



**Michigan
Technological
University**

**Integrated Pest Management Plan
University Landscapes**

100 Facilities Building
1400 Townsend Drive
Houghton, Michigan 49931

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DEFINITIONS

DPSPS	Department of Public Safety and Police Services
EHS	Department of Environmental Health and Safety
EGLE	Department of Environment, Great Lakes, and Energy
FEMA	Federal Emergency Management Association
ICT	Incident Command Team
ICS	Incident Command System
IPM	Integrated Pest Management
ISO	Initial Sign-On
JSA	Job Safety Analysis
LARA	Department of Licensing and Regulatory Affairs
MDARD	Michigan Department of Agriculture and Rural Development
MSU	Michigan State University
NREPA	Natural Resources and Environmental Protection Act
PA	Public Act
PIPP	Pollution Incident Prevention Plan
PPE	Personal Protective Equipment
SDS	Safety Data Sheet
TMQ	Threshold Management Quantity
University	Michigan Technological University
USEPA	United States Environmental Protection Agency



1. INTRODUCTION

Michigan Technological University (University) has developed this Integrated Pest Management (IPM) Program to ensure that pesticide application at the University is performed consistently and in accordance regulatory guidance. As summarized, by the Michigan Department of Agriculture and Rural Development (MDARD), “IPM is a pest management system that utilizes all suitable techniques to prevent pests from reaching unacceptable levels or to reduce an existing population to an acceptable level. An emphasis is placed on manipulation of the pest environment to the point that it will not support a pest population.”

The following subsections outline the regulatory statutes and site-specific information for exterior applications conducted by the Grounds Department, including but not limited to, the application of herbicide, pesticide, and similar products related to ornamental and turf pest management.

1.1 Regulatory Framework

The University is required to develop and maintain an IPM Program as defined by the *Natural Resources and Environmental Protection Act (NREPA) 1994 Public Act 451, Part 83, Pesticide Control and Regulation 637, Pesticide Use* as amended. These laws are further described as follows:

- **Part 83 Pesticide Control** - The statute that regulates pesticide products including their use, the people that apply them, licensing requirements, and penalties.
- **Regulation 637 Pesticide Use** – The statute that establishes rules for notification, application, mixing and loading facilities, washing and rinsing facilities, personal protective equipment (PPE), integrated pest management, and penalties.

These statutes, in conjunction with Regulations 633, 636, and 640 establish the rules and protocols related to the storage, application, and disposal of pesticides in the State of Michigan. These laws can be reviewed and downloaded from the web located at https://www.michigan.gov/mdard/0,4610,7-125-1569_16988_35291---,00.html, or you may contact MDARD at 800-292-3939.

The University is included in these statutes as a “public building”, or for the purposes of this plan, public property. These statutes require that certain conditions must be met prior to making a pesticide application (other than sanitizers, germicides, disinfectants, or anti-microbial agents) in schools, day care facilities, public buildings or health care facilities.

Specifically, these conditions include the following:

- Pesticide applicators must be trained under an approved IPM program; and,
- There must be a verifiable IPM program in place for all buildings and multi-use areas.

Violations of Michigan’s pesticide use laws are misdemeanor offenses and are punishable by administrative fines of up to \$1,000 per count, or, upon a conviction in a court of law, may be punishable by fines of up to \$5,000 per count and/or imprisonment. MDARD is the enforcing agency for pesticide use requirements and MDARD may conduct routine unannounced inspections to verify compliance with IPM requirements.



An IPM program is intended to assist in reducing the incidence of pest infestation and thereby reducing the need for chemical pesticide applications. The IPM is also intended to satisfy the regulatory requirement of having an IPM program in place for the campus grounds and gardens.

1.2 Key Terms

Operations of the Grounds Department require that limited quantities of pesticides, herbicides, and similar chemicals be temporarily stored or mixed on campus

- **Certified Applicator** - A person authorized to use and supervise the use of a restricted use pesticide. You must receive a passing score on one or more certification exams administered by MDARD to become a certified applicator
- **Commercial Applicator** - A person who is not a private agricultural applicator (i.e., a farmer, or someone growing a crop for an agricultural purpose) and who meets one of the following conditions:
 - Required to be a registered technician or certified applicator under PA 451, section 8314 requires a person to be a certified applicator to apply any pesticide (other than a sanitizer, disinfectant, bactericide or general-use ready-to-use product), other than for a private agricultural purpose, in the course of their employment.
 - Required to use or supervises the use of restricted use pesticides.
 - Required to present themselves to the public as being in the business of applying pesticides.
- **Commercial Building** - is located and that is frequented by the public.
- **Concentration** - The volume of pesticide formulation and the volume of carrier used to create an end use dilution.
- **Day Care Center** - A facility, other than a private residence, which receives one or more preschool or school-age children for care for periods of less than 24 hours a day, at which the parents or guardians are not immediately available to the child, and which is licensed as a child care organization by the Department of Licensing and Regulatory Affairs (LARA).
- **General Use Pesticide** - A pesticide that may be purchased by an individual who is not required to be a certified applicator.
- **IPM** - A pest management approach that uses all suitable techniques in a total management system to prevent pests from reaching unacceptable levels or to reduce existing populations to acceptable levels.
- **Pest** - An insect, rodent, nematode, fungus, weed, or other form of terrestrial or aquatic plant or animal life or virus, bacteria, or other microorganism, or any other organism that the director of MDARD declares to be a pest under PA 451, Part 83, Section 8322, except viruses, fungi, bacteria, nematodes or other microorganisms in or on living animals.
- **Pesticide** - A substance or mixture of substances intended for preventing, destroying, repelling, or mitigating pests or intended for use as a plant regulator, defoliant, or desiccant. Note that products such as Weed-and-Feed[®], RoundUp[®], or Raid[®] are pesticides.



- **Public Building** - A building that is owned or operated by a federal, state, or local government, including public universities.
- **Ready-To-Use Pesticide** - A pesticide which is applied directly from its original container consistent with label directions, such as an aerosol insecticide or rodent bait box, which does not require mixing or loading prior to application. Granular weed-and-feed products applied using rotary or drop spreaders are NOT considered to be ready-to-use and for nearly all situations an applicator applying the product as part of their non-agricultural work duties must be certified to use it.
- **Registered or Certified Applicator** - A classification of applicators authorized to apply general use pesticides for a commercial or private purpose as a scheduled and required work assignment.
- **Threshold Level** - The level of pest numbers or pest infestation that can be tolerated, either economically or aesthetically.

1.3 Facility Identification Information

Operations of the Grounds Department require that limited quantities of pesticides, herbicides, and similar chemicals be temporarily stored or mixed on campus. Batches of pesticide are also mixed and loaded on campus. **Table 1** provides a summary of the basic facility information for campus pesticide storage, loading, and mixing operations.

TABLE 1 – FACILITY IDENTIFICATION INFORMATION

Facility Name:	Facilities Storage Building
Facility Street Address:	1223 Garnet Street Houghton, MI 49931
Name of Facility Owner:	Michigan Technological University
Facility Mailing Address:	Michigan Technological University Department of Facilities Management Building 44 1400 Townsend Drive Houghton, MI 49931
Facility Phone Number:	(906) 487-2303
24-Hour Emergency Phone Number:	(906) 487-0001
Nearest Surface Water Body/Distance:	Drainage Ditch/300 feet

1.4 Roles and Responsibilities

The safety, health, and environmental policies and procedures presented herein apply to all students, contractors, visiting scholars and scientists, and employees—regardless of rank—involved in activities associated with the operation of Michigan Technological University or performed on



University-owned or leased property. The following subsections outline the roles and responsibilities of campus personnel responsible for the implementation and maintenance of this IPM Plan.

1.4.1 Environmental Health and Safety (EHS)

The University's EHS Department was integral in IPM Plan development and implementation. In general, EHS provides technical support to assist the University administration in developing and implementing a safety, health, and environmental program and evaluating its effectiveness. EHS' responsibilities include:

- Acting as a University liaison with local, state, and federal regulatory agencies.
- Keeping those responsible for compliance informed of changes in safety, health, and environmental regulations.
- Providing the technical resources needed by the University to protect the safety and health of students and employees.
- Maintaining the safety, health, and environmental records necessary to document the University's programs and as required by specific regulations.

The following EHS personnel are responsible for providing oversight and ensuring the regulatory compliance of the IPM Plan. EHS personnel is also responsible for documenting and retaining any notices related to regulatory compliance or violations.

Primary Point of Contact

Name: Scott Wendt
Department: Environmental Health and Safety
Title: Health and Safety Manager
Office Phone: (906) 487-1496
Mobile Phone: (231) 420-2653

First Alternate

Name: Chris Maxson
Department: Environmental Health and Safety
Title: General Safety Specialist
Office Phone: (906) 487-3020
Mobile Phone: (810) 444-2020

1.4.2 Facilities Management

The Department of Facilities Management is responsible for the development and implementation of this IPM Plan. Facilities Management staff is responsible for ensuring that all aspects of the IPM Plan are being implemented consistently across campus, including the following:

- Educating our staff so that they understand the characteristics of common pests on campus, appropriate responses to those pests, and any associated monitoring of locations and populations.



- Training our staff so that they are certified in pest management protocols and associated pest control tactics including sanitation, structural maintenance, and non-chemical methods to be used in conjunction with pesticide applications.
- Ensuring that communication standards are in-place including, but not limited to notifications required for regulatory compliance, inquiry management, and employee “right to know” standards.
- Coordinating with vendors to ensure that cost-effective and environmentally responsible tools and materials are being utilized to effectively manage pests.
- Investing in natural and non-chemical means of pest management through experimental applications and evaluating programmatic changes that achieve a more sustainable approach to pest management.

The following Facilities Management personnel are responsible for overseeing the implementation of the IPM Plan.

Primary Point of Contact

Name: Dan Liebau
Department: Facilities Management
Title: Site Engineer
Office Phone: (906) 487-3037
Mobile Phone: (906) 370-0524

First Alternate

Name: Quincy Higgins
Department: Facilities Management
Title: University Gardener
Office Phone: (906) 487-2722
Mobile Phone: (906) 370-7846

The Department of Facilities Management also has a 24-hour emergency line that may be contacted to report a spill or uncontrolled release of a pollutant. Personnel that are not trained to respond to a spill should contact the Department of Public Safety and Police Services (DPSPS) at (906) 487-2216. In the event of an emergency, personnel should contact 911.

1.5 Emergency Response Coordination

The University recognizes the importance of preparing to deal with emergency situations and has an Incident Command Team (ICT) in place to do so. The ICT utilizes guidelines established by the Federal Emergency Management Association’s (FEMA) Incident Command System (ICS). The ICS is a standardized, on-scene, all hazards incident management concept that allows its users to adopt an integrated organizational structure in order to provide for the safety of university personnel, achieve tactical objectives, and use resources efficiently and effectively. Emergency spill notifications and cleanup coordination may be routed through the ICT if conditions warrant, most notably if off-campus properties are impacted. Notifications and follow-up reporting regarding reportable quantities of released material will be coordinated by Facilities Management and documented by EHS.



2. ADMINISTRATION

The purpose of this plan is to ensure that the campus community, including personnel performing the work, is protected from hazards related to pest management, while also ensuring compliance with the regulatory statutes outlined in the preceding section. Employee safety and mitigation of public exposures will be managed through the implementation of this IPM Plan and specifically, the administrative controls established in the following sections.

2.1 Communication

Chemical applications for the purposes of reducing pest populations and turf management can be a divisive issue, particularly as it relates to perceptions about human health and the environment. As such it's critical that communication standards for the IPM Plan are well defined and maintained by Facilities Management.

In most cases it's anticipated that communication will be between two parties; technical staff who are administering the IPM Plan and the community members who have questions or concerns related to the pest management practices being implemented on campus.

2.1.1 Technical Staff

The Grounds Manager and University Gardener will provide direction and oversight of the technical staff performing pesticide and herbicide applications. Communication considerations will include non-verbal communication for example, the optics of personnel applying products in chemical resistant personal protective equipment (PPE), to appropriate responses to inquiries from the public while performing their work.

2.1.1.1 Training

The aspects of the IPM Plan will be managed through regular training and education of our technical staff, as required by Regulation 637, Pesticide Use, Rule 14. The rule requires that any person who applies a pesticide, (other than a sanitizer, germicide, disinfectant or antimicrobial agent), in a school, day care center, public building, or health care facility, to participate in a verifiable IPM training program which is approved by MDARD.

In accordance with MDARD's guidance, the University requires that personnel engaged in the application of pesticides and herbicides review the *State of Michigan Integrated Pest Management Training Manual (December 2009)* prepared by MDARD's Pesticide & Plant Pest Management Division, IPM Steering Committee.

Ensuring compliance with the IPM Plan and training requirements will be the responsibility of the Grounds Manager. Training documentation will be retained in the employees personnel file. Licensing and certification of personnel will be on a case by case basis, as necessitated by the work.



2.1.1.2 Signage/Markings

When making an application of pesticides, *other than a general-use ready-to-use pesticide*, technical staff will place the appropriate signs or markers at the primary points of entry to the treated area. If controlled points of entry are not readily discernible, then signs or markers will be posted around the perimeter of the treated area. It is the responsibility of Grounds Manager (or his/her designated representative) to ensure that the appropriate signs are posted.

Postings will remain in place at least 24 hours following application. Postings will be in compliance with Regulation 637, Rule 11(2). Signs will be at least 4 inches high by 5 inches wide and shall depict a picture of an adult and child walking a dog on a leash. The illustration will depict, using a diagonal line across the circle, that this action is prohibited. Specifically, postings will appear similar to the sign shown below with same information printed on both sides of the sign.



2.1.2 Campus Community

The intent of these interactions will be to educate campus community members pest problems on campus, their causes, and methodologies prescribed in the IPM Plan to mitigate them. Simply having informed individuals who will identify and report potential pest problems will contribute greatly to managing pest populations on campus.

2.2 Documentation

Accurate and timely recordkeeping is an important component of the IPM Plan both from a pest management and employee safety perspective. The following subsections outline required documentation that should be maintained by the Grounds Manager.

2.2.1 Sighting Log

It is important for the Grounds Manager and other administrative staff to communicate with department pesticide applicators to ensure proper implementation of the IPM Plan. To meet this goal, a Pest Sighting Log and will be used as part of the communication process.

A Pest Sighting Log will be used by personnel to document reports of pests or and/or indicators of the presence of pests. The Pest Sighting Log will be kept in a convenient location and consulted by personnel during routine inspections. All departmental staff involved in grounds maintenance and related pest management will be responsible for ensuring that the Pest Sighting Log is regularly updated. The Grounds Manager will be responsible for ensuring that the log is available to departmental staff and that reports are being documented accordingly.

The Pest Sighting Log provides staff with specific problem areas to follow-up on and ensures ongoing communication between the campus community and Facilities Management. The most



important aspect of the Pest Sighting Log is that it incorporates students, faculty, and staff in the process of pest control, the first step toward educating them about how their daily practices influence pest populations.

A departmental Pest Sighting Log is included in **Attachment A**.

2.2.2 Application Records

As a standard practice, pest control actions will be recorded on an Application Record. The Application Record will generally describe the pest encountered, pest conducive conditions, any action performed, and the pesticide that was applied. Minimally, application records will include the following information prescribed by MDARD:

- Campus location or zone as applicable and the location where pesticides were applied.
- The date of service.
- The target pest(s).
- An inspection report, including the number of pests found or reported (this information may be found in the sighting log), and the conditions conducive to pest infestation.
- Pest management recommendations made by the applicator, such as structural or habitat modification.
- Structural or habitat modifications or other measures initiated as a part of the IPM program.
- The brand name, USEPA registration number, concentration and total amount of pesticide(s) used.
- The name of the applicator.
- The method and rate of application.

A departmental Application Record is included in **Attachment B**.

2.2.3 Applicator Credentials

A person who applies a pesticide (other than a sanitizer, germicide, disinfectant, or anti-microbial agent) in schools, public buildings, or health care facilities **MUST** have been IPM-trained using training approved by MDARD. Approved IPM training includes use of MDARD's self-study manual and/or attendance at an MDARD approved IPM training session. IPM training credentials do not expire, so the training only needs to occur once.

University employees who have obtained their IPM training certificate may use a *general-use ready-to-use product* as defined in **Section 1.2** without being certified or registered. However, whenever possible, pesticide applications should be conducted by personnel responsible for pest control at the University or by a licensed and certified professional applicator.

Persons who use a pesticide product which is NOT ready-to-use, other than a sanitizer, germicide, disinfectant, or antimicrobial agent, *must* be a commercially certified or registered pesticide



applicator. Examples of situations where the applicator must be commercially certified or registered include:

- When pesticides are mixed and applied from a compressed air sprayer such as a hand-can or backpack sprayer.
- When pesticides such as weed-and-feed are put into a granular spreader, such as a lawn weed-and-feed spreader, for application.

Commercially certified applicators must meet the following criteria to qualify for an applicator certification.

- Must be 18 years of age or older.
- Submit appropriate fee and a completed application.
- Must pass the commercial core exam and a minimum of one category exam in the applicant's area of pesticide application. If the applicator applies for more than one category, all exams must be passed before a credential will be issued.
- Must pass all exams with a score of 70% or better before a credential will be issued.

Outside contractors who conduct pesticide applications at the University, other than use of a sanitizer, germicide, disinfectant or anti-microbial agent, must be **licensed** and **certified**. Information for commercial applicators can be obtained from MDARD website to verify that the outside contractor holds a valid pesticide applicator business license.

2.3 Special Considerations

Although the University is generally comprised of campus grounds and public buildings, there are a variety of other services and events that are hosted and/or otherwise made available to our campus community.

Current properties requiring special consideration include the following:

- Little Huskies Child Development Center; and,
- MTU Preschool, Inc.

The following sections identify those areas or properties that require considerations that extend beyond the scope of public buildings as defined by MDARD.

2.3.1 Day Care Centers

The University provides routine grounds maintenance at two daycare centers on campus. In addition, K-12 students are routinely present on campus, including residency in the summer months as part of youth programs associated with academics and athletics.

2.3.1.1 Annual Notification to Parents/Guardians

In September of each year the day care center's administrator shall provide written notification to parents and guardians of children attending the facility that they will receive notification before



any pesticide application, other than a bait or gel formulation, is made on the property. The notice shall be on a form that contains statements informing parents /guardians that pesticides may periodically be applied at the day care property and that parents/guardians will be notified of such pesticide applications. The form will state that in the case of an emergency, such as an infestation of stinging insects, pesticides may be applied without prior notice, but that notification will be provided after the emergency application occurs.

This annual notification shall be in writing and shall specify two methods by which advance notice of the applications of a pesticide will be given at least 48 hours before the application. The first method shall be by posting at the primary points of entry to the day care center. Subject to a request from the parent or guardian for notification by first class US mail, the second method shall be by at least 1 of the following methods:

- Posting in a public, common area of the school or day care center, other than an entrance;
- Contacting the parent or guardian of a child under the care of the day care center via email;
- Contacting the parent or guardian of a child under the care of the day care center via telephone call or a recorded voicemail message.
- Providing the children under the care of the day care center with a written notice to be delivered to their parents or guardians.
- Posting on the day care center's website.

The annual notice shall state that in addition to the methods of notice provided above, parents or guardians are entitled to receive the notice by first-class US mail postmarked at least three days before the application, if they so request, and the manner in which such a request shall be made.

A sample form for the annual notification is included as **Attachment C**.

2.3.1.2. Advance Notice of Pesticide Use

As stated in the annual notification to parents/guardians, the Advance Notice of Pesticide Use must be delivered at least 48 hours prior to the anticipated treatment and in the manner(s) described in the annual notice to parents/guardians described in the preceding section. Recall that notice must be postmarked at least three days prior to the treatment for those parents/guardians that requested notice by first class mail.

The Advance Notice of Pesticide Application form will contain the following information:

- A statement that a pesticide is expected to be applied.
- The target pest(s).
- The approximate location of the application.
- The date of the application
- The name, telephone number, and if available, e-mail address of a contact person at the day care center responsible for maintaining records with specific information on pest infestation and actual pesticide application as required by the State of Michigan.



- A toll-free telephone number for a national pesticide information center, National Pesticide Information Center at Oregon State University 800-858-7378 and the telephone number for MDARD, 800-292-3939.
- Note that advance notices must still be provided to the parents/guardians of children attending the day care center for treatments conducted **during periods of vacation or holidays**.

A sample advance notification form is included as **Attachment D**.

2.3.1.3. Pesticide Application Restrictions

As required by Michigan law under Act 451, Part 83, Pesticide Control, Section 8316(6) and under Regulation 637, Rule 15, there are certain restrictions pertaining to use of pesticides at schools, including the following:

- Liquid spray or aerosol insecticide applications shall not be made in a room of a school building unless the room will remain **unoccupied for at least four hours** UNLESS the product label requires a longer reentry period, in which case the more restrictive requirement must be met.
- Liquid spray pesticides used for turf or ornamental applications may not be made on school grounds within 100 feet of occupied classrooms during normal school class hours or when persons are using the treatment area.
- The pesticide applicator shall notify the school's/day care center's building manager of any reentry periods that are required by the product label.



3. IMPLEMENTATION

The administrative processes detailed in the preceding section establish the operating framework for University personnel applying pesticides on campus. While communication and documentation are critical to the successful implementation of the IPM Plan, the actual procedures that are used by personnel performing the work will control pest populations and ensure the health and safety of the campus community. IPM Plan implementation will be managed as summarized in the following subsections.

3.1 Planning and Preparation

Pesticide applications at the University shall only be conducted by an applicator who has obtained their IPM training certificate and shall be made in accordance with the administrative processes outlined herein. All pesticide applications must be made in a manner that is consistent with the pesticide label directions, as required by State and Federal law.

3.1.1 Management Strategy and Pest Biology

This IPM Plan requires that all available methods and strategies for controlling pests are considered when determining an appropriate course of action. When considering methods to utilize for pest control, personnel shall consider the impact of human health and the environment. The pest control method should also consider the effectiveness of the treatment for pest reduction while mitigating adverse impacts on human health and the environment.

To do so each occurrence of pests requires a threshold, or level of pest density that can be tolerated. IPM is site-specific and allows for scaling of corrective measures based on acceptable levels of infestation. For example, different numbers of pests may be tolerated at different sites. The number of pests that can be tolerated at each target site is determined and noted on the IPM program specific to that site. In many cases, the acceptable level may be zero. Setting thresholds will eliminate preventative spraying, curtails excessive pesticide application, and encourages good inspection methods and administrative controls.

Prior to the application of pesticide staff should implement a management approach that minimally considers the conditions that are present that are allowing the pests to thrive. Actions should include corrective measures that eliminate materials that are attracting or harboring pests. To that end, it's also important for staff to have a basic understanding of pest biology. Employees engaged in the management of pests will need a general understanding of a variety pest behaviors including, but not limited to population density, nesting habits, and growth cycles.

3.1.1.1 Management Strategy

IPM requires that actions are taken to prevent pests from becoming a problem, such as utilizing pest resistant products and landscaping, disease-resistant plants, or caulking cracks to keep insects or rodents from entering a building. Rather than simply eliminating the pests that are currently present, IPM dictates that environmental factors that affect the pest and its ability to thrive be managed.

The most effective, long-term way to manage pests is by using a combination of methods generally characterized by the following categories.



- **Biological Controls** - Include the use of *natural enemies*—predators, parasites, pathogens, and competitors—to control pests and their damage. Invertebrates, plant pathogens, nematodes, weeds, and vertebrates have natural enemies that should be evaluated.
- **Cultural Controls** – Include practices that reduce pest establishment, reproduction, dispersal, and survival. For example, changing irrigation practices can reduce pest problems, since too much water can increase root disease and weeds.
- **Physical Controls** – Include killing pests directly, block pests out, or make the environment unsuitable for survival. Traps for rodents are an example of mechanical control. Physical controls include mulches for weed management, steam sterilization of the soil for disease management, or barriers such as screens to keep birds or insects out.
- **Chemical Controls** - Pesticides will only be used when needed and in combination with other approaches for more effective, long-term control. Pesticides are selected and applied in a way that minimizes their possible harm to people, non-target organisms, and the environment. Applicators should use the most selective pesticide that will do the job and be the safest for other organisms and for air, soil, and water quality. Examples of controlled or limited applications might include using pesticide bait stations over sprays and spot treatments for weed control instead of broadcast applications over a larger area.

Specific management considerations defined by MDARD should include sanitation, exclusion, reservoir reduction, harborage reduction, and population reduction. Each of these strategies are included under the generic categories outlined above and are defined below.

- **Sanitation** - A reduction of the food and water resources that are attractive to pests. Minimizing the food and water resources available to the pests will greatly reduce the pest population without the need for pesticides.
- **Exclusion** - The use of caulk, mortar, screens or similar materials to reduce or eliminate the entry of pests into a structure or building.
- **Reservoir Reduction** - Includes techniques that eliminate features that attract pests, such as moving a dumpster or waste receptacle away from a building so that pests that are attracted to the dumpster are not drawn closer to the building.
- **Harborage Reduction** – Eliminating the habitat that provides a home (or harborage) to pests. For example, cleaning old equipment from a storage room will reduce harborage for mice. Mowing grass around a building will reduce the cover and harborage for insects and rodents.
- **Population Reduction** – Utilizing controls such as mechanical traps, repellents, or toxicants to drive away or kill pests. Chemical or biological pesticides may be utilized to reduce pest populations.

3.1.1.2. **Pest Biology**

The method used for pest control shall take into consideration the relationship between pest biology and pest management methods, giving due consideration to the impact on human health and the environment. When chemical controls are necessary, this program will attempt to use products that are least toxic to human health and the environment, while remaining effective in control of the target pest(s).



It is vital that staff identify the pest prior to implementing controls. For example, pest control measures to control one type of cockroach or ant may be ineffective for another species of cockroach or ant. Some actions taken for ant control can even *promote* the spread of the ants if the ant species is not properly identified. Pest identification should be confirmed by a reliable source, such as use of keys in pest identification manuals (found on the Internet or in reference books), by consultation with a professional pesticide applicator, or by using a service such as the Michigan State University Extension Service.

A brief biology of some pests prepared by MDARD is included in **Attachment E**. Additional information can be found using pest identification books, internet resources, referencing the MSU General Pest Management Certification Study Manual, or consulting a professional.

3.1.2 Personal Protective Equipment

Personnel certified and/or licensed to apply pesticides on campus shall use PPE that is appropriate relative to the potential exposure and as required by the pesticide label. Persons who apply pesticides at the University, other than general-use and ready-to-use pesticides, are commercial pesticide applicators. Minimum PPE for commercial pesticide applicators includes long pants, protective footwear, gloves that are impervious to the pesticide being applied (when contact with the hands is likely), and long-sleeve clothing. Short-sleeve clothing may be worn if soap and water is immediately available and a long-sleeved shirt is not required by the pesticide label.

A Job Safety Analysis (JSA) for pesticide application is included in **Attachment F**.

3.2 Storage, Loading, and Application

The majority of all pesticide accidents occur to non-users of the materials. Each year there are several cases of children, livestock, and pet poisonings from accidental contacts with improperly stored pesticides. These accidents cause human suffering and economic losses and are largely preventable. Improper storage of pesticides is illegal.

The Grounds Department purchases and stores these materials on campus in limited quantities. Each pesticide label describes the proper storage environment for each product. The following subsections outline the Grounds Department's procedures for storing, loading, and applying pesticides and herbicides.

3.2.1 Material Storage

Guidance related to the storage of pesticides, herbicides, and similar chemicals suggest that storage areas should be downwind and downhill from sensitive areas, such as homes, play areas, feedlots, animal shelters, gardens, and groundwater sources. In addition, it's recommended that the area be located in a place that will not be subject to flooding. Bulk pesticides and herbicides are securely stored at the facility identified in **Table 1**. Limited quantities of ready-to-use pesticides are also securely stored in Room 104 of the DOW Building.

In all cases pesticides and related materials are stored in locked areas with restricted access. It's recommended that these materials be stored in a room or separate building designated solely for pesticide/herbicide storage when feasible. The University's current storage area is used for multi-purpose storage. Conspicuous signage will be posted in areas where pesticides are stored advising



personnel and emergency responders of potential hazards. Access to the storage areas will be limited and pesticides will be stored to prevent cross contamination in other stored materials. As a general rule, dry pesticides will be stored on upper shelves and liquids on the lower shelves. Chemicals will be tightly sealed and stored in their original, labeled container.

The department will maintain a current inventory of all materials in storage, along with Safety Data Sheets (SDSs) for the materials, in a secure area away from the storage area. Date and identify all pesticides when they are placed into storage, and store no more than will be needed for one season. Establish a policy of first-in, first-used, so that pesticides do not become outdated. Provide the local fire department with an updated copy of this inventory.

Storage areas will be stocked with PPE and materials to mitigate de minimis spills. Products such as activated charcoal, absorptive clay, vermiculite, clay-granule type cat litter, or sawdust are good materials to absorb liquid spills.

3.2.2 Loading and Mixing Operations

A temporary mixing/loading area will be established on a seasonal basis. The mixing/loading pad that will allow for the containment of products or materials that may be spilled during loading and mixing operations. The mixing/loading pad will be established in the vicinity of the material storage area to limit the distance that the materials and chemicals need to be moved.

The mixing/loading area will be curbed or sloped to allow the containment of accumulated liquids. The area will be constructed with an impermeable liner and will feature a sump to allow for the collection of any accumulated liquids. The liner material and mixing/loading pad will be durable and constructed so that it can minimally accommodate the rear axle of the tractor and pesticide dispersion equipment (sprayer, spreader, etc.).

The mixing/loading pad size and shape will depend on the functions performed, and the orientation and boom width of the equipment. As a general rule, the pad will extend at least 5 feet on each side of the edges of the spray equipment's extended boom to catch any splashed water or boom sprays. The mixing/loading pad will include sufficient space for workers to allow for safe movement around or in between equipment.

Each time a tank is emptied it will be rinsed on the loading/mixing pad immediately and thoroughly to prevent pesticides from drying on tank walls and to wash bottom sediment out. The containment volume needed in the pad area will depend on the size of sprayer tank. It should be able to hold 110 to 125 percent of the volume of the largest tank to allow for a margin of safety.

If a spill occurs, all solids/liquids will be contained within the mixing/loading pad. Spills should be contained and managed in accordance with the SDS for the material. Generally, spills will be cleaned up as follows:

- Dry Spills (granular, dust, wettable, dispersible, and soluble powder formulations)
 - Use a broom, dust pan or shovel to sweep up the spill while minimizing airborne particulates.



- Place spillage in metal or plastic containers. Plastic bags may be used, but only as a last resort.
- Secure and label the containers for later disposal.
- Liquid Spills
 - Soak up the liquid with an appropriate absorbent. (sweeping compound, sawdust).
 - Use a broom to work the absorbent into the spill.
 - Gather the combined material and deposit it in a labeled plastic or metal container.
 - Secure and label the containers for later disposal.

In either case, if at all possible, assess the volume of spilled material, review the label and application rates, and then apply as a legal application. Use of the product, though not necessarily for pest control, is legal and allows the material to breakdown under normal application conditions; thus, negating the possible need to handle the material as an expensive hazardous waste.

3.2.3 Product Application

The majority of the IPM Plan reviews the importance administrative practices and the critical nature of environmental health and safety when applying pesticides. The following sections describe the general procedures that staff should use when applying pesticides and herbicides on the University landscape.

3.2.3.1. Label Review

Prior to using a herbicide, fungicide or insecticide, the applicator will read and follow all labeling instructions. Staff should always ask for assistance if there is any uncertainty related to applications instructions or product mixing procedures.

A label of the material being applied will be kept available at all times when applying the chemical. In addition, the SDS for all chemical used by the department are available on the University's online SDS database, [MSDSOnline](#). *Note: Access to the University's MSDSONline database is secure and will require you to enter your University Initial Sign-On (ISO) credentials.*

3.2.3.2. PPE

Pesticides can enter the body through inhalation, ingestion, or absorption by the skin and eyes. The skin usually receives the most exposure, so it is important to cover as much of the body as possible. Staff should wear the required PPE (printed on the label) before opening the pesticide container. PPE the clothing and other equipment worn to protect the body from contact with pesticides or pesticide residues.

Staff must don the protective clothing required by the product's label for example, long-sleeved shirts, long pants, overalls, non-absorbent gloves (not leather or fabric), rubber footwear (not canvas or leather), a hat, goggles, or a dust/mist filter. If no specific clothing is listed staff must minimally wear non-absorbent gloves, a long-sleeved shirt, long pants, socks, and closed shoes when applying pesticides.



Personnel wearing contact lenses should consider the potential for their lenses to trap materials on the eyes. Staff should wear any prescribed eye protection and consider removing contact lenses before mixing and applying pesticides.

3.2.3.3. *Mixing and Application*

For practical purposes, staff must also consider the importance of the work that they are performing. The decision to apply chemical treatment is the last step under IPM and the work must be done carefully and with purpose. Similar to concerns related to unintended exposures humans, the wrong pesticide and herbicide applications can also have negative aesthetic, environmental, and financial consequences for the University.

When applying pesticides always consider selective products, or those having a more limited range of target pests, over non-selective products to avoid harm to non-target organisms. Staff must follow each product's *Directions for Use*. If more than one product is being used, staff must also consider chemical compatibility between the products. Only use products for the listed purposes. Only use the quantities and amounts directed and under the timeframes and conditions specified. **Twice the amount will NOT do twice the job.** You could harm yourself, others, or the areas you're working to protect.

Generally, staff should minimally adhere to the following when mixing, transporting, applying, or otherwise handling pesticides on campus:

- **Never smoke or eat while mixing or applying pesticides.** You could easily carry traces of the pesticide from your hands to your mouth. Also, some pesticide products are flammable.
- **Always mix or dilute the pesticide outdoors or in a well-ventilated area.** Only use the amount listed on the label and measure the pesticide carefully. All equipment and mixing tools must be labeled and dedicated for pesticide use.
- **Mix only the amount that you need for each application.** Do not prepare larger amounts to store for possible future use. The pesticide will degrade and become ineffective over time.
- **Ensure all notifications have been communicated prior to applying pesticides.** Keep community members away from areas where you mix and apply pesticides for at least the length of time required on the label. If no time is listed on the label, wait until the pesticide has dried before reentering the area.
- **Pesticides will not be transported in the same compartment with people or food.** Pesticide containers shall be secured to vehicles during transportation in a manner that will prevent spillage onto the vehicle or off the vehicle. Paper, cardboard and similar containers shall be covered when necessary to protect from moisture.
- **Wear PPE and use and maintain protective clothing in accordance with the manufacturer's instructions.** If clothing becomes saturated in spray solution or contaminated with the pesticide concentrate, dispose of it immediately. Wash any parts of the body that may have been exposed to the pesticide, with soap and water, and finish the job in fresh, clean clothing.
- **Equipment will be washed at the end of the day according to label direction.** Material shall not be left in spray equipment over night. Rinse material will be captured, stored in



a marked container and utilized to supplement water in the next solution. In lieu of capture and reuse, tank rinse may be sprayed over an area containing an approved crop.

- **Never put bait for insects or rats, mice, and other rodents where small children or pets can reach it.** Pesticides that are formulated as baits (containing a feed attractant) are still pesticides.

3.3 Documentation and Closeout

The final steps in product application are no less important than treating the pests and diseases outlined in the preceding sub-sections. Federal and state laws require that application records for pesticide applications made by a certified applicator are documented.

- Application records demonstrate applicator professionalism by documenting legal use, and the safety, care, and concern taken when making the application.
- Records serve to refresh applicators' memories of procedures, timing, and implemented precautions.
- Application documentation is operationally important as it provides useful information for tracking inventories, informing staff of pesticide applications, and when used in conjunction with pest monitoring records, they allow for evaluating the effectiveness of the applications.

3.3.1 Recordkeeping

A written record shall be kept of any pesticide (herbicide, fungicide, and insecticide) applications made to areas of the University landscape. Refer to **Section 2.2.2** of the IPM Plan for the University's standard practices for application records. Generally, information will include the applicator's name, location, date, weather conditions, target pest(s), material applied, formulation, and special comments, including re-entry information. Documentation of any equipment calibration activities should also be part of the pesticide record.

The Application Record included in **Attachment B** must be completed within 24-hours of product application.



4. ASSESSMENT

Measuring the effectiveness of pest control is seemingly very simple - the absence of pests is visible and measurable. However, without regular review of the IPM Plan and associated treatment programs the campus community is not benefiting from improved best practices or industry trends. In addition, periodic reviews ensure that the University remains in occupational and environmental compliance as it relates to pest management.

4.1 Program Evaluation

Implementation of individual treatments are dictated by the procedures in the IPM Plan. Each treatment program will be evaluated on a continual basis to determine its effectiveness and the potential need for any program modifications or adjustments.

The assessment should include a review of each landscape treatment, including the initial site evaluation, each record of inspection, and pesticide application. These documents will be evaluated to determine the success of individual treatments and maintenance activities, but also the overall effectiveness of the IPM Plan.

If the evaluation does not indicate improvement or continuation of an acceptable pest level, then the IPM program should be revised to reach an acceptable level of pest control. Further, the overarching IPM Plan should be reviewed to ensure that the plan is not inhibiting effective treatment.

4.2 Plan Review and Updates

The IPM Plan will be reviewed every two years to ensure occupational and regulatory compliance. In addition, the IPM Plan will be compared to University policy changes and consider community interests so that the plan is reflective of evolving campus priorities.

The minimum review and revision requirements are summarized as follows:

- Document reviews shall be conducted at least once every two years and recorded in the IPM Plan. The review will be specific to the IPM Plan for University Landscapes.
- The IPM Plan will be revised as necessary and more frequently as dictated by the following:
 - MDARD determines that the IPM Plan is incomplete or inadequate;
 - The mixing and storage facility information or contact information changes;
 - There is an accidental spill or chemical release related to pesticide application;
 - There are unplanned or unexpected results from a chemical treatment or application; and,
 - Processes or procedures summarized in the IPM Plan are changed.



The IPM Plan is available for review during normal business hours. When the IPM Plan is updated, copies will be distributed to applicator personnel, effected departments, and required regulatory agencies.

IPM Plan amendments or updates are described in **Table 2** and should minimally include the following:

- The name of the section that was amended or updated;
- A description of the amendment or update; and,
- The date the amendment or update was completed.

TABLE 2 – PLAN AMENDMENTS AND UPDATES

REVISION DESCRIPTION	DATE
Initial document	4/20/2020



5. REFERENCES

1. Buhler, Wayne. North Carolina State University. "Using Pesticides Safely and Correctly". *Pesticide Environmental Stewardship*, <https://pesticidestewardship.org/homeowner/using-pesticides-safely-and-correctly/>. April 2020.
2. Davis, Terry. Michigan State University Extension. Ornamental Pest Management: Commercial Applicator Training Manual - Category 3B (E2291). October 2015.
3. Facilities Management. University of Delaware. "Pesticide Application Procedures for Grounds Maintenance Activities Including all Herbicides, Fungicides, and Insecticides" *Pesticide Procedure*, <http://web.facilities.udel.edu/docs/policies/pesticideprocedure.pdf>. April 2020.
4. Pesticide and Plant Management Division. Michigan Department of Agriculture and Rural Development. "Integrated Pest Management Training Manual". https://www.michigan.gov/documents/mdard/MDARD_Final_IPM_Manual_Feb_2-27-13_412824_7.pdf. December 2009.
5. Purdue University Extension. "IPM Section 7" *Integrated Pest Management In Schools*, https://www.extension.purdue.edu/ipm/ipm1_9.html. March 2020.
6. Ramsay, Carol. Washington State University Extension. "Pesticide Application Recordkeeping". *Pesticide Environmental Stewardship*, <https://pesticidestewardship.org/records/>. April 2020.
7. University of California Agriculture and Natural Resources. "What is Integrated Pest Management (IPM)?". *UC ANR Statewide IPM Program*, <https://www2.ipm.ucanr.edu/What-is-IPM/>. March 2020.
8. University of Georgia Extension. "Pesticide Storage and Mixing Facilities", *Publications*, <https://extension.uga.edu/publications/detail.html?number=B1095&title=Pesticide%20Storage%20and%20Mixing%20Facilities>. March 2020.

**ATTACHMENT A
PEST SIGHTING LOG**



Pest Sighting Report

(Used when staff reports a pest.)

DATE	PEST SIGHTED	LOCATION OF PEST	REPORTED BY:



Pest Monitoring Form

(Used to record trapping data.)

DATE	TRAP LOCATION	TYPE AND NUMBER OF PESTS FOUND IN MONITORING STATION	INSPECTED BY:

**ATTACHMENT B
APPLICATION RECORD**



Pesticide Recordkeeping Form

LOCATION & INSPECTION INFORMATION

Location: _____

Date: _____

Pests Noted:

Conditions Conducive To Pest Infestation:

Pest Management Recommendations Made By The Applicator:

Structural or Habitat Modifications Undertaken:

APPLICATION INFORMATION

Name of Pest Control Firm (If Employed) & Emergency Phone Number:

Target Pest(s): _____ # Of Target Pests Found or Reported: _____

Name of Applicator: _____ Certification/Registration #: _____

Name of Pesticide(s) [Brand or product name]: _____

EPA Reg #(s): _____ Active Ingredient(s): _____



Concentration/Ratio of Pesticide(s) Applied: _____

Total Amount of Pesticide(s) Used: _____

Method of Application (ex: pump sprayer, spreader, etc.): _____

Rate of Application: _____

Restricted Entry Interval: _____

Location Where Pesticide(s) Applied [Written description or map]:

Notes:

ATTACHMENT C
SAMPLE ANNUAL NOTIFICATION FORM



Annual Advisory To Parents/Guardians

Dear Parent or Guardian:

State of Michigan law requires that day care centers that may apply pesticides on day care property must provide an annual advisory to parents or guardians of children attending the facility.

Please be advised that the _____ day care center utilizes an Integrated Pest Management (IPM) approach to control pests. IPM is a pest management system that utilizes all suitable techniques in a total pest management system with the intent of preventing pests from reaching unacceptable levels or to reduce an existing population to an acceptable level. Pest management techniques emphasize sanitation, pest exclusion, and biological controls. One of the objectives of using an IPM approach is to reduce or eliminate the need for chemical applications of pesticides. However, certain situations may require the need for pesticides to be utilized.

As required by State of Michigan law, you will receive advance notice regarding the non-emergency application of a pesticide such as an insecticide, fungicide or herbicide, other than a bait or gel formulation, that is made to the school or day care grounds or buildings during this school year. Please note that notification is not given for the use of sanitizers, germicides, disinfectants or anti-microbial cleaners. In certain emergencies, such as an infestation of stinging insects, pesticides may be applied without prior notice to prevent injury to students, but you will be notified following any such application.

Advance notification of pesticide applications, other than a bait or gel formulation, will be given by at least 2 methods. The first method will be by posting at the main entrance to the day-care center, which is located at _____. The second method will be by the method(s) checked below:

- Posting in a public, common area of the school or day care center, other than an entrance. We will post in the _____.
- E-mail.
- A telephone call by which direct contact is made with a parent or guardian of a student of the school / day-care center or a message is recorded on an answering machine.
- Providing the students of the school or children of the day-care center with a written notice to be delivered to their parents or guardians.
- Posting information on the school or day-care center's web site.



Please be advised that parents or guardians of children attending day care center are entitled to receive the advance notice of a pesticide application, other than a bait or gel formulation, by first class United States mail postmarked at least 3 days before the pesticide application, if they so request. If you prefer to receive the notification by first class mail, please complete the attached form and return it to our office.

Please be advised that parents or guardians of children attending the school may review the school's Integrated Pest Management program and records of any pesticide application upon request.

SAMPLE



REQUEST FOR ADVANCE NOTIFICATION BY FIRST CLASS MAIL

Dear Parent / Guardian:

Complete this form **ONLY** if you are requesting advance notification of a pesticide application by United States Postal Service first-class mail.

Please be advised that you WILL receive notice via the methods identified in the annual advisory notice and should only complete this form if you are also requesting notification by first-class mail.

If you are requesting prior notification of pesticide treatments conducted at this school or day care center, other than a bait or gel formulation, and you would like the notice to be delivered by United States Postal Service first-class mail, postmarked at least 3 days prior to the planned treatment, please complete the information on the following form and submit it to:

(ENTER SCHOOL NAME, ADDRESS, CONTACT PERSON AND PHONE NUMBER HERE)

I wish to receive a prior notice of any pesticide application to the school or day care center by first-class mail.

PARENT NAME: _____

STUDENT NAME: _____

STREET ADDRESS: _____

CITY, ZIP _____

DAY PHONE # _____

EVENING PHONE # _____

Please Check One:

- I wish to be notified prior to a scheduled pesticide application inside of the school building.
- I wish to be notified prior to a scheduled pesticide application on the outside grounds of the school building.
- Both of the above.

Signature

Date

ATTACHMENT D
SAMPLE ADVANCE NOTIFICATION FORM



Advance Notice of Pesticide Treatment

This notice is to be provided whenever a pesticide, other than a bait or gel formulation, is to be applied at a daycare facility. The information will be posted using the methods identified in the annual Advisory To Parents.

Attention: Parents / Guardians of students attending this facility:

This facility utilizes an Integrated Pest Management approach for pest control, employing non-chemical methods that include sanitation and exclusion to control pests. However, from time to time a pesticide application may be necessary to control certain pests.

Please be advised that a pesticide is expected to be applied to control _____.

The approximate location of this pest control treatment is _____.

The anticipated date of treatment will be _____.

If you have questions pertaining to this treatment, please contact:

Name:

Phone:

E-mail:

For further information pertaining to pesticides you can contact the National Pesticide Information Center at Oregon State University. The toll free number is 800-858-7378. The web site is www.npic.orst.edu.

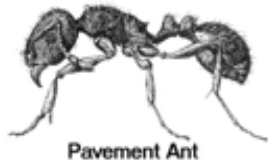
For additional information pertaining to pesticide use, you can contact the Michigan Department of Agriculture and Rural Development (MDARD). The MDARD's web site is www.michigan.gov/mdard and a contact phone number for MDARD is 800-292-3939.

**ATTACHMENT E
COMMON PEST BIOLOGY**



PEST BIOLOGY

Pavement Ants



Pavement Ant

This ant is 1/10th to 1/16th inch long and has two nodes on its pedicel. Their antenna has 12 segments. They are active foragers and establish trails along baseboards and other areas inside structures. They can easily move between floors using plumbing lines, which not only provide movement between floors, but also into the structure itself. The ants feed on a wide variety of foods including pet food, food bits dropped on the floor, grease, and seeds. These ants commonly invade buildings through cracks in cement slab floors and exterior walls. Exclusion through sealing of the cracks is an effective means of control. Exterior perimeter treatments may also provide effective control. If ants still invade the building, baits are an effective means of control.

Carpenter Ants

Carpenter Ants vary in size and color but are usually blackish in color and range in size from 1/4" to 1/2" in size. If winged carpenter ants are seen swarming in the spring, it may mean that there is a colony nesting in the structure. They can be distinguished from termites by the carpenter ant's slender waist. Termites have a wider waist. Carpenter ants look for sites with wet wood to build their nests. Ants inside a structure may be from a nest located within the structure. However, the ants may be foraging for food and may be from a nest outside of the structure. Carpenter ants tend to forage at night. You may place some food, such as a dab of honey, to bait the ants. Then, watch where the ants go. If they're going behind a baseboard or into a wall void, then attempt to determine if they're nesting in that location or if they're passing through the structure to an outside nest. Apply an appropriate pesticide. Baits are an effective means of control.



Roaches – General

Roaches can carry germs and disease. Sanitation and reduction of harborage are important in reducing the incidence of roach infestation. Glue boards may be used to detect the presence of roaches. Where roaches are found, baits can be an effective means of control. Crack/crevice/void treatments may also be used.



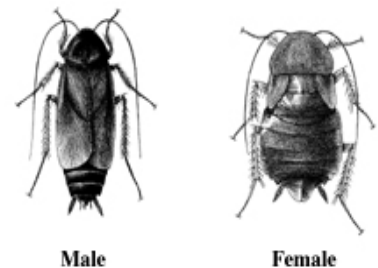
German Cockroaches



Female German cockroaches carry an egg capsule with 30-40 eggs, producing 4-8 egg cases in her lifetime. That can be over 300 offspring from one female roach and if not controlled the population could explode to as many as 100,000 roaches in one year! German roaches prefer dark places with warmth and high humidity. They prefer harborage where they can fit closely.

Oriental Cockroach

Adult Oriental cockroaches are 1 inch to 1 ¼ inch in size. They are shiny and range from dark brown to black in color. Their wings are not functional. Immature roaches, called nymphs, are darker in color than adults, but have a similar shape. Egg cases are dark reddish-brown and about an inch long. This roach is also known as the “water bug” and feeds on garbage and filth. It prefers a moist environment, so it may be found near leaky pipes or in a moist basement or crawl space. They may live outside during summer months and migrate indoors during cold weather.



Mice



Mice may enter buildings to seek shelter. Exclusion and reservoir reduction are effective means of control. Keep weedy fields mowed. Move dumpsters away from the building. Clean the area of any debris that offers harborage. Use exclusion methods such as screens, caulk, and door sweeps. To eliminate mice present in the building, it is preferable to use mechanical methods such as traps or glue boards. Baits can be an effective tool, but should be used only with extreme caution and should NEVER be used in areas accessible to students.

Head Lice

Head lice generally do not survive for more than a few hours when away from a host. Due to the biology of lice, insecticidal treatments to the school or day care center are generally not effective and should not be done. Instead, parents should be informed about the pest biology and given instruction for effective control measures on hosts (children) and garments such as hats that may be shared between students. For more information visit www.headlice.org.





Flies and Gnats

There are MANY types of flies and gnats. Proper identification is vital to determine the best type of pest control. Proper sanitation can provide effective control for most flies and gnats. Screen windows and doors to exclude these pests. Garbage containers should be closed and kept an appropriate distance from the buildings. Insecticides may be appropriate for reducing large populations of adult flies, but sanitation is the preferred means of control.

Other Pests

Other pests such as yellow jackets, hornets, and carpenter ants may occur. In all cases, the relationship between the pest biology and effective control measures must be considered.

ATTACHMENT F
JOB SAFETY ANALYSIS

Job Safety Analysis



FACILITIES MANAGEMENT

Job Safety Analysis		
Routine Task/Operation: Pesticide Application/Mixing and Loading		Standard Operating Procedure No. G-08
Position/Title: University Gardener, Operator, Groundsperson		Building Campus turf and landscapes
Department Facilities Management		
Required PPE and Equipment: Chemical resistant gloves, Rubber boots, Goggles/Face shield		
Process/Procedures	Potential Hazard(s)	Hazard Controls/Safe Practices
Inspect mixing area	Cuts, Punctures, Slippery surfaces	Inspect the mixing/loading area to make sure that the impermeable liner is free from damage. Plan where mixing will occur within the pad and make sure there are no obstructions and that slip, trip, and fall hazards are mitigated.
Review product labels	Inadequate PPE	Different chemicals and mixing ratios are used in pest management. The product's label and SDS are critical in determining what PPE should be donned during mixing and loading procedures.
	Improper mixing	Mixing ratios must be followed closely to ensure that chemical exposures are mitigated. Improper mixing can effect both human health and the environment.
	Chemical exposure	Unregulated exposures can result in negative health effects and/or damage to the landscape being managed.
Product/equipment movement and placement	Chemical exposure (skin, eyes, inhalation), Chemical spill	Move tank/mixing vessel to the loading/mixing pad. Ensure that tank/mixing vessel have been cleaned. Make sure caps are secured when chemicals are not being used. Carefully measure and pour chemicals into the vessel to prevent spilling. All mixing and loading should be done in accordance with product labels.
Chemical mixing	Chemical exposure (skin, eyes, inhalation), Chemical spill	Move tank/mixing vessel to the loading/mixing pad. Ensure that tank/mixing vessel have been cleaned. Make sure caps are secured when chemicals are not being used. Carefully measure and pour chemicals into the vessel to prevent spilling. All mixing and loading should be done in accordance with product labels.

Job Safety Analysis - Continued

Routine Task/Operation: Pesticide Application/Mixing and Loading		Standard Operating Procedure No. G-08
Position/Title: University Gardener, Operator, Groundsperson		Building Campus turf and landscapes
Department Facilities Management		
Process/Procedures	Potential Hazard(s)	Hazard Controls/Safe Practices
Control quantities, Minimize wastes	Waste management, Chemical spills,	Avoid mixing more chemical than prescribed for the application. Excess product will need to be managed as a waste. Wastes need to be stored and secured while awaiting disposal. Reducing wastes minimizes the need for additional product management which poses risks related to spills and exposures. Waste management increases operational costs.
Prepared By:		Date:
Reviewed By:		EHS Review/Approval:

**FINANCIAL
STABILITY**

**SERVICE
EXCELLENCE**

**ENHANCE
SUSTAINABILITY**

Job Safety Analysis



FACILITIES MANAGEMENT

Routine Task/Operation: Pesticide Application/Product Application		Standard Operating Procedure No. G-09 - Product Application
Position/Title: University Gardener, Operator, Groundsperson		Building Campus turf and landscapes
Department Facilities Management		
Required PPE and Equipment: Chemical resistant gloves, Rubber boots, Goggles/Face shield		
Process/Procedures	Potential Hazard(s)	Hazard Controls/Safe Practices
Review product labels	Inadequate PPE	Different chemicals and mixing ratios are used in pest management. The product's label and SDS are critical in determining what PPE should be donned during mixing and loading procedures.
	Improper mixing	Mixing ratios must be followed closely to ensure that chemical exposures are mitigated. Improper mixing can effect both human health and the environment.
	Chemical exposure	Unregulated exposures can result in negative health effects and/or damage to the landscape being managed.
Dry chemical application (Manual)	Chemical exposure, Chemical Spill, Chemical Drift	Confirm that required notfications are in-place. Plan application when it is least likely for community members to be present. All mixing and loading should be done in accordance with product labels. Product may not be applied in unfavorable weather conditions. Wear appropriate PPE to prevent exposures during application. Take care to limit over-application with overlapping coverage.
Dry chemical application (Spreader)	Chemical exposure, Chemical Spill, Chemical Drift, Motor Vehicle Accident	Confirm that required notfications are in-place. Plan application when it is least likely for community members to be present. All mixing and loading should be done in accordance with product labels. Product may not be applied in unfavorable weather conditions. Wear appropriate PPE to prevent exposures during application. Ensure equipment signals and safety equipment are working properly. Verify that equipment attachments are properly secured and not leaking. Take care to limit over-application caused by overlapping routes. Do not apply chemicals in the vicinity of surface water or drainage ditches.

Job Safety Analysis - Continued

Routine Task/Operation: Pesticide Application/Mixing and Loading		Standard Operating Procedure No. G-09 - Product Application
Position/Title: University Gardener, Operator, Groundsperson		Building Campus turf and landscapes
Department Facilities Management		
Process/Procedures	Potential Hazard(s)	Hazard Controls/Safe Practices
Liquid chemical application (Manual)	Chemical exposure, Chemical Spill, Chemical Drift	Confirm that required notificatons are in-place. Plan application when it is least likely for community members to be present. All mixing and loading should be done in accordance with product labels. Product may not be applied in unfavorable weather conditions. Wear appropriate PPE to prevent exposures during application. Take care to limit over-application with overlapping coverage.
Liquid chemical application (Sprayer)	Chemical exposure, Chemical Spill, Chemical Drift, Motor Vehicle Accident	Confirm that required notificatons are in-place. Plan application when it is least likely for community members to be present. All mixing and loading should be done in accordance with product labels. Product may not be applied in unfavorable weather conditions. Wear appropriate PPE to prevent exposures during application. Ensure equipment signals and safety equipment are working properly. Verify that equipment attachments are properly secured and not leaking. Take care to limit over-application caused by overlapping routes. Do not apply chemicals in the vicinity of surface water or drainage ditches.
Equipment cleaning and maintenance	Chemical spill, Chemical exposure	Product should not be stored in application equipment overnight. All equipment should be rinsed and cleaned after use. Equipment cleaning should be performed on the mixing/loading pad so that rinsate water is collected so that it may be containerized if necessary. Minimize the volume of water used in cleaning processes to reduce disposal costs.
Prepared By:		Date:
Reviewed By:		EHS Review/Approval:

**FINANCIAL
STABILITY**

**SERVICE
EXCELLENCE**

**ENHANCE
SUSTAINABILTY**