Powered Landscaping Equipment Procedures
for Landscape Operations

January 2014
Central Michigan University
Powered Groundskeeping Equipment Procedures for
Landscape Operations

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Central Michigan University
Powered Groundskeeping Equipment Procedures
For
Landscape Operations

Introduction

Purpose

The Central Michigan University (CMU) Powered Groundskeeping Equipment procedures have been written to meet the requirements of the Michigan Occupational Safety and Health Administration’s (MIOSHA) Part 54 Powered Groundskeeping Equipment Standard. These procedures were designed to assure the maintenance and safe operation of powered groundskeeping related equipment and attachments, and their safe use by CMU Landscape Operations employees.

Compliance

Management:

A. Shall train all new employees, and re-train employees when necessary on these Powered Groundskeeping Equipment Procedures as well as all equipment and tools and submit to Environmental Health & Safety a completed Landscape Operations Machine Shop/Equipment Training Checklist for each employee (Appendix B).

B. Shall provide personal protective equipment necessary to protect the employee from the recognized hazards of the equipment.

C. Shall not allow powered groundskeeping and related equipment to be operated which is not guarded as prescribed by these procedures, or which has a known defect that could affect the safety of the operator.

D. Shall not allow powered groundskeeping equipment and attachments to be used for operations other than those for which the equipment was designed.

Employee:

A. Shall report to their supervisor any tool, equipment or safeguard, which is defective or missing.

B. Shall use personal protective equipment prescribed to them at the expense of CMU.

C. Shall not remove a guard except for authorized maintenance purposes. The guard shall be replaced or equivalent guarding provided before the equipment is returned to normal use.
D. Shall not operate, lubricate or provide maintenance of any equipment unless trained in the operating, lubrication or maintenance procedures, hazards and safeguards.

Personal Protective Equipment

A. An operator of powered groundskeeping equipment listed in Table 1 shall be provided with and use hearing protection.

B. When operating powered groundskeeping equipment an operator shall be provided with and use eye protection.

C. An operator of a power rotary mower, reel mower or string trimmer shall use steel-toed shoes or boots or steel toecaps.

Table 1 – All Landscape Operations equipment requires the use of hearing protection including, but not limited to the following:

<table>
<thead>
<tr>
<th>Mowers</th>
<th>Kubota Tractor</th>
<th>920 CAT Loader</th>
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</thead>
<tbody>
<tr>
<td>Eager Beaver Chipper</td>
<td>Ford Tractor</td>
<td>Bobcat Skid Steer</td>
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<tr>
<td>John Deere Backhoe</td>
<td>All leaf blowers</td>
<td>Ford Tractor 1520</td>
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<tr>
<td>Edger</td>
<td>Weed Whip</td>
<td>Kubota BF800 L3350</td>
</tr>
<tr>
<td>Chain Saw</td>
<td>Hedge Trimmer</td>
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</table>

Lubrication and Maintenance

A. Groundskeeping equipment shall be shut off or disconnected during lubrication and maintenance, except when it is necessary to make adjustments with the power on.

B. When servicing the blade on any piece of equipment, the spark plug shall be disengaged to prevent accidental ignition.

Labeling

A. All positions of an operating control shall be legibly identified by durable labels.

B. Self-propelled groundskeeping equipment shall have a durable label at the engine starting control point with the wording, or similar wording, Caution - Be sure the operating control is in neutral before starting engine. All warning labels shall be maintained in a legible condition.

C. A walk-behind or riding rotary mower shall have labeled warning instructions at or near the discharge opening stating, Caution - Mower shall not be used unless the opening guard or grass catcher is in place.
D. A riding mower shall have a durable label installed in a place where the operator can readily see it stating, *Caution.*

- Keep all guards and shields in place.
- Before leaving the operator’s position, shift the transmission to neutral, set parking brake and disengage attachment clutch.
- Wait for all movement to stop before servicing machine.

E. Snow throwers shall have a labeled warning instruction on the discharge guide stating, *Warning – Keep hands out of discharge guide while engine is running.*

F. A labeled warning instruction *Caution – Keep hands and feet clear of collector while engine is running* shall be placed on the collector housing of a snow thrower.

**General Operating Rules**

A. A gas tank shall not be filled:

1. Indoors, except in an area conforming to the requirements of the state fire marshal.
2. While the engine is running.
3. While a source of ignition is present in the immediate area.

B. A portable container used for refueling shall be an approved safety can with an automatic closing cap and flame arrester.

C. Gasoline spills shall be cleaned up immediately.

D. The drive mechanism of self-propelled groundskeeping equipment shall be disengaged before starting the motor or engine.

E. An engine or motor governor adjustment shall not be made or changed to create an overspeed condition.

F. An engine or motor shall be stopped and an inspection made after striking a foreign object with a machine or if a vibration develops.

G. An engine or motor shall be stopped when clearing a clog or a jam or when removing an attachment.

H. An area to be mowed shall be checked and cleared of any object that might be picked up and thrown by the blade.

I. The discharge of material shall not be directed at another person.
J. Groundskeeping equipment shall not be left running or unattended if the operator is beyond vision, or more than 25 feet away from the equipment.

K. Groundskeeping equipment, without approved double insulation and powered by 110 volts or more, shall be connected to a grounded service outlet. Unless equipment is an approved double insulated device, its cord and any extension cords shall be of 3-wire grounded type and of a contrasting color to the foliage such as, but not limited to, orange or yellow.

L. All rotating shafts, fly wheels, chains, belts, pulleys, and sprockets, shall be located or guarded to prevent accidental contact.

M. Should an operator deem a piece of groundskeeping equipment to be unsafe or in need of repair, he/she shall tag it as such and inform Matt Weaver, Manager of Landscape Operations, or his designee.

Construction Tools and Equipment

Powered Mowers; Lawn and Garden Tractors

A new powered lawn mower, lawn tractor, or a garden tractor and its attachments purchased after December 1, 1983 shall meet the requirements of ANSI B 71.1-1972 standard, “Safety Specifications for Power Lawn Tractors,” and shall bear a permanently attached tag or label so indicating.

Snow Throwers, General

A. The speed of the collector shall be not more than the manufacturer’s rated speed.

B. The impeller of a 2-stage snow thrower shall be not more than the manufacturer’s rated speed.

C. A snow thrower collector housing shall extend to the front of the auger travel path on both sides.

D. The collector shall incorporate a shear bolt or slip clutch protection against a blockage of the collector.

E. The discharge guide rotating mechanism shall not be capable of delivering snow into the operator’s area.

Walk Behind Snow Throwers

A. A handle for a walk behind snow thrower shall be secured to the snow thrower to prevent unintentional uncoupling.

B. A positive upper limit stop or latch shall be provided for the handle of a walk behind snow thrower at the upper normal position.
Riding Snow Throwers

A. A riding snow thrower shall be provided with stops to prevent locking of the steering mechanism.

B. The snow thrower controls shall be accessible to the operator from the operator’s control position.

A snow thrower shall have adjustable skid shoes or gauge wheels to control operating height.

Work Practices

Self-propelled Snow Throwers

A. The traction drive directional control lever, when provided on a self-propelled snow thrower, shall be moved forward to cause the machine to move forward and backward to move in reverse.

B. An area to be cleared of snow shall be checked and cleared of any visible object that might stop the collector or be picked up and then thrown by the impeller.

C. The collector clutch shall be disengaged when adjusting the deflector guide upwards and downward.

D. An employee shall not attempt to clear the discharge guide with the engine running.

An operator shall maintain direct control of a self-propelled walk behind snow thrower. The operator shall adjust ground speed to their gait for control.

String Trimmers

A. Before starting a trimmer, the operator must check to see if the guard is in place.

B. String trimmers shall be started with the trimmer positioned on the ground.

Edger

The cutting blade of an edger-trimmer shall be covered with a guard to prevent foreign objects from being discharged into the operator’s area or at an angle above 15 degrees from the ground.
Rotary Tillers

A. Rocks or other entanglements shall not be removed from the tines until the power has been shut off and all motion has stopped.

B. The tine area shall be operated or designed to prevent debris or other miscellaneous items from being thrown.

C. An operator shall maintain direct control of the rotary tiller. The operator shall adjust the ground speed to his/her gait for control.

Chain Saws

A. A chain saw shall be used only for cutoff work such as cutting trees, limbs, poles and beams. A chain saw shall not be used to open a hole in a solid object such as a floor, wall, or panel.

B. A chain saw shall be equipped with a positive-type on-off ignition switch that is conveniently located to allow the operator to move it into the off position without relinquishing one’s grip on the saw.

C. A manual chain oiler control, if provided on the saw, shall be located so that it can be operated without relinquishing one’s grip on the saw.

D. An engine throttle control, if provided on the saw, shall be located so that it can be operated without relinquishing one’s grip on the saw.

E. A chain saw shall have a guard that protects the throttle lever from casual contact from brush or other foreign objects.

F. A chain saw equipped with a centrifugal clutch shall have a throttle control, carburetor and clutch system so that the engine idle speed becomes lower than the clutch engagement speed if the throttle control is released, thereby allowing the chain to come to a complete stop.

G. A chain saw’s moving parts, such as a flywheel, rotating screen or clutch, shall be guarded. A saw’s chain shall be guarded adjacent to the handle area and the sawdust shall be directed away from the operator.

H. A saw’s chain shall be stopped if it is not being used for sawing.

I. A chain saw shall be carried by the top handle with the guide bar to the rear.

J. A chain saw shall not be started within 10 feet of the place it was refueled.

Environmental Hazards

Poison Ivy is prevalent on campus, often found wrapped around trees. If you should come in contact with any, apply poison ivy solution from the First Aid cabinet.
Emergencies

A. In case of a minor injury, report to Wellness Central for treatment and inform your supervisor. The employee or supervisor should report the accident to Workers’ Compensation at 774-7177.

B. In case of an emergency, dial 911 on any campus phone and/or report to McLaren Central Michigan Hospital, 1221 South Drive, Mt. Pleasant.
PART 54. POWERED GROUNDSKEEPING EQUIPMENT

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GENERAL PROVISIONS

R 408.15401 Scope.

Rule 5401. This part provides rules for the construction, the maintenance and the safe operation of powered groundskeeping and related equipment and attachments by the employer and their safe use by the employee in, around or about a place of employment.

R 408.15403 Definitions; A to E

Rule 5403. (1) “Attachment” means detachable equipment, such as, but not limited to, a mower, snow thrower, tiller or sweeper designed for use with a propulsion vehicle.

(2) “Blade enclosure” means the guard around the periphery of the rotary mower blade.

(3) “Braking distance” means the distance traveled between the point of first application of the brake to the point at which the vehicle comes to rest.

(4) “Discharge guide” means the device which directs the snow from the impeller to the deposit area, and which is rotatable to deliver the snow in the desired direction.

(5) “Edger-trimmer” means a walk behind powered machine with a rotary blade designed to edge grass in a vertical position and trim grass when adjusted to a horizontal position.

R 408.15404 Definitions; F to P.

Rule 5404. (1) “Foot protection” means footwear such as, but not limited to, safety shoes or strap-on foot guards.

(2) “Grass catcher” means a part or a combination of parts which provides a means for collecting grass clippings and other debris.

(3) “Groundskeeping equipment” means that equipment such as, but not limited to, lawn mowers, lawn and garden tractors, leaf blowers, snow throwers, shredders, compost mills and tillers used to maintain lawns, gardens, walks and drives.

(4) “Impeller” means a final power driven device which imparts energy to discharge the snow.
(5) “Power reel mower” means a grass cutting machine which uses a power source to rotate 1 or more helically formed blades about a horizontal axis to provide a shearing action with a stationary cutter bar.

(6) “Power rotary mower” means a grass cutting machine which uses a power source to rotate 1 or more blades about a vertical axis.

R 408.15405 Definitions; R and S.
Rule 5405. (1) “Riding garden tractor” means a self-propelled riding vehicle designed for general purpose lawn and garden work by use of attachments which produces less than 1500 pounds but more than 500 pounds of draw bar pull.

(2) “Riding lawn tractor” means a self-propelled riding vehicle designed for general purpose lawn work by use of separate attachment.

(3) “Riding mower” means a self-propelled riding vehicle designed specifically for cutting grass.

(4) “Rotary tiller” means a powered machine with steel tines attached to a horizontal shaft which revolves to till soil.

(5) “Shredder bagger” means a machine with a rotating device which breaks up debris such as leaves, twigs and small branches and packs it into a catcher or bag.

(6) “Single stage snow thrower” means a snow thrower which incorporates the impeller into the collector either at the end of the collector or in the middle.

(7) “Snow thrower” means a machine designed to move snow from 1 area to another.

(8) “Snow thrower collector” means an auger or similar device used to collect snow.

R 408.15406 Definitions T to W.
Rule 5406. (1) “Tip speed” means the distance a rotary blade tip covers in 1 minute, or circumference in feet times speed in feet per minute by 60.

(2) “Two stage snow thrower” means a snow thrower with the impeller as a separate unit from the collector.

(3) “Walk behind mower” means a grass cutting machine either pushed or self-propelled, controlled by an operator walking behind the unit.

(4) “Walk behind snow thrower” means a snow thrower either pushed or self-propelled, controlled by an operator walking behind the unit.

R 408.15411 Employer responsibility.
Rule 5411. An employer shall:
(a) Provide training to an operator of powered groundskeeping and related equipment regarding the operating procedures, hazards, and safeguards to the assigned job.

(b) Provide personal protective equipment necessary to protect the employee from the recognized hazards of the equipment as prescribed in Part 33, Personal Protective Equipment, R 408.13301 et seq., of the Michigan Administrative Code, and require its use.

(c) Not allow powered groundskeeping and related equipment to be operated which is not guarded as prescribed by this part, or which has a known defect that could affect the safety of the operator.

(d) Not allow powered groundskeeping equipment and attachments to be used for operations other than those for which the equipment was designed.

R 408.15412 Employee responsibilities.
Rule 5412. An employee shall:
(a) Use personal protective equipment required by this part.

(b) Report to their supervisor any equipment or safeguard which is found to be damaged.

(c) Not operate, lubricate or provide maintenance of any equipment until trained in the operation, lubrication, maintenance procedures, hazards and safeguards and has been authorized to do so.

(d) Not remove a guard except for authorized maintenance purposes. The guard shall be replaced before the machine is returned to operation.

R 408.15413 Personal protective equipment.
Rule 5413. (1) An operator of powered groundskeeping equipment subjected to a noise level in excess of that established by the division of occupational health shall be provided with hearing protection prescribed by rule 8260 of the occupational health standards of the division of occupational health.

(2) When operating powered groundskeeping equipment an operator shall be provided with and use eye protection in accordance with, and as prescribed in, Part 33, Personal Protective Equipment, R 408.13301 et seq., of the Michigan Administrative Code.

(3) An operator of a walk behind power rotary mower shall not wear open toed or canvas-type shoes.

(4) An operator of a power rotary mower shall be provided with and use foot protection as prescribed in Part 33, Personal Protective Equipment, R 408.13301 et seq., of the Michigan Administrative Code.

R 408.15414 Lubrication and maintenance.
Rule 5414. Equipment covered by this part shall be shut off or disconnected during lubrication and maintenance, except when it is necessary to make adjustments with the power on.

R 408.15415 Labeling.
Rule 5415. (1) All positions of an operating control shall be legible identifiable by durable labels.

(2) Self-propelled groundskeeping equipment shall have a durable label at the engine starting control point with the wording, or similar wording, “Caution: Be sure the operating control is in neutral before starting engine.”

(3) A walk-behind or riding rotary mower shall have labeled warning instructions at or near the discharge opening stating, “Caution: Mower shall not be used unless the opening guard or grass catcher is in place.”

(4) A riding mower shall have a durable label installed in a place where the operator can readily see it stating, “Caution:
(a) Keep all guards and shields in place.
(b) Before leaving the operator's position, shift the transmission to neutral, set parking brake and disengage attachment clutch.
(c) Wait for all movement to stop before servicing machine."

(5) A snow thrower shall have a labeled warning instruction on the discharge guide stating, "Warning — Keep hands out of discharge guide while engine is running."

(6) A labeled warning instruction "Caution — Keep hands and feet clear of collector while engine is running" shall be placed on the collector housing of a snow thrower.

(7) All warning labels shall be maintained in a legible and readable condition.

**R 408.15416 Operating rules generally.**

**Rule 5416. (1) A gas tank shall not be filled:**


(b) While the engine is running.

(c) While a source of ignition is present in the immediate area.

(2) A portable container used for refueling shall be an approved safety can with an automatic closing cap and flame arrester.

(3) Spills of gasoline which could create a hazard shall be cleaned up immediately.

(4) The drive mechanism of self-propelled groundskeeping equipment shall be disengaged before starting a motor or engine.

(5) An engine or motor governor adjustment shall not be made or changed to create an overspeed condition.

(6) An engine or motor shall be stopped and an inspection made after striking a foreign object with a machine or if a vibration develops.

(7) An engine or motor shall be stopped when clearing a clog or a jam or when removing an attachment.

(8) An area to be mowed shall be checked and cleared of any object which might be picked up and thrown by the blade.

(9) The discharge of material shall not be directed at another person.

(10) Groundskeeping equipment shall not be left running, unattended, if the operator is beyond vision or more than 25 feet away from the equipment.

(11) Groundskeeping equipment, without approved double insulation and powered by 110 volts or more, shall be connected to a grounded service outlet. Unless equipment is an approved double insulated device, its cord and any extension cords shall be of 3-wire grounded type and of a contrasting color to the foliage such as, but not limited to, orange or yellow.

(12) All rotating shafts, fly wheels, chains, belts, pulleys, and sprockets, shall be located or guarded to prevent accidental contact in accordance with and as prescribed in, Part 7, Guards for Power Transmission, being R 408.10701 to R 408.10765 of the Michigan Administrative Code.

**R 408.15420 Rescinded.**

**SPECIFIC PROVISIONS**

**R 408.15422 Construction; powered mowers; lawn and garden tractors.**

**Rule 5422. (1) A new powered lawn mower, lawn tractor, or a garden tractor and its attachments, purchased after the effective date of this part, shall meet the requirements of ANSI B 71.1-1972 standard, “Safety Specifications for Power Lawn Tractors,” which is incorporated herein by reference, and shall bear a permanently attached tag or label so indicating. This standard is available for inspection at the Lansing office of the Department of Consumer and Industry Services and may be purchased from the American National Standards Institute, 1430 Broadway, New York, New York 10018, or from the Michigan Department of Consumer and Industry Services, 7150 Harrison Drive, Box 30543, Lansing, Michigan 48909, at a cost of $4.50 each.**

**R 408.15423 – R 408.15425. Rescinded.**

**R 408.15426 Construction, snow throwers, general.**

**Rule 5426. (1) The speed of the collector shall be not more than the manufacturer’s rated speed.**

(2) The impeller of a 2-stage snow thrower shall be not more than the manufacturer’s rated speed.

(3) A snow thrower collector housing shall extend to the front of the auger travel path on both sides.

(4) The collector shall incorporate a shear bolt or slip clutch protection against a blockage of the collector.

(5) The discharge guide rotating mechanism shall not be capable of delivering snow to the operator’s area.

**R 408.15427 Construction, walk behind snow throwers.**

**Rule 5427. (1) A handle for a walk behind snow thrower shall be secured to the snowthrower to prevent unintentional uncoupling.**

(2) A positive upper limit stop or latch shall be provided for the handle of a walk behind snow thrower at the upper normal position.

**R 408.15428 Construction, riding snow throwers.**

**Rule 5428. (1) A riding snow thrower shall be provided with stops to prevent locking of the steering mechanism.**

(2) The snow thrower controls shall be accessible to the operator from the operator’s control position.

(3) A snow thrower shall have adjustable skid shoes or gauge wheels to control operating height.

**R 408.15429 Controls; self-propelled snow throwers.**

**Rule 5429. (1) The traction drive directional control lever, when provided on a self-propelled snow thrower, shall be moved forward to cause the machine to move forward and rearward to move in reverse.**

(2) The throttle control of a self-propelled snow thrower, if separate from the directional control, shall be moved forward or upward to increase speed and rearward or downward to decrease speed.

**R 408.15431 Rescinded.**

**R 408.15442 Operating rules, walk behind mowers.**

**Rule 5442. (1) A walk behind mower shall be moved across the face of a slope of more than 17 degrees, never up and down, except by use of a rope to raise and lower the mower while standing at the top of the slope.**
(2) An electric powered walk behind mower shall be shut off and disconnected from the electrical source when cleaning, repairing or adjusting.
(3) The operator shall maintain direct control of a self-propelled, walk behind mower. The operator shall adjust the ground speed to their gait for proper control.

R 408.1544 Operating rules, riding vehicles.
Rule 5443. (1) A riding vehicle shall not carry a passenger other than the operator.
(2) The source of power to an attachment of a riding vehicle shall be disengaged when the attachment is not in use or is being transported.
(3) When a riding vehicle is left unattended, the steps listed in subdivision (b) of subrule (4) of rule 5415 shall be followed.
(4) Riding groundskeeping equipment shall not be operated up or down a slope of more than 26 degrees or move across the face of a slope of more than 17 degrees.
(5) A deviation from the requirements of subrule (4) may be obtained from the department of consumer and industry services by presenting special design or modification criteria which shows an ability to perform safely on a specific slope of a greater degree without slipping or tipping.

R 408.1544 Operating rules, snow throwers.
Rule 5444. (1) When necessary to operate a snow thrower over graved areas, the snow thrower shall be placed in its highest operating position.
(2) An area to be cleared of snow shall be checked and cleared of any visible object that might stop the collector or be picked up and then thrown by the impeller.
(3) The collector clutch shall be disengaged when adjusting the deflector guide upwards and downward.
(4) An employee shall not attempt to clear the discharge guide with the engine running.
(5) An operator shall maintain direct control of a self-propelled walk behind snow thrower. The operator shall adjust ground speed to their gait for control.

R 408.1545 Shredder baggers and compost mills.
Rule 5451. (1) The power of a shredder bagger or compost mill shall be shut off and all motion stopped before moving it.
(2) A clog or a jam in a shredder bagger or compost mill shall not be cleared until the power has been shut off and all motion stopped.
(3) The hopper feed opening of a shredder bagger or compost mill shall be of such distance from the cutting knives or impeller so that an operator cannot make contact or a guarding means shall be employed. A baffle gate shall be installed at the feed opening of a hopper to reduce hazard of kick backs.
(4) The discharge opening shall be covered by a guard, container or catcher whenever the shredder bagger or compost mill is under power.

R 408.15452 Edger-trimmer.
Rule 5452. (1) The cutting blade of an edger-trimmer shall be covered with a guard to prevent foreign objects from being discharged into the operator’s area or at an angle above 15 degrees from the ground.

(2) The power shall be shut off when converting from edging to trimming operation or from trimming to edging.

R 408.15461 Rotary tillers.
Rule 5461. (1) Rocks or other entanglement shall not be removed from the tines until the power has been shut off and all motion stopped.
(2) The tine area shall be operated or shielded in such a manner as to prevent debris or other missiles from being thrown.
(3) An operator shall maintain direct control of the rotary tiller. The operator shall adjust the ground speed to their gait for control.

Michigan Occupational Safety and Health Administration
PO Box 30643
Lansing, Michigan 48909-8143
Ph: 517.332.1845

The Department of Licensing and Regulatory Affairs will not discriminate against any individual or group because of race, sex, religion, age, national origin, color, marital status, disability, or political beliefs. Auxiliary aids, services and other reasonable accommodations are available upon request to individuals with disabilities.
Appendix B – Landscape Operations Machine Shop/Equipment Training Checklist

Landscape Operations Machine Shop/Equipment Training Checklist

Employee Name: ____________________________________________ Please Print

Employee Name: ____________________________________________ Please Print

This checklist is to be completed by the supervisor of the employee. This document confirms that the above named employee has been trained on the safe operation of machine shop and landscape equipment and tools. Employee understands his/her responsibility to follow all applicable rules and regulations pertaining to said equipment, including the proper selection and use of PPE, has had all his/her questions answered fully, and is authorized to operate the following:

Please date and sign for all that apply.

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<tr>
<th>EQUIPMENT</th>
<th>DATE COMPLETED</th>
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If for any reason, as their supervisor, I believe that this person is not working with equipment safely, this authorization to use said equipment will be revoked. Below are signature(s) of person(s) verifying training and competency to operate equipment.

Supervisor Signature: ____________________________ Date:

Authorized Employee Signature: ____________________________ Date:

Cc: Supervisor File
Caren Blanzy, Safety Administrator, Smith Hall 103 – 774-7398 – Fax: 774-1303

Central Michigan University Environmental Health & Safety