

Mount Royal University: Safety Program		
<b>Tools, Equipment &amp; Machinery</b>		
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## SAFE WORK PROGRAM: TOOLS, EQUIPMENT & MACHINERY

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#### PREAMBLE

Tools, equipment and machinery (TEM) are used by a number of departments at Mount Royal University. The operation of TEM can pose safety hazards to employees and other members of the University community. This program provides guidance to ensure that TEM are used safely.

#### SCOPE

This program applies to all MRU employees when performing work with tools, equipment, or machinery on behalf of the University. Contractors working on MRU property shall have their own guidelines and procedures in place that they and their subcontractors must follow when applicable.

This program does not apply to office desktop equipment, including computers and related devices, or small appliances which are covered under their own safe work programs and practices.

#### LEGISLATION

Alberta's Occupational Health and Safety (OHS) Code outlines requirements for Tools, Equipment, and Machinery in Part 25, Sections 362 to 385.

#### RESPONSIBILITIES

Associate Vice-Presidents / Deans / Directors / Department Managers:

- Ensure that this safety procedure is communicated to affected employees.
- Ensure that this safety procedure is understood and followed by affected employees.
- Maintain required documentation, including hazard assessments, inspection and training records.

Supervisors / Chairs:

- Ensure employees are trained and competent with any TEM they are expected to use when performing tasks.
- Ensure that all tools, equipment and machinery (TEM) are inspected and maintained as per manufacturer's instructions or industry best practices.
- Develop safe work procedures for equipment when procedures are unclear or user's manuals are unavailable or insufficient.
- Ensure employees understand and follow this safety program and any tool, equipment or machinery-specific safe work practices.
- Identify tasks involving TEM and ensure that associated hazards and controls are captured in Position and Field Level Hazard Assessments.
- Ensure any tool, machine, or equipment removed from service is identified or tagged out so that it cannot be returned to service until it's repaired and made safe for use.

MRU Employees (Staff, Faculty, or Volunteers):

- Follow the safety requirements outlined in this program.
- Complete required training.

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- Do not use TEM unless trained and competent to do so. Ask for additional training if you do not feel competent to use the TEM you need.
- Apply manufacturer's recommendations for safe use, preventive maintenance, handling and storage of tools, machinery, and equipment when available; when unavailable, follow industry best practices.
- Only use tools in the manner for which they are intended.
- Perform pre-use inspections of TEM and do not use items that fail inspection - tag it out of service and report to your supervisor.
- Assist in the development of equipment or machine-specific safe work procedures when requested.

### Contractors:

- Use all TEM in a safe, healthy and responsible manner to reduce the risk of injury or property or environmental damage when on MRU property.
- Provide safety programs, practices, or procedures that meet or exceed Alberta OHS regulations, as applicable to work scope.

### Environmental, Health & Safety (EH&S):

- Provide assistance and guidance to departments regarding tool, equipment and machinery safe work practices and hazard assessments.
- Review this program annually and update as required.
- Review training records, inspection and maintenance records, and any other documentation as needed for audit purposes.

## HAZARD ASSESSMENT

Different types of TEM have different hazards, based on their purpose and design. All TEM should be assessed for hazards prior to use. Manufacturer's manuals will summarize the hazards and recommended controls. These should be reviewed by employees and incorporated into Position or Field Level Hazard Assessments, or incorporated into safe work procedures (SWPs) when appropriate.

### Some common hazards or TEM include:

- Pinch points or crush points
- Rotating / moving parts
- Sharps (i.e. cutting blades, sharp edges)
- Electrical hazards
- Noise
- Ergonomic hazards (awkward posture, repetitive motion, overreaching, stooping, kneeling)
- Heat sources or flames
- Laser hazards
- Compressed gases or fluids

### Other related hazards that may be encountered when using TEM include:

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- Falling tools when working at height, or working near someone who is
- Inhalation hazards from dust, fumes or vapours created by the work
- Restricted workspaces, adding to ergonomic concerns
- Slip / trip hazards from cords and materials in the work area
- Other people in or around work zone

**HAZARD CONTROLS**

Hazard controls for some tools, equipment and machinery (TEM) will be outlined in the manufacturer's manual. Consult this manual prior to using the item to understand the intended use, storage, handling, maintenance, and limitations of the item. Hazard controls recommended in the manual (or equivalent) should also be put in place.

Simpler tools or equipment may not come with a manufacturer's manual (e.g. non-powered hand tools). For these, follow industry best practices and the general controls listed below.

The controls listed below should be applied for all TEM:

- Only use TEM that you are trained and competent to use. Some equipment and machinery require certification training; others may only require in-house or hands-on training or mentorship. You will not be reprimanded for asking for assistance or training.
- Only use TEM for their intended use, in the manner intended.
- Always perform a pre-use inspection to ensure that equipment is in good condition prior to use.
- Perform regular and formal inspections as outlined in manufacturer's manual, documenting when required.
- Ensure that all equipment controls are adequately labeled.
- Remove defective or damaged TEM from service and report the action to your Supervisor.
- Only perform repairs on TEM if you are trained and qualified to do so.
- Lockout equipment when performing maintenance or repairs. See Safe Work Procedure: Control of Hazardous Energy (Lock Out Tag Out).
- After performing maintenance or repair, ensure all elements (especially safety guards) are reinstalled as per manufacturer's recommendations.
- When guards are provided, only use equipment when they are in place.
- Where applicable, know where the emergency safety stop is and how to use it in the event of an emergency.
- Wear the appropriate personal protective equipment for the TEM, as per the manufacturer's recommendations or pre-use hazard assessment.
- Do not use cell phones while operating TEM.
  - Headphones and earbuds are forbidden when operating mobile equipment such as riding mowers or utility vehicles. Only certified hearing protection is permitted (when required).
- Avoid wearing loose clothing or jewelry where there is a risk of be caught in moving parts.
  - Tie back or otherwise secure long hair (including facial hair).
  - If jewelry cannot be removed (e.g. medical alert bracelet), tape it down and tuck it into clothing.
- Practice good housekeeping of your work area and tool and equipment storage areas.

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- Work with heat generating tools must be kept away from combustible materials. Consult the hot work procedure/low energy safe work practice for hot work procedures and permits, as well as the manufacturer's manual for further recommendations.

**MANUAL HAND TOOLS**

Hand tools are tools that are powered manually, such as hammers, saws and wrenches. In addition to the general hazard controls noted above, apply the following guidelines to prevent injury:

- Always direct tools such as knives, saw blades, etc. away from other employees working in close proximity to reduce the likelihood of an impact or laceration injury.
- Keep edged tools such as saws and blades sharp to reduce the effort needed to use them.
- If working in an area where flammable gases, highly volatile liquids, and other explosive substances are stored or used, use spark-resistant tools to reduce the risk of fire.
- Store tools in a dry and secure location and keep them clean to reduce wear and tear.
- Carry and store sharp tools with the sharp edge down with a protective cover. Do not carry sharp tools in pockets.

**POWER TOOLS**

Power tools may include electric, pneumatic, liquid fuel, hydraulic, and powder-actuated tools. Employees must be trained and supervisors must ensure they are competent to use the tools. Employees shall observe the following general precautions in addition to those outlined earlier in this program and those provided in the manufacturer's operating manual:

- Review the operating manual prior to use and follow the directions for safe use, maintenance and storage.
- Identify cut points, pinch and crush points, nip points and lines of fire and keep body parts away from these hazards.
- Never carry a tool by the cord or hose and do not pull on the cord or the hose to disconnect it from the receptacle.
- Keep cords and hoses away from heat, oil, and sharp edges.
- Ensure tools are properly grounded and use Ground Fault Circuit Interrupter (GFCI) outlets or extension cords in wet or damp locations.
- Disconnect the power source when not in use; before servicing and cleaning; 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.
- When possible, secure work with clamps or a vise, freeing both hands to operate the tool.
- Avoid accidental starting by keeping your fingers away from the "on" switch while carrying a plugged-in tool.
- Keep edged tools sharp to ensure they work safely.
- Check that you have stable footing and good balance when operating power tools.
- Practice good housekeeping by ensuring that cords do not present a trip hazard.
- Keep work areas well-lit.
- Store electric tools in a secure and dry place when not in use.
- Wear appropriate PPE and footwear for the tool and identified hazards.

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- Keep body parts out of the line of fire.
- Ensure that guards and safety switches are in place (when available).
- Where there is a possibility of flying debris, set up a work zone to protect others in the area.

### MOBILE EQUIPMENT

Before starting and while using tools, equipment, or machinery, an operator must ensure that starting the machinery will not endanger the operator, another worker, or individuals in the surrounding area.

If seatbelts or other life safety devices are available to be used during the operation of the equipment or machinery, they must be used. Any worker authorized to be on the mobile equipment must be safely seated and secured while the equipment is in motion.

Mobile equipment left unattended must be properly secured against use, especially when stored in a publicly accessible area.

Audible warning devices such as back-up alarms must be loud enough to be heard above other noise in the immediate area.

Do not use mobile equipment / machinery on public roads, unless stated as approved for use in the Traffic Safety Act.

### SETTING UP WORK ZONES

Prior to working with TEM, set up an appropriately sized work zone, considering swing zones, the potential for flying or falling objects, and the presence of other workers or third parties. Use cones, delineators, flagging tape, screens, or spotters as appropriate for the hazards identified.

As much as possible, schedule work with TEM around rush times (between classes or during lunch) if the work is to be performed in publicly accessible areas.

Keep work zones free of housekeeping hazards such as cords or debris to reduce the risk of slips / trips or falls.

Restrict access to areas where TEM are stored (e.g. workshops, labs).

Use appropriate signage around work zones when required (e.g. excess noise, flying objects, workers overhead)

### DEFINITIONS

**Affected Employee:** An employee who operates or uses a machine or equipment on which servicing or maintenance is being performed under LOTO or who works in an area where such work is being performed.

**Employee:** Volunteers or individuals who are engaged to work for the University under an employment or apprenticeship contract, including Faculty, Staff, exempt Employees, Management Employees, and Undergraduate, Graduate or Postgraduate students carrying out work for the University.

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**Equipment:** any equipment used for the purpose of work that is electric, gas powered or manually handled (e.g. cart, electric cart, front end loader, mobile elevated platform, utility vehicle, lawn mower, etc.)

**Hazard Control:** Actions taken to eliminate or lower risk at work such as procedures and/or processes and/or mechanized equipment intentionally used to protect the worker from hazards in the workplace. Common hazard controls fall under engineering controls (e.g. ventilation), administrative controls (e.g. training, signage), and personal protective equipment (e.g. safety glasses).

**Hazardous energy:** Any form of energy (including electrical, mechanical, hydraulic, pneumatic, chemical, nuclear, thermal, and gravitational) that could cause injury to personnel due to the unintended energizing, start-up, or release of stored or residual energy in machinery or equipment.

**Isolation:** Ensuring all sources of hazardous energy for a piece of equipment or machinery are moved or controlled to prevent it from unexpected activation or energization.

**Lockout:** Isolating the energy source or sources from equipment, dissipating any residual energy in a system, and securing the isolation by a device that is operated by a key or other process.

**Machinery:** combination of mechanical parts that transmits from one part to another, or otherwise modifies, force, motion, or energy that comes from a hydraulic, pneumatic, chemical or electrical reactions or from other sources, and includes vehicles.

**Pneumatic tools/equipment/machinery:** are powered by compressed air. Common types of these air-powered hand tools that are used include buffers, nailing and stapling guns, grinders, drills, jack hammers, riveting guns, sanders and wrenches.

**Tools:** electric (e.g. drills, nail guns, hand held grinders, etc.), pneumatic, or non-powered tools (e.g. wrench, screwdriver, hammer, etc.)

**Servicing and/or Maintenance:** Activities such as constructing, installing, setting up, adjusting, inspecting, modifying and/or servicing machines. This includes activities such as lubrication, cleaning or unjamming of machines or equipment and making adjustments.

**Supervisor:** A person who has charge over a workplace or authority over a worker. Depending on the particular reporting relationship, a Supervisor includes, but is not limited to any of the following: Manager, Associate Dean, Director, Vice President or President.

### REFERENCES

Alberta Labour. 2018. *Part 25: Tools, Equipment and Machinery*. Alberta OHS Code. Queen's Printer.

Mount Royal University Safe Work Procedure: Control of Hazardous Energy (Lock Out / Tag Out)

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REVISION HISTORY

Date	Revision	Notes
January 2021	01	Creation of Safe Work Program