

EASTERN MICHIGAN UNIVERSITY™

POWERED GROUNDKEEPING EQUIPMENT PROCEDURES MANUAL



Department of Public Safety
Health and Safety Office
1200 Oakwood
Ypsilanti, MI 48197
734.487.0794

May 2004

EASTERN MICHIGAN UNIVERSITY
POWERED GROUNDSKEEPING EQUIPMENT PROCEDURES MANUAL

TABLE OF CONTENTS

ITEM	PAGE
Purpose	1
Scope and Application	1
Definitions	1
Responsibilities	2
Supervisors	2
Employees	3
Personal Protective Equipment	3
Lubrication & Maintenance	3
Labeling	3
General Operating Rules	4
Construction	5
Powered Mowers; Lawn and Garden Tractors	5
Snow Throwers, General	5
Walk Behind Snow Throwers	5
Riding Snow Throwers	5
Controls	6
Self-Propelled Snow Throwers	6
Operating Rules	6
Walk Behind Mowers	6
Riding Vehicles	6
Snow Throwers	6
String Trimmer	7
Edger	7
Rotary Tillers	7
Chain Saws	7
Environmental Hazards	7
Emergencies	8
Training	8
Appendixes	9
Appendix 1 – Hills Greater Than 17°	10
Appendix 2 – Poison Oak / Ivy / Sumac	11
Appendix 3 – Poisonous Plants Imagery	13

PURPOSE

Eastern Michigan University's Powered Groundskeeping Equipment Procedures Manual has been written to achieve compliance with the Michigan Department of Labor Part 54, Powered Groundskeeping Equipment standard. These procedures were designed to assure the maintenance and the safe operation of powered groundskeeping, related equipment and attachments and their safe use by employees.

SCOPE AND APPLICATION

All Eastern Michigan University departments using powered groundskeeping equipment are required to comply with these procedures. This includes, but is not limited to Grounds, Athletics, Olds Rec, Housing, University Apartments and the Golf Course.

DEFINITIONS

Attachment - detachable equipment, such as, but not limited to, a mower, snow thrower, tiller or sweeper designed for use with a propulsion vehicle.

Blade Enclosure - the guard around the periphery of the rotary mower blade.

Braking Distance - the distance traveled between the point of first application of the brake to the point at which the vehicle comes to a rest.

Discharge Guide - 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.

Edge-Trimmer - 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.

Foot Protection - footwear such as, but not limited to, safety shoes or strap on foot guards.

Grass Catcher - a part or a combination of parts which provides a means for collecting grass clippings and other debris.

Groundskeeping Equipment - 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.

Impeller - a final power driven device which imparts energy to discharge the snow.

Limbing - to cut limbs from a felled tree.

Power Reel Mower - 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.

Power Rotary Mower - a grass cutting machine which uses a power source to rotate one or more blades about a vertical axis.

Riding Garden Tractor - a self-propelled riding vehicle designed for general purpose lawn and garden work by use of attachments and which produces less than 1500 pounds of draw bar pull, but more than 500 pounds of draw bar pull.

Riding Lawn Tractor - a self-propelled riding vehicle designed for general purpose lawn work by use of separate attachment.

Riding Mower - a self-propelled riding vehicle designed specifically for cutting grass.

Rotary Tiller - a powered machine with steel tines attached to a horizontal shaft which revolves to till soil.

Single Stage Snow Thrower - a snow thrower which incorporates the impeller into the collector either at the end of the collector or in the middle.

Snow Thrower - a machine designed to move snow from one area to another.

Snow Thrower Collector - an auger or similar device used to collect snow

String Trimmer - a gas powered machine equipped with a spool of string designed for cutting vegetation.

Tip Speed - the distance a rotary blade tip covers in one minute, or circumference in feet times revolution during a one minute interval.

Two Stage Snow Thrower - a snow thrower with the impeller as a separate unit from the collector.

Walk Behind Mower - a grass cutting machine either pushed or self-propelled, controlled by an operator walking behind the unit.

Walk Behind Snow Thrower - snow thrower either pushed or self-propelled, controlled by an operator walking behind the unit.

RESPONSIBILITIES

Supervisors

- Provide training to operators of powered groundskeeping and related equipment regarding the operating procedures, hazards, and safeguards to assigned jobs.
- Provide personal protective equipment necessary to protect the employee from the recognized hazards of equipment
- 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 and/or safe operation of the equipment.
- Shall not allow powered groundskeeping equipment and attachments to be used for operations other than those for which the equipment was designed.

Employees

- Wear personal protective equipment required by these procedures.
- Report defective equipment and/or missing safeguards to the supervisor.
- Shall not operate, lubricate or provide maintenance of any equipment unless trained in the operation, lubrication maintenance procedures, hazards and safeguards and has been authorized to perform these tasks.
- Shall not remove a guard except for authorized maintenance purposes. The guard shall be replaced before the equipment is returned to operation.

PERSONAL PROTECTIVE EQUIPMENT

- An operator of powered groundskeeping equipment subjected to a noise level in excess of that established by the department of Consumer and Industry Services, shall be provided with hearing protection.
- When operating Powered Groundskeeping Equipment, an operator shall be provided with and use eye protection.
- An operator of a walk behind power rotary mower, reel mower, string trimmer or sidewalk edger shall not wear open toe or canvas type shoes.
- An operator of a power rotary mower, reel mower, string trimmer or sidewalk edger shall be provided with steel toed shoes, boots, or steel toe caps.
- When tree trimming, an operator shall wear a hard hat, safety glasses and steel toe shoes.
- When spraying herbicides, an operator shall wear chemical goggles, chemical resistant gloves and any other ppe required by the nature of the job.
- When operating a chainsaw, an operator shall wear safety glasses, a hard hat, steel toed shoes and hearing protection.
- An operator of a backpack blower shall wear safety glasses.

LUBRICATION AND MAINTENANCE

- Groundskeeping equipment shall be shut off or disconnected during lubrication and maintenance, except when it is necessary to make adjustments with the power on.
- When servicing the blade on any piece of equipment, the spark plug shall be disengaged to prevent accidental ignition.
- A maintenance checklist shall be kept for each piece of groundskeeping equipment.

LABELING

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

- Self-propelled groundskeeping equipment shall have 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 and readable condition.
- 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.”
- 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.”
- Snow throwers shall have a labeled warning instruction on the discharge guide stating, “Warning - Keep hands out of discharge guide while engine is running.”
- 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

- Gas tanks shall not be filled:
 - Indoors, except in areas conforming to the requirements of the state fire marshal rules.
 - While the engine is running.
 - While a source of ignition is present in the immediate area.
- A portable container used for refueling shall be an approved safety can with an automatic closing cap and flame arrester.
- Gasoline spills shall be cleaned up immediately.
- The drive mechanism of self-propelled groundskeeping equipment shall be disengaged before starting the motor or engine.
- An engine or motor governor adjustment shall not be made or changed to create an over speed condition.
- An engine or motor shall be stopped and an inspection made after striking a foreign object with a machine or if a vibration develops.
- An engine or motor shall be stopped when clearing a clog, jam or when removing an attachment.
- An area to be mowed shall be checked and cleared of any object which might be picked up or thrown by the blade.
- The discharge of material shall not be directed at another person.
- Groundskeeping equipment shall not be left running, unattended, if the operator is beyond vision of more than twenty-five feet away.

- Groundskeeping equipment, without approved double insulation and powered by 110 volts or more, shall be connected to a grounded service outlet. Unless the 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.
- All rotating shafts, fly wheel chains, belts, pulleys and sprockets, shall be located or guarded to prevent accidental contact.
- Should an operator deem a piece of groundskeeping equipment to be unsafe or in need of repair, a dual tag shall be attached to the equipment so indicating, and the removable portion shall be submitted to a foreperson or supervisor.

CONSTRUCTION

Powered Mowers; Lawn and Garden Tractors

- All new powered lawn mowers, lawn tractors, or garden tractors and their attachments shall meet the requirements of ANSI B 71.1-1972 standard, "Safety Specifications for Power Lawn Tractors" and shall bear a permanently attached tag of label so indicating.

Snow Throwers, General

- The speed of the collector shall not be more than the manufacturer's rated speed.
- The 2-stage impeller of a snow thrower shall not be more than the manufacturer's rated speed.
- A snow thrower collector housing shall extend to the front of the auger travel path on both sides.
- The collector shall incorporate a shear bolt or slip clutch protection against a blockage of the collector.
- The discharge guide rotating mechanism shall not be capable of delivering snow onto the operator's area.

Walk Behind Snow Throwers

- A handle for a walk behind snow thrower shall be secured to the snow thrower to prevent unintentional uncoupling.
- 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 riding snow thrower shall be provided with stops to prevent locking of the steering mechanism.
- 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.

CONTROLS

Self-Propelled Snow Throwers

- The traction drive directional control lever shall be moved forward to cause the machine to move forward and rearward to move in reverse.
- The throttle control, if separate from the directional control, shall be moved forward or upward to increase speed and rearward or downward to decrease speed.

OPERATING RULES

Walk Behind Mowers

- 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.
- An electric powered walk behind mower shall be shut off and disconnected from the electrical source when cleaning, repairing, or adjusting.
- The operator shall maintain direct control of a self-propelled, walk behind mower. The operator shall adjust the ground speed to his/her gait for proper control.

Riding Vehicles

- A riding vehicle shall not carry a passenger other than the operator.
- 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.
- Before a riding vehicle is left unattended, the following steps must occur:
 - Before leaving the operator's position, shift the transmission to neutral, set parking brake and disengage attachment clutch.
- Riding groundkeeping 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.
- For hills greater than 17 degrees, see Appendix 1.

Snow Throwers

- When necessary to operate a snow thrower over graveled areas, the snow thrower shall be placed in its highest operating position.
- An area to be cleared of snow shall be checked and cleared of any visible objects that might stop the collector or be picked up and thrown by the impeller.
- The collector clutch shall be disengaged when adjusting the deflector guide upwards and downwards.
- An employee shall not attempt to clear the discharged 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 his/her gait for control.

String Trimmer

- Before starting trimmer, the operator must check to see if guard is in place.
- String trimmer shall be started with the trimmer positioned horizontally on the ground.

Edger

- The cutting blade of an edge 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

- Rocks or other entanglements shall not be removed from the tines until the power has been shut off and all motion stopped.
- The tine area shall be operated or designed to prevent debris or other missiles from being thrown.
- 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 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.
- 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 his or her grip on the saw.
- A manual chain oiler control and/or an engine throttle control, if provided on a chain saw, shall be located so that it can be operated without relinquishing a secure grip on the saw.
- A chain saw shall have a guard that protects the throttle lever from casual contact from brush or other foreign objects.
- A chain saw equipped with a centrifugal clutch shall have a throttle control, carburetor, and clutch systems 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.
- 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.
- A saw's chain shall be stopped if it is not being used for sawing.
- A chain saw shall be carried by the top handle with the guide bar to the rear.
- A chain saw shall not be started within 10 feet of the place where it was refueled.

Environmental Hazards

- Poison ivy is prevalent in Michigan - often found wrapped around trees. If you should come in contact, apply poison ivy rinsing solution from First Aid cabinet.

- For poison ivy information, see Appendix 3.
- In case of a bee sting, report to Business Health Services if treatment is needed and inform your supervisor.
- If employee is allergic to a bee stings, they need to carry the appropriate kit and inform their supervisor immediately, if stung.

Emergencies

- In case of a minor injury, report to Business Health Services for treatment and inform your supervisor. Also, complete an accident report and fax it to Risk Management.
- In case of emergency, dial 911 on any campus phone or report to St. Joseph's hospital.

Training

- Prior to an employee being assigned to groundskeeping work, training on the equipment, hazards, personal protective equipment and required safety procedures shall be provided.
- Employees shall be trained whenever a new piece of equipment is introduced and whenever employees demonstrate a lack of knowledge.
- All training shall be documented, see Appendix 2

APPENDIXES

Hills Greater than 17 Degrees

Ann Street Lot – Rear

Boone – North Side

Bowen Lot

Business & Finance – Northeast / West

Convocation Center – East Side

Halle – Southwest Side

Hoyt Conference Center – Rear

Huron Berm – Between Oakwood & Mayhew

Mayhew Lot

McKenny – Washtenaw Berm

Oakwood Lot – North End

Porter – East Side

Rackham – Southwest Side

Varsity Baseball Berm – Rear

Welch – East

Westview – Playground / West Side of Apts. / Westview Rd.

Westview Drive – Northeast End

**What to do about
Allergic Reactions to ...**

**Poison Ivy
Poison Sumac
Poison Oak**

To avoid these plants, learn to identify them. All three of these plants have poisonous leaves, branches and roots. All bear small white hard berries along their branches, rather like peppercorns, but it may be difficult to distinguish a plant by its berries because not all plants have berries during every season.

Poison ivy is the most common of these plants in Michigan. It grows as a vine, shrub, or bush with green leaves in summer and red leaves in autumn. In winter, its bare branches remain poisonous. Its leaves grow in threes, so remember the rhyme:

“Leaves of three, beware of me!”

Other plants are less common in Michigan. Poison sumac can be found in wetlands in lower Michigan. Poison oak is found on the east and west coasts and grows as a bush; it also has “leaves of three” but its leaves are more lobed than poison ivy’s leaves.

When in doubt avoid touching a plant!



What Are Symptoms of Allergic Reactions to Poison Ivy, Poison Sumac, and Poison Oak?

Symptoms include localized skin rash with redness and itching, with blisters developing from six hours to several days after contact. Blisters often open and are runny, then gradually become crusted.

How Did I Get It?

Poison ivy, poisons sumac, and poison oak excrete an oil which can cause some people to develop an allergic reaction. A person's reaction to these plants may vary during his or her lifetime: a person may not react one time but react the next.

Exposure can occur by:

- Touching leaves, roots and branches.
- Touching clothes, pets, or other items.
- Breathing smoke from burning plants.

Contrary to popular belief, the liquid from blisters does not spread the rash to other parts of the body or to other people. It may appear to spread because some parts of the body react more slowly than others. Also, an individual can spread plant oil to other body parts by touching him or herself.

What Can I Do About an Allergic Reaction?

Prevention is the best medicine. You can prevent or minimize the reaction if you have come in contact with a plant by washing the exposed area of your body, plus all clothes worn at the time of contact and pets with a strong soap as soon as possible after exposure. Reactions will eventually go away even if untreated.

However, you can make yourself more comfortable by:

- To reduce itching, soak the affected areas in a solution of cornstarch or baking soda in tepid water for 10 minutes, 4 to 6 times a day. After soaking, apply calamine lotion, Caladryl, Rhugel, hydrocortisone or a similar drying product.
- Resist scratching as much as possible. Scratching can open the skin and may lead to infection. You may want to wear gloves or socks on your hands to keep from scratching while sleeping.
- If you have difficulty sleeping because of itching, take an antihistamine (e.g. Benadryl) to reduce itching. Take it before going to bed since it will make you drowsy.

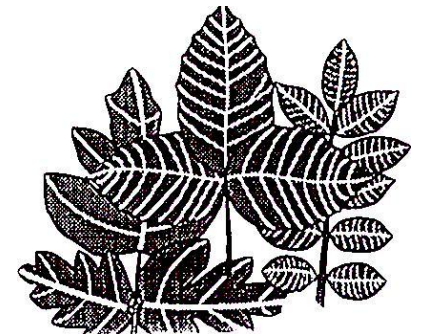
In severe cases, a clinician may prescribe a steroid cream to apply 4 to 6 times a day. The steroid interferes with your body's ability to react to the poison ivy. Do not use it if you have an infection, because it also interferes with your body's ability to fight infection.

In very severe cases, or when the eyes, mouth or genitals are involved, you may be prescribed steroid pills to be taken by mouth. To take the pills, follow instructions carefully.

When Should I See a Clinician?

See a clinician if:

- You do not get relief from the measures above within 3 to 4 days.
- You develop a fever over 100 degrees.
- You notice signs of infection such as pus.





“Poison Ivy” - Toxicodendron Radicans



“Poison Oak” - Toxicodendron Pubescens



“Poison Sumac” - Toxicodendron Vernix

“Poison Ivy”

Toxicodendron radicans from en:Image:Poison ivy lg.jpg

-Public domain This work has been released into the public domain by its author, Esculapio. This applies worldwide.

Esculapio grants anyone the right to use this work for any purpose, without any conditions, unless such conditions are required by law.

http://en.wikipedia.org/wiki/File:Toxicodendron_radicans.jpg

“Poison Sumac”

Toxicodendron vernix

-Source: Robert H. Mohlenbrock @ USDA-NRCS PLANTS Database / USDA SCS. 1991. Southern wetland flora: Field office guide to plant species. South National Technical Center, Fort Worth, TX.

-This image or file is a work of a United States Department of Agriculture employee, taken or made during the course of an employee's official duties. As a work of the U.S. federal government, the image is in the public domain.

http://commons.wikimedia.org/wiki/File:Tove_002_lhp.jpg

“Poison Oak”

Toxicodendron pubescens.jpg

-From http://plants.usda.gov/java/profile?symbol=TOPU2&photoID=toqu_001_ahp.tif

-Robert H. Mohlenbrock. USDA SCS. 1991. Southern wetland flora: Field office guide to plant species. South National Technical Center, Fort Worth, TX. Courtesy of USDA NRCS Wetland Science Institute.

http://commons.wikimedia.org/wiki/File:Toxicodendron_pubescens.jpg