.
 - ii) The upper guard shall cover the saw to the depth of the teeth, except for the minimum arc required to permit the base to be tilted for bevel cuts.
 - iii) The lower guard shall cover the saw to the depth of the teeth, except for the minimum arc required to allow proper retraction and contact with the work.
 - iv) When the tool is withdrawn from the work, the lower guard shall automatically and instantly return to covering position.
 - v) All cracked saw blades shall be removed from service.
- c) Switches and Controls
 - i) All hand held powered tools, circular saws, drills, tappers, fastener drivers, horizontal or vertical angle grinders, etc., shall be with a constant pressure switch or control, and may have a lock-on control provided that turnoff can be accomplished by a single motion of the same finger or fingers that turn it on.
 - ii) All hand-held powered circular saws having a blade diameter greater than 2 inches, electric, hydraulic or pneumatic chain saws, and percussion tools without positive

- accessory holding means shall be equipped with a constant pressure switch or control that will shut off the power when the pressure is released. All hand-held gasoline powered chain saws shall be equipped with a constant pressure throttle control that will shut off the power to the saw chain when the pressure is released.
- iii) The operating control on hand-held power tools shall be so located as to minimize the possibility of its accidental operation, if such accidental operation would constitute a hazard to employees.
 - iv) Grounding of portable electric powered tools shall meet the electrical requirements that can be found in CNM Electrical Safety Program. All electric power tools shall be equipped with a three-prong plug.
- 7) Personal Protective Equipment
- a) Employees using hand and power tools and exposed to the hazard of falling, flying, abrasive, and splashing objects, or exposed to harmful dust, fumes, mists, vapors or gases shall be provided with the particular PPE (gloves, safety glasses, face shields etc.) necessary to protect them from the hazard.