# Section 16: TOOLS AND EQUIPMENT

## INTRODUCTION

Most King County jobs require the use of some type of tools, equipment, or machinery, all of which can present hazards if they are not operated and maintained in accordance with the manufacturer's instructions. Following basic tool and equipment safe operating procedures can mitigate hazards and minimize the impact on the body.

Use only the machines and equipment you are trained and authorized to use. Leave repair and maintenance to those designated to perform these tasks. If you discover any equipment you think is not safe, report it to your supervisor immediately before continuing work. Any equipment found to be defective or unsafe must be removed from use and marked "Unsafe-Do Not Use" until corrective action is taken.

Any machine that could expose a person to injury from a point of operation, such as blades, cutters, rotating parts, powered drive belts, gears, or chains, must be provided with guards that completely enclose the hazardous parts of the machine. All guards should be in place and properly adjusted before the machine is operated. If guards are removed for an approved, specific procedure, they must be replaced immediately after finishing.

## APPLICABILITY

This program applies to all employees who use machines, tools, or equipment at work.

## RESPONSIBILITIES

County Safety and Health Professionals:

- Develop written programs
- Provide technical assistance to supervisors and managers
- Assist in employee training

Supervisors and Managers:

- Evaluate or seek help to identify appropriate tools for job tasks
- Equip employees with necessary tools to perform their jobs safely
- Ensure compliance with the safety program
- Provide training for employees on tool use

Employees:

- Comply with management directives with respect to tool use
- Review manufacturers' instructions before using any tool
- Only use tools for their intended purposes

## TRAINING

All King County employees who use machines, tools, or equipment for their jobs must be trained in use, maintenance and storage. Training shall be provided by knowledgeable individuals. Where possible, it is recommended that training be provided by manufacturer's representatives.

## GENERAL REQUIREMENTS

- Tools and equipment shall be used only for the purpose for which they are designed
- All tools, regardless of ownership, shall be of an approved type, maintained in proper condition, and subject to inspection at any time
- Tools with sharp edges shall be stored and handled in such a way as to not cause damage or injury to personnel
- Damaged machines, tools, and equipment must not be used
- Tools, except those normally carried on belts, that must be raised or lowered from one elevation to another shall be placed in an approved container or firmly attached to hand lines
- Tools shall not be thrown from place to place or from person to person under any circumstances
- Tools shall not be left lying around to pose tripping or stumbling hazards
- Tools shall not be placed unsecured on elevated places
- All hand-held power tools must be equipped with constant pressure switches that will shut off the power when the pressure is released
- Switches or valves on any type of power tools shall not be wired or tied in the open position

## SPECIFIC REQUIREMENTS - POWER TOOLS

Power tools should be inspected, tested, and determined to be in safe operating condition before using. Portable electric tools, equipment, and appliances must meet one or more of the following:

- The exposed noncurrent-carrying metal parts of the portable or plug-connecting equipment that may be energized must be grounded.
- The equipment must be of the approved double-insulated type and be conspicuously marked as such.
- The equipment must be self-contained and battery-operated.

Portable power tools present hazards similar to those presented by stationary machinery in addition to the risk of handling. Sources of injury include shock, particles in the eyes, fires, falls, explosion of gases, and falling tools. The following general guidelines must be followed:

- Always disconnect the power lines before changing the accessories on a portable tool, replace the guards, and put in the correct adjustment before the tool is used again.
- Suspend the power lines over the work areas in such a way as to prevent the line from being struck by people or materials moving through the area. Keep lines away from sharp edges, oils, hot surfaces, and chemicals.
- Establish and maintain a systematic inspection schedule of each tool to help prevent accidents. Tag and withdraw from service all defective tools, until repaired.

**Portable Abrasive Wheels**

Abrasive wheels shall be used only on machines provided with safety guards and recommended for such use by the manufacturer. Before use, ensure that safety guard covers the spindle end, nut and flange projections.

**Vertical Portable Grinders**

When using the vertical portable grinder, ensure that the safety guards in place. They must have a guard with maximum exposure angle of 180 degrees and located between the user and the wheel during use.

**Bench Grinder**

- When using abrasive or wire wheels, wear a face shield, goggles, or safety glasses.
- Since most defective wheels break when first started, run all new wheels at full operating speed for at least one minute before work is applied. Ensure that the immediate area in front of the grinder is cleared of all people before starting.
- Do not grind on the side of a grinding wheel unless it is designed for side grinding.
- Ensure that there is no more than 1/8 of an inch between the tool rest and grinding wheel. This must be adjusted as wheel wears down.

**Band Saw**

- Ensure that the saw table is well lighted, yet free from glare.
- Ensure that an adjustable guard is installed around the saw blade and it does not interfere with the movement of stock or the vision of the operator.
- Keep the floor around the saw clean and do not allow it to get slippery. Ensure that the working distance around the saw is ample and free of traffic to avoid any accidental bumping of either the stock or the operator into the saw.
- Wear safety glasses to protect your eyes from flying particles.
- The most common injuries from band saw are from hand contact with the saw blade.
- Clean accumulated shavings from underneath saw to prevent build up and potential hazard.

**Electrical Drill Press**

- Always use a sharp drill bit to prevent breakage
- Keep hair and sharp clothing away from revolving parts
- Wear safety glasses
- Remove key or drift from chuck before starting drill
- Securely clamp work before drilling to prevent a frozen drill from spinning the drill material

**Table Saw**

- Injuries from table saws are usually caused by contact with the blade or kickbacks, and by poor housekeeping practices
- Table saws must be equipped with saw blade hoods, a spreader or riving knife, and non-kickback fingers or dogs
- Keep hands out of the line of the cut while feeding
- Hold the stock against a gauge, and never saw freehand
- Clamp the filler board to the table between the gauge and the saw to guide the stock when ripping the stock with a narrow clearance on the gauge side
- Stand out of the line of the stock to avoid kickbacks. A heavy leather or plastic apron will give additional protection
- To help prevent kickbacks, set the saw blade so that no more than three teeth or 1/8" of the blade are exposed above the stock
- The lower the saw blade is set, the less chance there is of kickback
- Keep saw blades sharp to prevent material from getting pinched
- Check blades regularly for cracks, and replace the blade if necessary
- Clear sawdust and slivers away from the saw with a brush or stick, never with the hands
- Clean accumulated shavings from underneath the saw to prevent build up and a potential hazard

**Circular Hand Saw**

- Ensure that the guard operates freely; that it encloses the teeth completely when it is not in cutting, and the unused portion of the blade when it is cutting
- Start and stop the saw outside the work
- Keep your body out of the line of the cut at the beginning and end of the stroke

**Other Woodworking Machinery**

- Ensure that all other woodworking machinery such as swing saws, radial saws, jointers, boring and mortising machines, shapers, planers, lathes, sanders, veneer cutters, and other miscellaneous woodworking machinery are effectively guarded to protect the operator and other employees from hazards inherent to their operations.

- Provide a power control device on each machine to make it possible for the operator to cut off the power to the machine without leaving his/her position at the point of operation.
- Ensure that power controls and operating controls are located within reach of the operator while he/she is at his/her regular work location, making it unnecessary for him/her to reach over the cutter to make adjustments (This does not apply to constant pressure controls used only for setup purposes).
- Ensure that each operating treadle is protected against unexpected or accidental tripping.
- On applications where injury to the operator might result if motors were to restart after power failures, make sure that provisions are made to prevent machines from automatically restarting upon restoration of power.

**Electric Drill**

- Adequately secure the work by using a clamp, jig, or vise, and do not hold small work in hands
- Wear adequate eye protection whenever a drill is in use, especially when the work is near head level or overhead
- Ensure that the chuck key or drift has been removed from the chuck before a drill is started

## PERSONAL PROTECTIVE EQUIPMENT (PPE) REQUIREMENTS

Employees must use appropriate PPE when working with tools. Consult Section 10 – "Personal Protective Equipment and Clothing" of this Accident Prevention Program for more details on selection, fitting, cleaning and maintenance of PPE. For further assistance with PPE, contact your Department's assigned Safety and Health Professional.