Hand and Power Tools

Short description

This section outlines the guidance for assessing and controlling hazards associated with hand and power tools.

Contact person

Andrew Richardson	HSEQ
Name	Functional Department
770-613-2999	arichardson@cce-inc.com
Phone number	Email address

Responsible

Brent LeVander	HSEQ
Name	Functional Department

Approval

Mark Bailey	President and CEO
Name	Title

Content

1 Objective and area of application

The objective of this section of the HSEQ Manual seeks to inform Centennial employees and subcontractors of their obligations to develop the appropriate hazard prevention and control methodologies designed to prevent workplace injuries and illnesses from the use of hand and power tools.

For the purpose of this section, hand and power tools are defined as tools that may be carried by hand and portable in nature. These tools may be divided into non-powered (hand) tools and powered portable tools.

All personnel who use hand and power tools on Centennial project sites shall be able to recognize the hazards associated with the different types of tools and the safety precautions necessary to prevent incidents and injuries. Hand and power tools shall be suitable for specific use, conditions of use and used in accordance with any instructions/manufacturer recommendations included.

Any hand or power tool that is not in compliance with any applicable requirement of this section is prohibited and shall either be identified as unsafe by tagging or locking the controls to render them inoperable or shall be physically removed from the project site.

2 Superior and additional applicable documents

1000_GP_11_01_en_5.0 Global Policy on Health, Safety, Environment/Sustainability and Quality (HSEQ)

1000_GS_11_26_en_1.0 Global Standard on Maintenance and Inspection

29 CFR 1926

29 CFR 1910

This section of the HSEQ Manual applies to all Centennial employees and subcontractors who are performing work in Centennial facilities and / or on project sites. There may be more stringent requirements than this section as defined by specific State, local or contact specific HSEQ requirements. If there is a conflict between this section and other applicable regulations, the more stringent will apply.

3 Definitions

The following definitions of terms are important for an understanding of this procedure.

Term	Definition
AHA	Activity Hazard Analysis
ANSI	American National Standards Institute
Centennial	All Centennial employees, joint venture employees, subcontractors and business partners
DFOW	Definable feature of work

Double insulation	Internal wiring are insulated and tool housing is non conductive
Electrical hazard	Recognized dangerous condition such as exposed energized parts or unguarded electrical equipment that is energized and/or may be unexpectedly become energized
Energized parts	Energized components that can be inadvertently touched or approached nearer than a safe distance and are not suitably guarded, isolated or insulated
Fastener	A hardware device that mechanically joins or affixes two or more objects together
Point of Operation	The place where work is performed
Hand Tool	Any tool that is not a power tool
HSEQ Director	Leads the HSEQ Team
Pneumatic Tool	Any tool driven by compressed air, supplied air, and or CO2
Powder-Actuated Tool	A tool powered by a powder charge
PSI	Pounds per square inch
Power Abrasive Wheel	A wheel in which a grinding process is used as to cut material
Ring test	An inspection test performed on an abrasive wheel to detect cracks that could cause wheel breakage and potentially hazardous flying debris
HSEQ	Health, Safety, Environment and Quality
NEC	National Electric Code
NFPA	National Fire Protection Agency
NFPA 70E	Standard for Electrical Safety in the Workplace
OSHA	Occupational Safety and Health Administration
Qualified person	One who has skills and knowledge related to the construction and operation of the electrical equipment and installations and received safety training on the hazards involved
UL	Underwriters Laboratories

4 General hand and power tool safety precautions

Hand and power tools may be hazardous when improperly used or maintained. There are several types of hand or power tools, based on the power source they use: manual, electric, pneumatic, liquid fuel, hydraulic, and powder-actuated.

Centennial employees and subcontractors shall be trained in the use of all tools that they may use as well as understand the potential hazards and safety precautions necessary to prevent incidents. A risk assessment shall be performed and documented on an AHA in accordance with HSEQ Manual Section 6 (Risk Assessment and Operations) to ensure that the use of hand and power tools is performed in safe manner.

Centennial employees, subcontractors and lower tier contractors who use hand and power tools and who are exposed to harmful dusts, fumes, mists, vapors, or gases shall be adequately protected or provided with proper personal protective equipment necessary to shield them from the hazards.

Poorly maintained portable tools in construction (either hand tools or powered tools) present significant health and safety risks to the Centennial employees, subcontractors and others who may on or near the project site.

The following general precautions shall be observed by all hand and power tool users:

- Select the proper tool for the task
- Inspect the tool prior to use for defects or conditions that may be unsafe
- Maintain tools in good working condition as specified by the manufacturer
- Use tools properly as specified by the manufacture. Makeshift and job-made tools shall not be used
- Metal or conductive tools shall not be used near energized circuits or parts
- Tools shall be secured or prevented from falling from elevated surfaces
- Tools shall never be carried by the cord or hose
- Never yank the cord or the hose to disconnect it from the receptacle
- Hand and power tool cords and hoses shall be kept away from heat, oil, and sharp edges
- Hand and power tools shall be disconnected when not in use, prior to servicing and when changing accessories such as blades, bits, cutters etc.
- Secure loose or unstable materials with clamps or a vise
- Adequate clothing shall be worn and at a minimum, be in accordance with HSEQ Manual Section 11, paragraph 5.2. Additional protective clothing may be required according to manufacturer specifications
- All tools hand and power tools are damaged shall be removed from use and tagged “Do Not Use”
- Tools with sharp edges shall be stored and handled so that they will not cause injury or damage
- Wooden handles that are loose, cracked or otherwise damaged shall not be used
- Limit repetitive hand/wrist motions that may cause strain or unnatural postures or positions

The identified hazards and control measures shall be documented in the associated Activity Hazard Analysis (AHA) that provides an acceptable level of hazard identification and control for the associated task or work sequence.

5 Non-powered (hand) tools

Hand tools are non-powered tools. The greatest hazards posed by hand tools result from tool misuse and/or improper maintenance. Centennial employees and subcontractors are required to use and maintain hand tools in the condition approved by the manufacturer. Modifications or “job-built” tools are prohibited on Centennial project sites. Only trained and authorized personnel are permitted to use non-powered tools on Centennial project sites.

6 Powered portable tools

Power tools shall be of a manufacturer listed by a nationally recognized testing laboratory for the specific application for which they are to be used. Hand and power tools shall be used, inspected, and maintained in accordance with the manufacturer's instructions and recommendations and shall be used only for the purpose for which designed. Hand and power tools shall be inspected, tested, and determined to be in safe operating condition before use. Continued daily inspections shall be made to assure safe operating condition and proper maintenance.

There are several different types of powered portable tools, based on the power source used:

- Electric tools
- Pneumatic tools
- Powder actuated tools
- liquid fueled tools

6.1 Electric tools

Employees and subcontractors who use electric tools shall be trained on the specific hazards of use. Among the primary hazards of electric powered tools are burns, shocks or electrocution which can lead to injuries or potential fatality. Only trained, authorized and qualified personnel may operate portable electric tools on Centennial project sites.

The following are the general requirements for the use of portable electric tools:

- Portable electric tools shall be effectively grounded or double insulated when connected to a power source
- A GFCI shall be used at all times
- Portable electric tools shall be inspected prior to use to ensure general serviceability and all applicable safety devices and guards
- Portable electric tools shall only be used within their design and shall be operated in accordance with the manufacturer’s instructions
- All portable electric tools shall be kept in good repair and shall be disconnected from their power source for repairs or adjustments
- Portable electric tools shall not be used where there is a hazard from flammable vapors, gases, dusts or mists
- Appropriate work clothing in accordance with HSEQ Manual Section 11 paragraph 5.2 shall be worn while using portable electric tools. Loose clothing or other loose apparel shall not be worn as they may become caught in moving parts

6.2 Pneumatic tools

Pneumatic tools are powered by compressed air and include, but are not limited to, chippers, drills, hammers, and sanders etc. There are several hazards that may be potentially encountered through the use of pneumatic tools. Only trained, authorized and qualified personnel may operate pneumatic tools on Centennial project sites.

The following are the general requirements for the use of pneumatic tools:

- Adequate PPE including face protection, hearing protection and foot protection shall be worn in accordance with the manufacturer’s guidance

- Pneumatic tools shall be secured to the hose by a whip or some positive means to prevent the tool from accidently becoming disconnected
- Compressed air shall not be used for cleaning unless the pressure is reduced to less than 30 psi and then only with effective guards and PPE
- Compressed air shall not be used for cleaning personnel or blowing dust/debris from clothing
- The manufacturer's stated safe operating pressure for hoses, valves, filters, fittings and tools shall never be exceeded
- The use of hoses for hoisting or lowering tools/material shall not be permitted
- Compressed air tools shall not be left unattended while under pressure
- All connections to tools shall be made secure before turning on pressure
- Pneumatic tools that shoot nails, rivets, or staples, and operate at pressures more than 100 psi (pounds per square inch), must be equipped with a special device to keep fasteners from being ejected unless the muzzle is pressed against the work surface

6.3 Powder actuated tools

A powder-actuated tool is a nail gun used to join materials to hard substrates such as steel and concrete. Powder actuated tools are tools that are actuated by an explosive charge.

The following are the general requirements for the use of powder actuated tools:

- Only trained and qualified personnel shall be permitted to operate powder actuated tools (proof of qualifications shall be maintained on the project site)
- Explosive charges shall be transported and stored in approved containers
- Operators and affected personnel shall be protected by means of eye, face and hearing protection
- Users shall only use cartridges recommended and approved by the manufacturer
- Powder actuated tools shall be maintained in good condition and serviced regularly by qualified persons
- The tool shall be inspected prior to use to ensure that the protective shield is present and properly affixed to the tool
- The tool shall not be loaded until just prior to the intended firing time
- The tool shall not be left unattended while loaded
- The work area shall be surveyed, including the area directly behind the firing surface, for potential hazards and personnel
- Personnel shall be kept clear of the firing zone during tool operation
- Powder actuated tools shall not be used in a flammable or explosive atmosphere

6.4 Powered abrasive wheel tools

Powered abrasive grinding, cutting, polishing, and wire buffing wheels may throw off flying fragments during operation. Another hazard posed by these tools is the potential for the grinding wheel to break during operation. Before an abrasive wheel is mounted, it should be inspected closely and sound, or ring-tested to be sure that it is free from cracks or defects. When mounting the wheel to the spindle, the user shall ensure that the wheel fits freely with the spindle nut tightened adequately to hold the wheel in place. Only trained, authorized and qualified personnel may operate powered abrasive wheel tools on Centennial project sites.

The following are the general requirements for the use of powered abrasive wheels:

- The user should not place themselves directly in front of the wheel while the wheel is accelerating at full operating speed

- Select an appropriate abrasive wheel rated for the operating speed of the tool as specified by the tool manufacturer
- Appropriate PPE shall be used including a full face shield and safety glasses
- Portable grinding tools shall be equipped with all guards and safety devices to protect from the moving wheel surface, wheel breakage and flying debris generated from the work process
- Grinders shall be supplied with power sufficient to maintain the spindle speed at safe levels under all conditions of normal operation
- A lockable container with the words "POWDER- ACTUATED TOOL" in plain sight on the outside and a notice reading "WARNING - POWDER-ACTUATED TOOL TO BE USED ONLY BY A QUALIFIED OPERATOR AND KEPT UNDER LOCK AND KEY WHEN NOT IN USE"

6.5 Liquid fuel tools

Liquid fueled tools are usually powered by gasoline. The use or storage of these tools may create vapors that can burn, explode or release dangerous exhaust fumes containing carbon monoxide that may cause health hazards in poorly ventilated, enclosed or confined spaces. Only trained, authorized and qualified personnel may operate liquid fuel tools on Centennial project sites.

The following are the general requirements for the use of liquid fuel tools:

- Fuel storage cans shall be constructed of metal, appropriately labeled, and incorporate a spark/flame arrestor
- An appropriately rated fire extinguisher shall be readily available and placed within 50 feet of flammable liquids or equipment
- Liquid fuel tools shall not be used in poorly ventilated, enclosed or confined spaces without adequate ventilation
- Fueling or re-fueling of liquid fueled tools shall only be completed with the tool engine shut down with adequate time for the engine to cool in order to prevent accidental ignition of hazardous vapors

6.6 Guards and switches

Hazardous moving parts of all power tools shall be guarded in accordance with manufacturer specifications. Power tools designed to accommodate guards shall be equipped with such guards. All guards must be functional. Guards shall not be removed at any time during use. Guards shall be provided, as required by the tool manufacturer, to protect the operator and others from incident or injury.

Safety switches may be provided by the tool manufacturer on several types of tools. The following hand-held powered tools must be equipped with a momentary contact "on off" style control switch:

- Drills
- Tappers
- Fastener drivers
- Horizontal, vertical and angle grinders with wheels larger than 2 inches in diameter
- Disc and belt sanders,
- Reciprocating saws
- Saber saws
- Types of sanders (platen sanders, disc sanders)
- Grinders

- Routers
- Planers
- Jigsaws

Safety switches shall never be modified or disabled at any time. These types of tools may also be equipped with a lock-on control provided that turnoff can be accomplished by a single motion of the same finger or fingers that turn it on.

7 Training

Each Centennial employee, subcontractor or lower tier contractor performing work with hand and power tools shall be trained in the following minimum procedures:

- Specific hazards of the job and/or task
- Tool hazard recognition
- Effects of electricity on the body
- Selection and use of PPE
- Work procedures with additional or special precautions
- Energy source control

8 Amendment history

Date	Version	Revised content
07.19.2015	1.0	Initial Preparation
01.01.2018	2.0	Updates to Paragraph 2 Superior Documents to add the Group Policy and Global Standards and Paragraph 3 Definitions (Centennial and HSEQ Director)

9 Appendix

There are no appendices to this section.