

# PORTLAND COMMUNITY COLLEGE

## Integrated Pest Management Plan



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## I. INTRODUCTION

Structural and landscape pests can pose significant problems in schools and colleges. Pests such as mice and cockroaches can trigger asthma. Mice and rats are vectors of disease. Many people are allergic to yellow jacket stings. The pesticides used to remediate these and other pests can also pose health risks to people, animals, and the environment. These same pesticides may pose special health risks to children and younger students due in large part to their still-developing organ systems. Because the health and safety of students and staff is our first priority – and a prerequisite to learning - it is the policy of Portland Community College (College) to approach pest management with the least possible risk to students and staff. In addition, Senate Bill 637 incorporated into ORS Chapter 634 requires all school districts to implement integrated pest management in their schools. For this reason, the PCC Board of Directors adopts this Integrated Pest Management Plan (IPM or Plan) for use on the campuses and centers throughout its District.

## II. WHAT IS INTEGRATED PEST MANAGEMENT?

Integrated Pest Management, also known as IPM, is a process for achieving long-term, environmentally sound pest suppression through a wide variety of tactics. Control strategies in an IPM Plan include structural and procedural improvements to reduce the food, water, shelter, and access used by pests. Since IPM focuses on remediation of the fundamental reasons why pests are here, pesticides are only used when necessary.

# IPM Basics



**Education & Communication:** The foundation for an effective IPM Plan is education and communication. It is essential to know what conditions can cause pest problems, why and how to monitor for pests, proper identification, and pest behavior and biology *before* pests can be managed effectively. Communication about pest issues is essential. A protocol for reporting pests or pest-conducive conditions and a record of what action was taken is the most important part of an effective IPM Plan.

**Cultural and Sanitation Practices:** Knowing how human behavior encourages pests helps to prevent them from becoming a problem. Small changes in cultural or sanitation practices can have significant effects on reducing pest populations. Cleaning under kitchen serving counters, reducing clutter in classrooms, putting dumpsters further from the kitchen door or loading dock, proper irrigation scheduling, and over-seeding of turf areas are all examples of cultural and sanitation practices that can be employed to reduce pests.

**Physical & Mechanical Control:** Rodent traps, sticky monitoring traps for insects, door sweeps on external doors, sealing holes under sinks, proper drainage and mulching of landscapes, and keeping vegetation at least 24 inches from buildings are all examples of physical and mechanical controls.

**Pesticides:** IPM focuses on remediation of the fundamental reasons why pests are here; and that pesticides should be used only when necessary.

### III. WHAT IS AN INTEGRATED PEST MANAGEMENT PLAN?

The College's IPM Plan incorporates all required strategies from ORS 634.700-634.750 that define an IPM Plan as a proactive strategy that:

- (A) Focuses on the long-term prevention or suppression of pest problems through economically sound measures that:
  1. Protect the health and safety of students, staff, and faculty;
  2. Protect the integrity of campus buildings and grounds;
  3. Maintain a productive learning environment; and

4. Protect the health of the local ecosystems;

- (B) Focuses on the prevention of pest problems by working to reduce or eliminate conditions of property construction, operation and maintenance that promote or allow for the establishment, feeding, breeding, and proliferation of pest populations or other conditions that are conducive to pests or that create harborage for pests;
- (C) Incorporates the use of sanitation, structural remediation or habitat manipulation or of mechanical, biological and chemical pest control measures that present a reduced risk or have a low impact and, for the purpose of mitigating a declared pest emergency, the application of pesticides that are not low-impact pesticides;
- (D) Includes regular monitoring and inspections to detect pests, pest damage, and unsanctioned pesticide usage;
- (E) Evaluates the need for pest control by identifying acceptable pest population density levels;
- (F) Monitors and evaluates the effectiveness of pest control measures;
- (G) Excludes the application of pesticides on a routine schedule for purely preventive purposes, other than applications of pesticides designed to attract or be consumed by pests;
- (H) Excludes the application of pesticides for purely aesthetic purposes;
- (I) Educates and trains staff about sanitation, monitoring and inspection, and about pest control measures;
- (J) Gives preference to the use of nonchemical pest control measures;
- (K) Allows the use of low-impact pesticides if nonchemical pest control measures are ineffective; and
- (L) Allows the application of a pesticide that is not a low-impact pesticide only to mitigate a declared pest emergency or if the application is by, or at the direction or order of, a public health official.

**NOTE:** As mentioned above, ORS 634.700 allows for the routine application of pesticides designed to be consumed by pests. To avoid a proliferation of pests and/or unnecessary applications of pesticides, the following steps must be taken before **any** “routine” application is allowed:

1. Staff must be educated on sanitation, monitoring, and exclusion as the primary means to control the pest;
2. An acceptable pest population density level must be established;
3. The use of sanitation, structural remediation or habitat manipulation of mechanical or biological control methods must be incorporated into the management strategy of the pest;
4. The pesticide label must be read thoroughly to make sure the pesticide will be used

- in strict compliance with all label instructions; and
5. Documentation must be on file that the above steps were ineffective.

The PCC IPM Plan **does not apply** to the application of a germicide, disinfectant, sanitizer, deodorizer, antimicrobial agent, or insecticidal soap that are pesticides as long as the application of these products is not inconsistent with the goals of the PCC IPM Plan.

The PCC IPM Plan **does not apply** to off-campus/center buildings, structures, or property, notwithstanding any incidental use for instruction.



#### IV. IPM PLAN COORDINATOR

NOTE: ORS 634.720 states that the IPM Coordinator “. . . *must be an employee of the governed district, unit, school or entity, unless the governing body delegates pest management duties to an independent contractor.*”

The College Board of Directors designates the Facilities Management Services Grounds Manager as the College’s IPM Plan Coordinator. The Coordinator is the key to a successful IPM Plan implementation at the College, and is given the authority for overall implementation and evaluation of this IPM Plan. The IMP Plan Coordinator:

- (A) **Attends not less than six hours of IPM training each year** - training shall include at least a general review of IPM principles and the requirements in ORS 634.700 - 634.750.
- (B) **Conducts outreach to the College community (e.g., custodians, maintenance, construction, grounds, faculty, and kitchen staff) about the College’s IPM Plan** – and the IPM Plan Coordinator (or designee) provides for the training outlined in Section VI below.
- (C) **Oversees pest prevention efforts** - the IPM Plan Coordinator (or designee) works with custodians, faculty, and maintenance staff to reduce clutter and food in the classrooms, and to seal up pest entry points.

- (D) **Assures that the decision-making process in Section V for implementing the College's IPM Plan is followed** - the IPM Plan Coordinator (or designee) continually assesses and improves the pest monitoring, reporting, and action protocols.
- (E) **Assures that all notification, posting, and record-keeping requirements in Section VI are met when a decision to make a pesticide application is made:**
- (F) **Maintains the approved pesticides list as per Section VIII;** and
- (G) **Responds in writing to inquiries and complaints about noncompliance with the College's IPM Plan;** these are kept on file with the IPM Plan Coordinator.



## V. IPM PLAN DECISION-MAKING PROCESS

### (A) RESPONSIBILITIES:

1. **IPM Plan Coordinator** – see Section IV above.
2. **Custodial Services Staff** – are responsible to:
  - a. Attend annual IPM training provided by the IPM Plan Coordinator (or designee).
  - b. Check sticky insect monitoring traps in staff lounges/break rooms, cafeteria, and kitchen as per the IPM Plan Coordinator's instructions.
  - c. Initiate work orders for pest complaints using FMS-CMMS through the Service Request Center (SRC).
  - d. Assure that floors under serving counters are kept free of food and drink debris.
  - e. Identify and report small cracks or holes when noticed using the FMS SRC.
  - f. Record his or her pest management actions on the work order using the FMS-

CMMS-AiM program through the SRC.

- g. Report pest problems to the IPM Plan Coordinator using the FMS SRC.
  - h. Report staff who repeatedly refuse to reduce clutter and other pest-conducive conditions in their areas to the IPM Plan Coordinator.
  - i. Report pest-conducive conditions to the IPM Plan Coordinator using the FMS SRC.
  - j. Report any pesticides (such as aerosol spray cans) discovered during an inspection or during regular duties using the FMS SRC, and also report them to the IPM Plan Coordinator.
  - k. Follow up on issues found in an annual inspection report as instructed by the IPM Plan Coordinator. IPM Plan Coordinator will determine which campuses are to receive annual inspections based on pest and pesticide use history.
3. **Maintenance/Construction Staff** – are involved in facilities maintenance and construction and are responsible for working with the IPM Plan Coordinator to ensure that their daily tasks, projects, and operations enhance the College’s effective IPM Plan by:
- a. Training received from the IPM Plan Coordinator (or designee) on the basic principles of the IPM Plan, sealing pest entry points, and sanitation during construction work.
  - b. Continually monitoring for pest conducive conditions during their daily work, and seal small holes and cracks when noticed; larger openings are to be reported for scheduled repairs using the FMS SRC.
  - c. Working with the IPM Plan Coordinator to develop a protocol and priority list with deadlines for sealing holes, installing external door sweeps, and other pest exclusion needs that cannot be done in a short period of time.
  - d. Developing protocols and provisions for pest avoidance and prevention during construction and renovation projects. Note: The IPM Plan Coordinator has the authority to stop construction projects if these protocols and provisions are not being met.
4. **Grounds Staff** – are responsible to:
- a. Attend annual IPM training provided by the IPM Plan Coordinator (or designee).
  - b. Keep vegetation (including tree branches and bushes) at least two feet from building surfaces.

- c. Use proper mulching in landscaped areas to reduce weeds.
  - d. Reduce weeds with proper fertilization, over-seeding, mowing height, edging, drainage, aeration, and irrigation scheduling in turf areas. (See the OSU turf management publications EC 1521, EC 1278, EC 1550, EC 1638-E, and PNW 299 - available free online at <http://extension.oregonstate.edu/catalog/>).
  - e. Follow notification, posting, record-keeping, and reporting protocols as indicated in Section VI when a decision is made to apply a pesticide.
5. **Kitchen Staff** – are responsible to:
- a. Attend annual IPM training provided by the IPM Plan Coordinator (or designee).
  - b. Assure that floors under serving counters are kept free of food and drink debris.
  - c. Promptly empty and remove corrugated cardboard materials.
  - d. Keep exterior kitchen doors closed.
  - e. Report pest conducive conditions that require maintenance (e.g., leaky faucets, dumpster is too near building, build-up of floor grease requiring spray-washing, etc.) to the proper staff using the FMS SRC.
  - f. Participate in inspections conducted by the IPM Plan Coordinator (or designee).
  - g. Routinely check sticky traps for cockroaches or drain flies, and immediately report these pests and any sightings of rodents or rodent droppings using the FMS SRC.
6. **Faculty** – are responsible to:
- a. Review the IPM Plan communications sent at the beginning of each term.
  - b. Keep their classrooms and work areas free of clutter.
  - c. Assure that students clean up after themselves when food or drink is consumed in the classroom.
  - d. Report pests and pest conducive conditions using the FMS SRC.
7. **Campus Administration** – are responsible to:
- a. Assure that staff keeps their rooms clean and free of clutter in accordance with the IPM Plan Coordinator's instructions.
  - b. Work with the IPM Plan Coordinator and Campus Community Relations Managers to facilitate notifications of pesticide applications using email and the

College website to reach faculty, administrators, staff, and students.

- c. Assure that all staff meet their responsibilities as outlined in the College's IPM Plan by reducing pest conducive conditions, participating in monitoring and pest reporting, attending IPM training(s), and cooperating with the College's IPM Plan Coordinator.

## (B) MONITORING AND REPORTING

Monitoring is the most important requirement of ORS 634.700 - 634.750. It is the backbone of the College's IPM Plan. Monitoring provides recent and accurate information to make intelligent and effective pest management decisions. It can be defined as the regular and ongoing inspection of areas where pest problems do or might occur. Information gathered from monitoring is always recorded in writing.

As much as possible, monitoring should be incorporated into the daily activities of College staff. Staff training on monitoring should include what to look for and how to report the information in writing using the FMS SRC.

### 1. Monitoring Levels:

- **Level 1:** Casual observing or looking with no record keeping; this is not useful.
- **Level 2:** Casual observing or looking with written observations; this can be useful.
- **Level 3:** Careful inspections with written observations; this is always useful.

**Level 2 monitoring is for most staff** (faculty, administration, FMS staff, kitchen staff, etc.) – staff will be trained to improve their “casual observing or looking” monitoring to a Level 2, and to report any pests and pest-conducive conditions that they observe by using the FMS SRC.

### **Level 3 monitoring is done by:**

- a. IPM Coordinator and FMS staff who will periodically monitor structures for:
  - Pest conducive conditions inside and outside the building (e.g., structural deterioration, holes that allow pests to enter, conditions that provide pest harborage, etc.);
  - The level of sanitation inside and out (e.g., waste disposal procedures, level of cleanliness inside and out, conditions that supply food and water to pests, etc.);
  - The amount of pest damage and the number and location of pest signs (e.g., rodent droppings, termite shelter tubes, cockroaches caught in sticky traps, etc.);
  - Human behavior that affects the pests (e.g., working conditions that make it impossible to close doors or screens, food preparation procedures that provide food for pests, etc.); and
  - Maintenance activities (e.g., caulking and sealing, cleaning, setting out traps, treating pests, etc.) and these effects on the pest population.
- b. Grounds staff who will routinely monitor turf and landscape areas for:
  - The condition of the plants (vigor and appearance);

- The amount of plant damage;
- pH, phosphorus, and potassium levels of turf (soil testing every 3-4 years in various locations);
- Kind and abundance of pests (e.g., weeds, insects, mites, moles, etc.) as well as natural enemies (e.g., ladybugs, spiders, lacewing larvae, syrphid fly larvae, etc.);
- Weather conditions (records of any unusually dry, hot, wet, or cold weather in the past few weeks);
- Proper drainage;
- Human behaviors that affect the plants or pests (e.g., foot traffic that compacts the soil, physical damage to plants caused by people, insistence on having certain plants grown in inappropriate situations, etc.); and
- Maintenance activities (e.g., pruning, fertilizing, mulching, aeration, treating pests, etc.) and their effects on the plants and the pest population.

## 2. **Monitoring with Sticky Traps**

Sticky traps are neither a substitute for pesticides nor an alternative for reducing pest populations, but they are a diagnostic tool to aid in identifying a pest's presence, the reproductive stage, the likely direction pests are coming from, and the number of pests. The College hires an outside contractor for sticky traps.

## 3. **Reporting Pests**

When staff observes pests, signs of pests, or pest conducive conditions they should notify FMS using the FMS SRC.

## 4. **Reporting a "Pest of Concern"**

A "pest of concern" is a pest determined to be a public health risk or a significant nuisance pest. These include cockroaches (disease vectors, asthma triggers), mice and rats (disease vectors, asthma triggers), yellow jackets (sting can cause anaphylactic shock), cornered nutria, raccoons, cats, dogs, opossums, skunks (they can bite), and bed bugs (a significant nuisance pest).

When pests of concern or their droppings, nests, etc. are observed, staff should immediately contact FMS using the FMS SRC. The SRC must contact the IPM Plan Coordinator (or designee) immediately.

## 5. **Action!**

- a. Structural – an action, such as sealing up a hole, that maintenance, construction or custodial staff observes that they can resolve quickly should be taken care of. The action should then be reported using the FMS SRC.

If the action needed is not something that the IPM Plan Coordinator can

accomplish alone or with minimal assistance, the Coordinator will meet with maintenance, custodial, grounds, or other professional staff to develop a protocol and priority list with deadlines for sealing the holes, installing external door sweeps, and other pest exclusion or pest management needs.

- b. Grounds – When ground pests reach an acceptable threshold\* established by the Grounds staff and the IPM Plan Coordinator, action will be taken as per the matrices in Appendix 1-g.

#### 6. **Acceptable Threshold\***

An acceptable threshold is the number of pests (pest population density level) that can be tolerated before taking action. The acceptable threshold for cockroaches, mice, rats, raccoons, cats, dogs, opossums, skunks, and nutria is “0.” Acceptable thresholds for other pests will be determined by the IPM Plan Coordinator in conjunction with Safety & Risk Services.

### (C) **INSPECTIONS**

The IPM Plan Coordinator will conduct routine inspections of campuses and centers throughout the year (schedule for the campus/center to be determined by the Coordinator). Site custodial managers are required to accompany the Coordinator during these inspections. The inspections will focus on compliance with the College’s IPM Plan, with an inspection of the kitchen, staff rooms, childcare facility, and any other area of concern. After each routine inspection the Coordinator will record the findings and recommendations which will be kept on file. (See Appendix 2 – Inspections).

### (D) **PEST EMERGENCIES (also see Section VII. (B) below)**

**IMPORTANT – When a pest emergency is declared, the area must be evacuated and cordoned off before taking any other action!**

When the IPM Plan Coordinator, after consultation with campus leadership, determines that the presence of a pest or pests immediately threatens the health or safety of students, staff, or members of the public using the campus, or the structural integrity of campus facilities, he or she may declare a Pest Emergency. (Examples include, but are not limited to, yellow jackets swarming in areas frequented by staff or students, or a half a dozen mice or rats running through an occupied area of a building.)



## VI. REQUIRED TRAINING

ORS 634.700 (3) (i) requires staff education “. . . *about sanitation, monitoring and inspection and about pest control measures.*” All staff should have at least a general review of the College’s IPM Plan principles and strategy as outlined in Sections II and III.

### (A) **IPM Plan Coordinator**

ORS 634.720 (2) requires that the IPM Plan Coordinator “*shall complete not less than six hours of training each year. The training shall include at least a general review of IPM principles and the requirements of ORS 634.700 to 634.750.*”

Content should include health and economic issues associated with pests at campuses, exclusion practices, pest identification and biology for common pests, common challenges with monitoring-reporting-action protocols, proper use of sticky monitoring traps for insects, and hands-on training on proper inspection techniques.

### (B) **Custodial Staff**

The IPM Plan Coordinator (or designee) will train custodial staff at least annually on sanitation, monitoring, inspection, and reporting, and their responsibilities as outlined in Section V. (A).

### (C) **Maintenance/Construction Staff**

The IPM Plan Coordinator (or designee) will train maintenance staff at least annually on identifying pest conducive conditions and mechanical control methods (such as door sweeps on external doors and sealing holes under sinks), and their responsibilities as outlined in Section V. (A).

### (D) **Grounds Staff**

Grounds staff will be trained in basic monitoring for common pests on grounds in quarterly meetings through best practices.

The IPM Plan Coordinator (or designee) will train grounds staff at least once per year. Each year before training, the grounds manager will meet with the grounds department to review the FMS SRC work orders. The annual training will review this IPM Plan (especially grounds department responsibilities outlined in Section V. (A). It will also review the matrices in Appendix 1 and the OSU Turf Management publications EC 1521, EC 1278, EC 1550, EC 1638-E, and PNW 299 (available free online at:

<http://extension.oregonstate.edu/catalog/>).

**(E) Kitchen Staff**

The IPM Plan Coordinator (or designee) will train kitchen staff at least once per year on the basic principles of the College's IPM Plan and their responsibilities as outlined in Section V. (A).

**(F) Faculty and Other Staff**

The IPM Plan Coordinator (or designee) will communicate with faculty at least once per year on the basic principles of the College's IPM Plan and their responsibilities as outlined in Section V. (A).

**VII. PESTICIDE APPLICATIONS - REQUIRED NOTIFICATION, POSTING, RECORDS, AND REPORTING**

Any pesticide application (this includes weed control products, ant baits, and all professional and over-the-counter products) used on College property must be made by a licensed commercial or public pesticide applicator. College staff will be informed of the procedures for notification and posting of individual applications, including those for pest emergencies. This information will be provided to all the above via e-mail or the College website.

**(A) Notification and Posting for Non-Emergencies**

When prevention or management of pests through other measures proves to be ineffective, the use of a low-risk pesticide is permissible. Documentation of these measures is a prerequisite to the approval of any application of a low-risk pesticide. This documentation will remain on file on site with the IPM Plan Coordinator (or designee) and within the FMS CMMS AiM.

If the labeling of a pesticide product specifies a re-entry time, a pesticide may not be applied to an area of the campus where the College expects students to be present before expiration of that re-entry time. If the labeling does not specify a re-entry time, a pesticide may not be applied to an area of a campus where the College expects students to be present until the IPM Plan Coordinator (or designee) determines an appropriate re-entry time based on the area, ventilation, and whether the area will be cleaned before students are present.

The IPM Plan Coordinator (or designee) will give written notice via email or the College website of a proposed pesticide application at least 24 hours before the application occurs.

The notice must identify the name, trademark or type of pesticide product, the EPA registration number of the product, the expected area of the application, the expected date(s) and time(s) of the application, and the reason for the application.

The IPM Plan Coordinator (or designee) shall place notice signs around pesticide application areas beginning no later than 24 hours before the application occurs.

A notice sign must bear the words “Warning: Pesticide-Treated Area” and give the expected or actual date and time for the application, the expected or actual re-entry time, and provide the telephone number of the IPM Plan Coordinator (or designee).

## (B) Notification and Posting for Emergencies

### **IMPORTANT NOTES:**

- ✓ **The IPM Plan Coordinator may not declare the existence of a pest emergency until after consultation with College administration.**
  - ✓ **If a pesticide is applied at a campus/center due to a pest emergency, the Plan Coordinator shall review the IPM plan to determine whether modification of the Plan might prevent future pest emergencies, and provide a written report of such to College administration and the FMS Director.**
  - ✓ **The FMS Director shall review and direct formal action on any recommendations in the report in consultation with College administration.**
1. The declaration of the existence of a pest emergency is the only time a non low-impact pesticide may be applied.
  2. If a pest emergency is declared, the area must be evacuated and cordoned off before taking any other steps.
  3. If a pest emergency makes it impracticable to give a pesticide application notice no later than 24 hours before the pesticide application occurs, the IPM Plan Coordinator (or designee) shall send the notice no later than 24 hours after the application occurs.
  4. The IPM Plan Coordinator (or designee) shall ensure that notification signs are placed around the area as soon as practicable but no later than at the time the application occurs.

NOTE: ORS 634.700 also allows the application of a non-low-impact pesticide “. . . by, or at the direction or order of, a public health official.” If this occurs, every effort must be made to comply with notification and posting requirements noted above.

## (C) Records of Pesticide Applications

The IPM Plan Coordinator (or designee) shall keep a copy of the following pesticide product information using the Pesticide Application Record form; must be on file for 4 years at the site where the application occurred. The form includes:

- A copy of the label;
- A copy of the SDS – refer to the College’s Dolphin SDS system (IHS);

- The brand name and EPA registration number of the product;
- The approximate amount and concentration of product applied;
- The location of the application;
- The pest condition that prompted the application;
- The type of application and whether the application proved effective;
- The pesticide applicator's license numbers and pesticide trainee or certificate numbers of the person applying the pesticide;
- The name(s) of the person(s) applying the pesticide;
- The dates on which notices of the application were given;
- The dates and times for the placement and removal of warning signs; and
- Copies of all required notices given, including the dates.

## VIII. APPROVED LIST OF LOW-IMPACT PESTICIDES

The College's Safety Data Sheets (SDS) can be found in the College's Dolphin (IHS) system. Additionally, the College's most current list of approved low-impact pesticides is available on the FMS website in accordance with ORS 634.705 (5) that states that the governing body of a school district shall adopt a list of low-impact pesticides for use with their Integrated Pest Management Plan. Included is any product on the list except products that:

- (A) Contain a pesticide product or active ingredient that has the signal words "Warning" or "Danger" on the label;
- (B) Contain a pesticide product classified as a human carcinogen or probable human carcinogen under the United States Environmental Protection Agency (EPA) 1986 Guidelines for Carcinogen Risk Assessment; or
- (C) Contain a pesticide product classified as carcinogenic to humans or likely to be carcinogenic to humans under the EPA 2003 Draft Final Guidelines for Carcinogen Risk Assessment.

NOTE - All pesticides must be used in strict accordance with their label instructions.

As a part of pesticide registration under the Federal Insecticide Fungicide and Rodenticide Act (FIFRA) and re-registration required by the Food Quality Protection Act (FQPA), EPA Office of Pesticide Programs (OPP) classifies pesticide active ingredients with regards to their potential to cause cancer in humans. Depending on when a pesticide active ingredient was last evaluated the classification system used may differ as described above.

The National Pesticide Information Center for assistance in determining a pesticide's active ingredient cancer classification can be contacted at 1-800-858-7378 (<http://npic.orst.edu/>) or [npic@ace.orst.edu](mailto:npic@ace.orst.edu).

## **DEFINITIONS**

**AiM**—means Asset intelligence Management through FMS.

**Acceptable Pest Level**—means the number of pests (pest population density level) that can be tolerated before taking action. The acceptable threshold for cockroaches, mice, rats, raccoons, cats, dogs, opossums, skunks, and nutria is “0.” Acceptable thresholds for other pests will be determined by the IPM Plan Coordinator in conjunction with Safety & Risk Services.

**College**—means the Portland Community College District or PCC.

**CMMS**—means the Computerized Maintenance Management System through FMS.

**Employee**—means an individual employed by Portland Community College.

**EPA**—means the United States Environmental Protection Agency.

**FMS-SRC**—means the Facilities Management Services that is a centralized, College-wide department that has the responsibility for maintaining a healthy and safe physical environment through its maintenance, custodial, and ground operations; and their messaging Service Request Center.

**IPM Basics**—means Integrated Pest Management that is a proactive process for achieving long-term, environmentally sound pest suppression through a wide variety of tactics.

**ORS**—means the State of Oregon Revised Statutes.

**PCC**—means the Portland Community College District or the College.

**Pests**—means primarily ground pests found on College property, e.g., ants, gophers and moles, mice, weeds, poison oak, wasps and yellow jackets.

**Pesticide**—means the weed control product, ant bait, and professional or over-the-counter product or chemical used to eradicate pests.

**Safety & Risk Services—a.k.a. Risk Management and its Manager**, means the department designated by amended PCC Board Policy B-507 to “. . . *maintain a high standard of service and accountability through the development and implementation of programs to improve the health, safety, and well-being of the College’s workforce, students, and the community. . . through effective and innovative risk management techniques and practices.*”

## ***Appendix 1***

**SDS**—means the materials Safety Data Sheets issued by the manufacturers of chemicals. The sheets are stored in the College's SDS program accessed through the College's Intranet. The software is a product of IHS Global Inc. (a.k.a.Dolphin).

## **PESTS**

Their Lifecycle – What, Where, and How they eat, drink, and shelter; Monitoring; Prevention; Threshold Levels; Management Options; and Evaluation of Options.

Click on a topic (**in blue**) below to move to that section:

- a. **ANTS:**
  - 1. [Small Ants](#)
  - 2. Carpenter Ants – *Not yet completed*
  
- b. **BATS – *Not yet completed***
  
- c. **[BED BUGS](#)**
  
- d. **NESTING BIRDS: – *Not yet completed***
  - 1. Starlings
  - 2. Sparrows
  - 3. Swallows
  - 4. Pigeons
  
- e. **GEESE – *Not yet completed***
  
- f. **GROUND PESTS:**
  - 1. [HOUSE MOUSE](#)
  - 2. RATS — Norway Rat – *Not yet completed*
  - 3. [GOPHERS AND MOLES](#)
  - 4. [YELLOW JACKETS AND PAPER WASPS](#)
  - 5. [POISON OAK](#)
  - 6. [ATHLETIC FIELD WEEDS—IRRIGATED](#)
  - 7. [ATHLETIC FIELD WEEDS—NON-IRRIGATED](#)

### a. ANTS:

#### 1. Small Ants

Most small ants in Oregon are harmless. They do not transmit human disease and are thus called nuisance ants. Pavement Ants and Odorous House Ants are the two most common types of ants found in Oregon schools.

Nuisance ants may nest outdoors under objects, in soil, or within wall voids of structures. Pavement ants nest in soil under concrete walkways or foundations. Ants sometimes enter buildings in search of food or water, or during periods of heavy rain. Some sugar-feeding ants may move indoors in winter when their preferred food source (honeydew from aphids) is gone. Ants may also be more noticeable in spring or summer as colonies are dividing and establishing new nests.

##### **Pavement Ant**

The pavement ant gets its name from commonly locating its nest in or under cracks in pavement. It also nests under stones and at the edges of pavement. In winter it will nest in buildings in crevices adjacent to a heat source. Pavement ants tend aphids for their honeydew, and feed on seeds and insect remains. Indoors they may feed on sweets and greasy food.

##### **Odorous House Ant**

The odorous house ant gets its name from the pungent, rotten-coconut-like odor given off when it is crushed. It nests in a wide variety of places both outdoors and indoors. Odorous house ants tend aphids (as well as scale insects and mealy bugs) for their honeydew, which they prefer, but they also feed on other insects. Indoors they may feed on sweets, protein foods, and greasy food. When odorous house ants are disturbed or threatened; they can break off from the main colony and form satellite colonies. This is called "budding". When odorous house ants disperse and form new colonies and nests in this way, one colony of ants can actually have multiple satellite colonies and multiple queens. Disturbances, such as spraying a pesticide on a group of odorous house ants, actually increase the number of ants because of budding.

##### **When Nuisance Ants Come Inside**

Total eradication of nuisance ants indoors is extremely difficult. The district's first response to any trail of ants is to clean surfaces with soapy water or a disinfectant. Fortunately, most ants will leave on their own if denied access to food and water. Additional control measures are warranted if ants are entering a school in large enough numbers to cause a disruption in the learning environment. The district will use mechanical methods (such as crack sealing) first, and may use low-impact pesticide baits if other methods fail.

If nuisance ants become a disruption at a school, staff should take the following steps:

- Ask the custodian to vacuum any food crumbs, clean up any garbage or spills, and to use soap and water to clean areas where ant trails are seen (unless the areas are small and staff can clean them quickly). This can prevent other ants from following the pheromone trails that ants leave to mark the way to food.
- Make sure that any other food or water sources are removed, placed in tightly sealed containers, cleaned, or repaired. Food and water sources can include human or pet food, recycling bins, leaking faucets, clogged drains, damp wood, etc. For repairs, ask your custodian to fill out a work request on line.
- If staff finds a place where an ant trail enters the room or building, they should mark it for later sealing by the custodian or the maintenance/construction department. A temporary "seal" can be made with duct tape, if desired.

##### **When to Use Baits**

To avoid a proliferation of small ants and/or unnecessary applications of pesticides, the routine use of ant baits is not permitted without first:

8. Educating staff on sanitation, monitoring, and exclusion as the primary means to control the ants.
9. Establishing an acceptable pest population density (e.g. 10 ants).
10. Improving sanitation (e.g. cleaning up crumbs and other food sources) and structural remediation (sealing up cracks or holes where the ants are coming from).

If the use of low-impact pesticide baits is deemed necessary, they will be placed in childproof containers, and used only in areas that are out of sight and reach of children/students. Small amounts of low-impact pesticide gels or pastes may also be placed in cracks and crevices or low-impact pesticide dusts may be sprayed into wall voids.

Staff must be informed that sanitation is important to ensure the effectiveness of any bait that is used. Ants are less likely to take bait if there are more attractive food and water sources nearby.

### **Additional Exclusion Measures**

In addition to sealing up cracks and holes where the ants are coming from, custodial and/or maintenance/construction staff should routinely seal up as many cracks and holes as time allows, especially those around:

- Baseboards
- Cupboards
- Electrical outlets
- Pipes
- Sinks
- Toilets

Outdoors, pipe and electrical chases should be sealed off.

Grounds staff should prune away any tree limbs or bushes (leaving about 24" of space) that touch the building.

**a. ANTS**

**2. Carpenter Ants** (*not yet completed*)

**b. BATS** *(not yet completed)*

## c. BED BUGS

### “Good night, sleep tight; don’t let the bed bugs bite.”

The familiar refrain we have heard for years has taken on a more sinister meaning as bed bugs make a world-wide resurgence. Motels, theaters, schools, apartment buildings, and homes are just some of the places bed bugs can be found. The good news is, unlike many other blood-sucking parasites, bed bugs are not known to transmit human diseases. Bed bugs prefer to feed on humans, but in a pinch they will also feed on other animals such as rodents, bats, and birds. Bed bugs move around by hitching rides or laying eggs on clothing, furniture, bedding, and baggage. Bed bugs don’t discriminate. People of all economic levels, housing types, races, colors, and religions are equally susceptible.



*Bed bugs: adult (center), nymph (upper left), and fecal spots.*

#### Controlling Bed Bugs

Adult bed bugs are flat insects around ¼” long and typically rusty brown-red in color. They are flat and broadly oval in shape. They lack wings, but can crawl very quickly. After feeding, adults are more elongated and torpedo-shaped, gradually returning to their flat, oval shape as their meal is digested. Females lay tiny white eggs that hatch into light-colored nymphs in about seven to 10 days. Immature nymphs resemble adults but are smaller (from less than 1/10” to almost ¼” depending on developmental stage). The nymphs turn bright red after a blood meal. While nymphs need blood meals to complete their development, adult bed bugs can survive for several months without feeding. During the day bed bugs hide in any available crack, crevice, or sheltered spot within a few yards of their feeding area. At night they come out of hiding to feed. Bites often occur as a row of several raised, reddened bumps. Most people don’t notice being bitten, but later the bites can become very itchy or painful. Bed bug bites can take up to two weeks to produce a reaction. Some individuals have no reaction at all.

Bed bug control requires a combination of approaches, as pesticides alone are not completely effective. A comprehensive strategy should include education and awareness about bedbugs, vacuuming and cleaning, and elimination of hiding places. Professional steam or heat treatments can be effective if performed by trained personnel. Less-toxic insecticides can be used, but application of residual insecticides is not advised in most school situations. Bug bombs or foggers are NEVER recommended in any situation, as bed bugs hide in sheltered places that are unaffected by these pesticide applications. For the best results, consider consulting with a professional pest management company with experience in bed bug detection and control.

#### Bed Bugs in Schools: What You Should Know

Schools are not an ideal environment for bed bugs which prefer to feed at night—a time when most schools are relatively empty. Most bed bugs are brought into schools as stowaways on student or staff belongings. If bed bugs are detected in a classroom, collect a sample for identification by a professional. Bed bugs can closely resemble other species, so accurate identification is essential. Once a bed bug is identified, a thorough inspection of the area should be performed.

**d. NESTING BIRDS — Starlings, Sparrows, Swallows, Pigeons** (*not yet completed*)

**e. GEESE** *(not yet completed)*

**f. GROUND PESTS:**

**1. House Mouse**

After humans, the House Mouse (*Mus musculus*) is the second most successful mammal in the world. They breed rapidly, can consume a broad variety of food, require little or no water, and are able to adapt to a wide range of habitats. Unfortunately, they are disease vectors and the proteins found in their urine circulate in the air and can be asthma triggers for sensitized individuals. They are considered one of the most troublesome pests in the United States. The acceptable indoor threshold for the House Mouse is zero.

Poorly sealed school buildings are highly vulnerable to mouse invasion. Most rooms are maintained at favorable temperatures and often contain edible items. A mouse running along the outside edge of a building is drawn into the building by warm air and food odors coming from under doors and through holes in the wall.

Mice have good hearing, sense of smell, taste, and touch. They are excellent climbers and can run up vertical walls to get to food. They can move along wires, utility cables, or ropes, can jump vertically 12 inches, and survive an 8' fall. Adult mice can squeeze through openings slightly larger than 1/4 inch in diameter.

Once inside, mice often establish themselves inside food storage and prep areas, closets, cabinet bases, rooms with lots of clutter, or similar locations. They will also climb wall utility lines for electrical or plumbing, and nest within suspended ceiling spaces.

Portable-style classroom buildings are extremely vulnerable to a mouse invasion as portables provide attractive crawl spaces providing access to dark, dirt floors, cool in summer; warm in winter, and protection from predators. Once the mice have gained entry to the crawl space, they find their way up through the floor along crevices or gaps created by plumbing or other utility lines following their nose towards food odors or warm/cool air currents. Portables also contain gaps and openings directly into the portables through any broken vent louvers, screens etc.

**Exclude mice from buildings**

In order to reduce the threat of rodent borne diseases, mouse allergens, and other possible health threats from mice, it is important to make every reasonable effort to prevent mice from becoming established inside buildings.

Inspect and seal up access points:

1. Any gaps of 1/4 inch or more should be properly sealed using the appropriate sealant (steel wool, foam and other temporary materials are not recommended). Seal off using good materials (i.e., not steel wool or expandable foam). We recommend silicone and acrylic urethane products because they stretch as gaps and cracks in buildings expand and contract due temperature changes and other factors. Larger holes and cracks can be stuffed with XCLUDER cloth or STUF-FIT copper mesh, and then sealed up with a silicone or acrylic urethane product.
2. Seal around water, gas, electric and other pipes and conduits going through walls.
3. All external doors should be mouse proofed using the high quality brush-type door sweeps that seal the gap between the threshold and the door base.
4. All ventilation screens, louvers used in attic spaces, furnace closets, and so forth, should be kept in good repair. All gaps around the frames of screens and louvers should also be kept tightly sealed.
5. It is not realistic to attempt to mouse proof the crawl space skirt around portable classrooms. However, it makes sense to keep the skirting as tight as possible and in good contact with the ground to deny entry to other mammal pests such as raccoons, feral cats, skunks, rats, and other mammal pests.

### **Don't Attract Mice**

No trash should be allowed to accumulate along the exterior walls. If food trash is allowed to remain, this condition will attract mice to the building perimeter. Do not place trash receptacles close to exterior doorways. Keep dumpsters clean, with lids closed. Drainage holes can be screened or plugged.

### **Don't Harbor Mice**

De-clutter storage areas and classrooms! It is best to use plastic (transparent) totes for storage. If cardboard boxes haven't been opened in 2 years, box and contents may be contaminated with urine and feces. Recycle or Chuck-it-Out.

### **Mouse Vulnerable Areas (MVA)**

Once inside, mice most commonly nest and/or forage about in mouse vulnerable areas. These MVAs are the target zones for setting out mousetraps in:

1. Kitchen, pantry, food preparation areas, and food consumption areas (including classrooms and teachers' lounge).
2. The crawl space beneath portable classrooms. Invading mice will often construct platform nests on the various structural ledges made up of grasses, leaves, feathers, or the building's batting insulation. The mice will also carry in and store relatively large amounts of seeds, nuts, and insect carcasses in any available floor and wall nooks.
3. Furnace closets (especially if the closet's ventilation louver is not in good repair).
4. Beneath kitchenette and bath cabinets where utility lines come up through the floor.
5. Within the suspended ceilings during the cold weather months.
6. Stuffed chairs and couches in staff lounges.

### **Eliminating Established Mice with Snap Traps – You have to de-clutter if you want to de-mouse!**

Snap trapping results in the fastest elimination of mice, however trapping is useless in a cluttered environment. Mice typically do not venture more than 30 feet from their nest (unless food is sparse).

Traps are very effective for mice. They take advantage of their curiosity. Mice will be trapped easily the first night, but then they will be trap-shy. Set many traps the first night (six per mouse, at least three feet apart); clear them in the morning, and remove. Set them again a week later, in slightly different locations. This technique will overcome trap-shyness. Dead mice and their fecal pellets should be handled as described in the "Safety Precautions" section at the end of this document.

Plastic style snap traps (e.g., the Kness Snap-E, J.T. Eaton JAWZ, Bell Trapper Mini Rex, Woodstream Quick Kill, etc.) are more durable, and can be cleaned with disinfectants more easily. The disposable wooden-based traps are an option when a disposable trap is required.

Traps can be baited with small smudges of peanut butter or a few drops of vanilla, orange, or any other extract oils. Despite common myths, there is no one "favorite" bait for mice. They are opportunists, and will sample most food odors they bump into. Mice also forage for nesting materials as well as food, so cotton balls may be used with traps. Mice mainly travel along walls. Place traps up against walls with the snap end facing the wall.

### **Inspecting and Monitoring for Mice**

When carrying out inspections, look for fecal pellets in mouse vulnerable areas. Also look at cardboard boxes, stuffed furniture, and similar items for signs of gnawing.

In areas with past mice problems or potential mice problems, bait stations with non-toxic detection blocks (e.g. DETEX BLOX) may be used to monitor activity. Block baits should be replenished on an 8-12 week basis, or as necessary due to consumption, or spoilage of the blocks.

**It must be stressed that even when using non-toxic detection blocks, they should be put inside tamper-resistant bait stations that are designed so the blocks will not fall out should the stations be picked up and shaken.**

Possible locations for the stations include:

1. Within the furnace closet, in the back area of the closet, preferably behind the furnace;
2. Beneath any kitchenette sink;
3. Beneath any bath cabinet;
4. In the suspended ceiling, positioned directly above the kitchenette, bath, and nearby the furnace closet.

To monitor for mice under portables, put one or two tamper-resistant bait stations along the middle of the side of the skirts underneath the portable. To accomplish this, each portable must have an access door that is easily opened, and closes tightly.

Exterior storage sheds (bike sheds, dumpster sheds, equipment sheds, etc.) should also be monitored for mice. This can be accomplished by installing two bait stations; one on each side of the shed. The baits should be replenished on an 8-12 week basis, or as necessary as mentioned above.

### **Safety Precautions for Handling and Removing Rodent Carcasses and Feces from School Buildings\***

Despite good efforts, some mice inevitably gain entrance to schools and other public buildings. Most mice and the accompanying excrement are not considered to be highly hazardous to our health. Still, it makes sense to err on the side of caution, and practice good safety measures when handling dead rodents in traps, and/or cleaning up rodent excreta.

#### **Precautions When Handling Dead Rodents**

1. Wear rubber or plastic gloves (disposable gloves are usually purchased in boxes of 100 by pest management professionals and building custodians).
2. Spray the dead mouse and any trap with disinfectant until wet.
3. Any inexpensive household disinfectant will suffice as will a weak (5-10%) solution of bleach and water.
4. Turn a zip lock bag inside out.
5. With a hand inside the bag, pick up the rodent and the trap.
6. Invert the bag over your hand and seal the bag.
7. Wrap the bag in a newspaper and dispose in a dumpster or garbage can.
8. Spray the area where the trap or the dead mouse was lying with a light spray of disinfectant and let dry.
9. Dispose of the gloves in the trash, or for re-useable gloves, spray the outside of the gloves with disinfectant, then remove the gloves and wash hands with soap and water.

#### **Precautions When Cleaning up Small Amounts of Rodent Droppings**

1. Feces should not be swept up, or vacuumed because this can cause the excrement residues to become airborne and be inhaled.
2. Wear rubber or plastic gloves (disposable gloves are usually purchased in boxes of 100 by pest professionals, and building custodians).
3. Spray the droppings and affected area with disinfectant until wet.
4. Use a wet paper towel to pick up the disinfected droppings.
5. Place the droppings and paper towel into a zip lock bag and seal the bag.
6. Dispose the bag in a dumpster or garbage can.
7. Dispose of the gloves in the trash, or for re-useable gloves, spray the outside of the gloves with disinfectant, then remove the gloves and wash hands with soap and water.

**Note: For employees wishing to maximize personal protection, and/or when removing rodent feces in enclosed spaces, and where a large amount of rodent feces are present, coveralls, and a respirator with a HEPA (NP 100 to NP 400) filter should be worn.**

\* Adapted from:

1. CDC Hantavirus Preventative Recommendations ([www.CDC.gov](http://www.CDC.gov).)
2. Army Pest Management Bulletin, 2001. Vol. 22 (4)
3. Communications from Bobby Corrigan, Ph.D. RMC Pest Management Consulting.

# SCHOOLS INTEGRATED PEST MANAGEMENT (IPM) FOR RATS AND MICE

## \*Important Note\*

~~According to the Virginia Pesticide Control Act (Section 3.1-249.53), in order to apply ANY pesticide (including Raid®, Round-Up®, and other over-the-counter pesticides) in public areas of ANY educational institution, the applicator must first be certified by the Virginia Department of Agriculture and Consumer Services. In other words, it is illegal for uncertified teachers, staff, administrators, or contractors to apply pesticides on school grounds.~~

## INTRODUCTION

Rats and mice can be a major pest problem in schools. They damage food, books, documents, and clothing. Damage to a structure occurs when rats and mice gnaw on structural components, including wiring, wood, and plastics. The gnawing on wire insulation can result in electrical shorts and fires. Rodents have also been implicated in the spread of dangerous human diseases. In short, structural risks, health risks, and a general lowering of environmental quality accompany any rodent infestation.

## BIOLOGY AND IDENTIFICATION

There are several important rodent pest species. Correct identification is imperative. Each species behaves differently and therefore requires different management techniques. Table 1 and Figure 1 will help you to identify a pest rodent. Use the descriptions below to learn more about rodent habits.

### *Rats*

There are two main pest rat species in Virginia, *Rattus rattus*, the roof rat, and *Rattus norvegicus*, the Norway rat. The roof rat is also known as the ship, black, or Alexandrine rat. The Norway rat is also known as the brown, wharf, house, gray, or sewer rat. Use Figure 1 to help you identify these rats. The following points about the behavior and biology of rats are helpful to understand when dealing with them:

1. Norway rats will generally build their nests in subterranean or ground level

locations. Roof rats, in keeping with their name, prefer to nest in elevated areas, including trees and storm drains.

2. Rats require water on a daily basis.
3. Rats can travel several hundred feet from the nest to forage for food and water.
4. Rats feed on a wide variety of food sources including trash, fruits, vegetables, meats, insects, grains, pet food, tree bark, and plant material.
5. Some rats can pass through openings as small as  $\frac{3}{4}$  inch in diameter.
6. Rats can jump vertically at least 24 inches and horizontally at least four feet.
7. Rats can dive and swim underwater for as long as 30 seconds. Therefore, they can crawl up to and swim through the water trap of toilets and drains.
8. Rats chew on everything, including wood, metal, glass, plastic, and stone, in order to help keep their large front teeth sharp and shortened.
9. Rats are very wary of new items in their environment.

### *Mice*

There is one main species of pest mouse, the house mouse, *Mus musculus*. Other types of mice, such as field mice and voles, can invade a structure but are only occasional invaders and prefer living outdoors. Often, people confuse immature rats with house mice. Use Figure 1 to determine if your pest problem is a house mouse or an immature rat. The following points are important to remember when dealing with mice:

1. Mice can get all of their moisture from their food if a ready water source is not available.
2. Mice search their entire home range daily to check for any changes to their environment.
3. The home range of a mouse is usually no more than 33 feet from their nest.
4. Mice may nest within appliances, in wall and floor voids, in false ceilings, behind counters, and within other similarly protected areas. If they are living outdoors, they prefer to nest in thickly vegetated or covered areas, such as in wood piles, rock piles, or leaf litter.
5. Mice can jump upward at least 12 inches from the ground.
6. Mice can fit through any opening  $\frac{1}{4}$  inch in diameter.
7. Mice chew on everything, including wood, metal, glass, plastic, and stone, in order to help keep their large front teeth sharp and shortened.
8. Mice are good swimmers but seldom dive below surfaces.
9. Mice are very curious and will explore new items in their environment.

In general, rats and mice share many similar characteristics. Understanding these features is a very important aspect of rodent control. The following list gives some of these basic attributes:

1. Rats and mice usually search for food at night. If you happen to see a rodent during the day, that might mean there is a lack of food or the rodent population is high.
2. Mice and rats can run up almost any vertical surface including cinder blocks, wood, sheet metal, metal pipes, and cables.
3. Rodents prefer to travel along edges, using their whiskers as guides. Examples of edges include along the wall/floor junction, beside the foundation of a structure, or along pipes, utility wires, or rafters. Rodents are very wary of open spaces and will seldom cross uncovered areas.
4. Rats and mice have poor vision but powerful senses of smell, touch, hearing, and taste.
5. Rats and mice have very short generation times and can therefore populate a structure in a short amount of time.

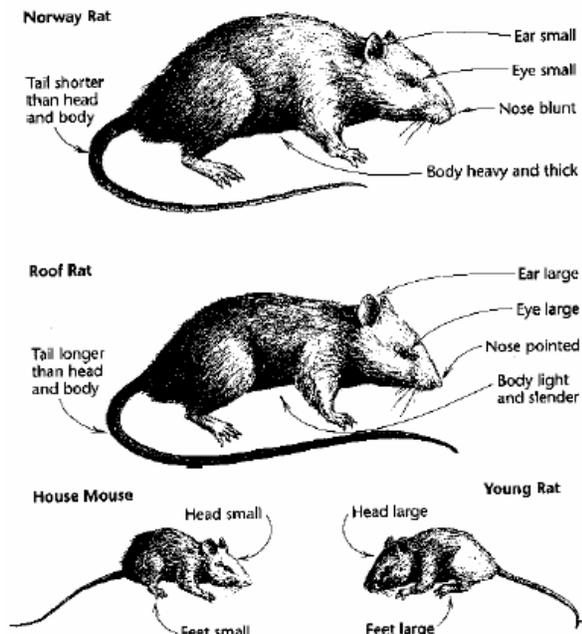


Figure 1. The differences between rats and mice.

## PREVENTION

Rats and mice often can be kept from becoming a nuisance by limiting their access to nesting sites and food and water supplies. If rats or mice are killed through control techniques but food and water resources are still available it is likely that new rodents will eventually move in to take their place. The best way to limit rodent resources is through sanitation and maintenance. Prevention may require time and effort but can be a permanent fix to the problem if done correctly. Below are some of the most effective methods of prevention using sanitation and maintenance:

1. Store food (including pet food and grains) in glass, metal, or thick plastic containers with tight fitting lids.

2. Promptly and thoroughly clean up any spilled food materials.
3. Designate certain places within the school as areas for eating. Help students, teachers, and administrators understand the importance of only eating in these areas.
4. Garbage is often the main source of food for rats and mice. Keep all trash receptacles tightly covered and empty them often. Plastic trash bags will not keep rodents out so remove trash daily.
5. Remove any ready water sources. Fix leaking pipes, faucets, or irrigation systems. Also, if possible, remove standing water found in ditches, depressions, or other similar situations.
6. Remove fallen fruits and nuts from any outside trees.
7. Trim trees, bushes, grass, vines, or any other plants at least 12 to 18 inches away from the structure.
8. Seal any holes and cracks within the siding of the building that can be used by rats or mice to gain access into the structure. In a rodent management program, the best materials to use when sealing large holes and cracks include ¼ inch hardware cloth, 19-gauge or thicker sheet metal, plaster, or mortar. Smaller holes can be sealed using caulk or copper wool. Remember to look for holes in the building not only in the first three feet above the ground. Rats and mice will also enter a structure via the eaves, the roof, the attic vents, and where pipes and wires penetrate the walls and roof.
9. Weather strip around doors and windows and if possible use raised metal doorsills.
10. Seal air conditioning units well. These units provide warmth, a nesting site, and a ready source of water.
11. Repair broken sewer pipes. Rats will dig into and use broken sewer pipes as an entryway into a structure.
12. Cap drains with perforated caps that are firmly attached to the floor.
13. Clean up storage areas and other cluttered spaces, thus reducing nesting

sites and protected places where rodents feel comfortable moving around.

14. Remove wood piles, rock piles, and any other outdoor heaps of materials that may provide nesting sites for rats or mice.

## **MONITORING AND INSPECTION**

Detection and monitoring are important in controlling mouse and rat problems. When inspecting an area for a rodent infestation, the following points will be helpful:

1. Remember that you are trying to find five main things: nesting areas, food sources, water sources, access points, and signs of rodent activity.
2. Search piles of trash, clutter, or debris for rodent nests.
3. Inspect for feces and urine. Use Figure 2 to identify the source of a fecal pellet.
4. Inspect for rub marks or other indications of activity. Since rodents pass over the same spot within their territory over and over again, they leave behind rub marks where body oils and dirt collect.
5. Look for holes and cracks through which rodents can pass both inside and outside.
6. If you feel rodents may infest an area, lightly dust the edges of the area with chalk dust or talcum powder. After a period of time, return and look for footprints and drag lines (made by tails) that indicate rodent traffic.
7. Inspect at night when rodents are most active. Use a powerful flashlight and watch for movement. Listen for gnawing sounds, squeaking, and rodent movement.
8. Temporarily close suspected holes and entryways with dirt, paper, or aluminum foil. After a few days, return to see if the material was removed or chewed through.

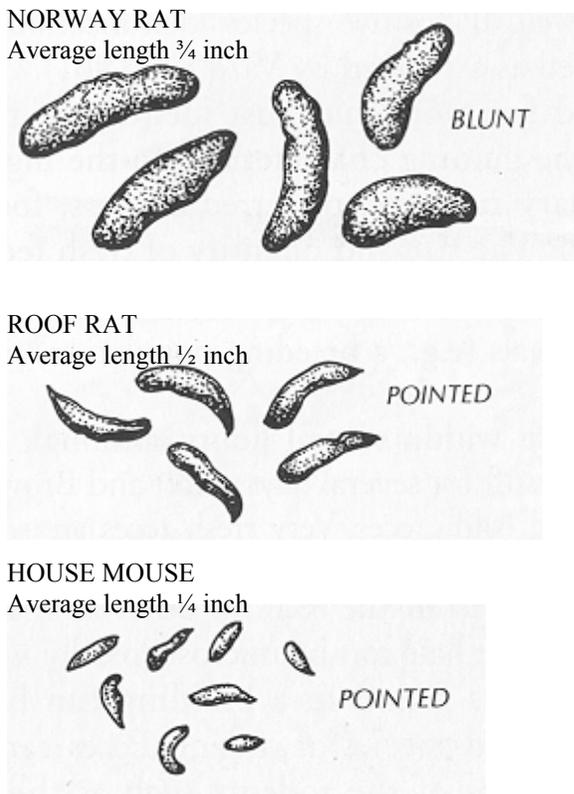


Figure 2. The difference between rat and mouse fecal pellets.

## LEAST TOXIC CONTROL METHODS

The purpose of integrated pest management (IPM) is to reduce two things: the pest population and the amount of pesticides needed to accomplish that goal. With the exception of emergency situations, all other available control methods should be used prior to using a pesticide. Using poisons has several important risks that must be considered. These dangers will be addressed in the section titled "Poisons". Before any poisons are used in an IPM program, sanitation, maintenance, and other less toxic control measures should be utilized.

As a side note, several companies manufacture and advertise repellent sound devices for rodents. The Federal Trade Commission ruled these devices as being ineffective at controlling rats and mice.

Below are some of the most effective and least toxic methods available for ant control.

### *Physical Removal*

One of the most common forms of rodent control is the removal of individuals by trapping. Rodent traps fall into three main categories: snap traps, live traps, and glue boards.

Snap traps make use of a trigger-induced killing mechanism. Upon being triggered by the presence of a rodent feeding on bait, the mechanism instantly snaps shut onto the mouse or rat, killing the individual. There are different sizes of traps, larger ones for rats and smaller models for mice. This type of trap is the most effective type of trap for use in dusty locations.

Live capture traps are available, but leave the unpleasant job of killing the rodents to you. These traps may or may not utilize bait to attract the rodents.

Glue boards are also an option. These are helpful in that they not only trap rodents but also can retain rodent hairs and fecal pellets of escaped rodents, allowing you to monitor the presence of rodents. Glue boards do not kill mice nor rats so should be inspected often in order to prevent unnecessary suffering of trapped individuals. Glue boards should be fastened to a base with nails or wire in order to prevent partially trapped individuals from dragging the traps away.

The following points will help your trapping program be more effective:

1. Always place traps flush against edges since rodents follow edges as they move from place to place.
2. Place traps near active holes and cracks and near clutter and other protected areas where rodents may frequent.
3. Place traps near fecal pellets and rodent urine.

4. Place traps near gnaw marks, rub marks, or other signs of rodent activity.
5. Secure all traps so those partially caught individuals can not drag the trap to an unknown location.
6. You may wish to bait your trap with food or nest material. Examples of effective food baits include hot dog, bacon, nuts, or sugary substances such as gumdrops or raisins. Cotton may be used as effective nest material bait.
7. As for the number of traps to use, there is not a definite number. Usually the more traps you can safely set, the better. Place traps wherever you find activity and try placing traps every three to four feet along a wall. Concentrate traps in one area at a time. After the area has been cleared of rodents, move on to the next area.
8. One of the most important things to remember about traps is when first placed they are foreign objects to the rodents. Rats and mice will treat foreign objects differently. Rats are wary of unfamiliar objects while mice are more curious. Therefore, depending on the rodent species, trapping may be instantly effective or may require patience.
9. Whenever removing live or dead rodents, wear gloves to protect yourself from harmful microorganisms.

### ***Chemical Management***

Sometimes sanitation, maintenance, and physical removal alone may not be enough to control an existing rodent problem. If mice and rats persist or if an emergency situation warrants control of a problem via other methods, chemical pesticides may be needed. Remember that Virginia law requires that all pesticides applied on school grounds must be applied by a certified applicator. All pesticides should be applied according to labeled directions. Applicators must wear protective clothing. Pesticides should never be applied where they might runoff into storm drains or sanitary sewers.

Whatever the control method you choose, it is imperative that you keep clear, accurate records of all actions taken.

There are several important negative aspects to the use of rodent poisons. The use of rodenticides has been overused. Because of this overuse some mouse and rat populations have developed resistance to the toxicants. In addition, the use of rodenticide can be a dangerous exercise. Rodents can pick up the toxic baits and move them to other areas of the school. Baits can end up in cafeteria food, in student lockers, and in wide-open areas where curious students may pick up and handle them. Therefore, rodenticides should only be used to handle emergency situations where rodents are out of control and other management techniques are insufficient alone.

Baits should not be used indoors. Intoxicated rodents that are disoriented may inadvertently wander into public areas. Imagine a school administrator having to deal with a dying rodent that has emerged into a school cafeteria. Additionally, rodents that have been baited indoors often die in hidden, difficult-to-reach areas. The result is a dead, decaying, malodorous body that can not be removed. The dead body also attracts new pests like flies and other insects.

The following suggestions will make the use of toxic baits more effective and safe:

1. Only use rodenticides outdoors.
2. Place all rodenticides in locked, tamper resistant bait stations and secure all bait stations so they are immovable.
3. Since rodents often move and hide their food, some forms of baits may be safer to use. Water baits and secured blocks of paraffin bait can not be removed and stored by rodents.
4. Use baits over long holidays when students are absent from the building.
5. For rats, bait stations should be placed about every 15 to 30 feet apart. For

mice, they should be about every six to eight feet apart.

6. Place baits along the edges of walls, near rodent entryways, and in areas where known rodent traffic exists.
7. Remember to have patience since rats must become accustomed to changes in their environment. It may take a few days until the rats feel comfortable trying the baits.
8. Monitor frequently the amount of bait consumed. Replenish any missing bait until management goals have been reached.
9. Remember to always wear gloves when handling any sick or dead rodents.

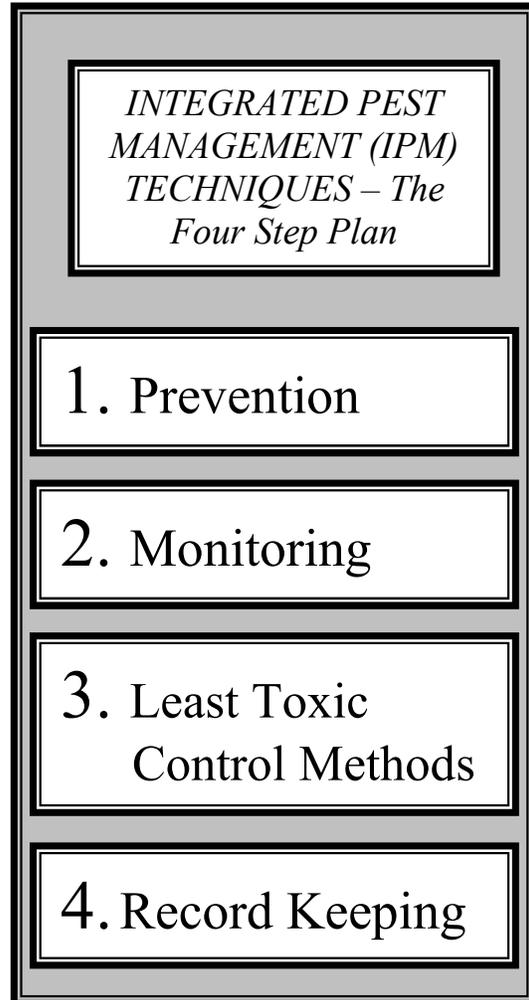
### **RECORD KEEPING**

Protect yourself against liability. Record all chemicals applied in a pesticide application IPM logbook on the facility's premises. Include the name of the applicator, the date of the application, the formulation used, and the brand name of the chemical used. Be sure to also document the location of application and the pest problem that initiated the chemical treatment.

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Special thanks to the Bio-Integral Resource Center (BIRC) for their permission to use the graphics and tables used in this publication  
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	<b>Norway Rat</b>	<b>Roof Rat</b>	<b>House Mouse</b>
<b>Scientific name</b>	<i>Rattus norvegicus</i>	<i>Rattus rattus</i>	<i>Mus musculus</i>
<b>Other common names</b>	Brown, wharf, or sewer rat	Black, ship, or house rat	
<b>Adult weight</b>	3 to 21 ounces	3 to 12 ounces	½ ounce
<b>Snout</b>	Blunt	Pointed	Pointed
<b>Ears</b>	Small and thick with short hairs	Large and thin without hair	Large, some hair
<b>Tail coloration</b>	Dark above, pale underneath	All dark	All dark
<b>Fur</b>	Brown with black; shaggy	Light brown, gray to black, smooth	Light brown to gray
<b>Droppings</b>	Capsule-shaped, pointed	Pointed and curved	Rod-shaped and pointed
<b>Food requirement</b>	1 ounce per day	1 ounce or less per day	1/10 ounce per day
<b>Water source</b>	Free water	Free water	Water from food; also need free water if dependant on a diet that is dry or high in protein
<b>Climbing ability</b>	Can climb	Active climber	Good climber
<b>Nest locations</b>	Mainly in burrows	Walls, attics, trees	Near/in stored material
<b>Swimming ability</b>	Excellent	Can swim	Can swim

**f. GROUND PESTS:**  
**3. Gophers and Moles**

**MATRIX OF HIERARCHICAL STEPS TO MANAGE PESTS:**

- Level 1 is the preferred first action.
- Level 2 is the preferred second action.
- Level 3 is the preferred last action.

This matrix identifies a pest problem or issue and defines approved practices for proper control. The goal is the safest, least toxic, and cost-effective methods of control. The IPM Plan Coordinator (or designee) must approve any additional strategies before they are used. Site personnel must always consult the IPM Plan Coordinator (or designee) prior to taking action against pests on College property. Uneven athletic turf is often caused by the burrowing of moles and gophers. This can result in injuries to users of these fields, and a general deterioration of the quality of the turf surfaces. Dogs, often allowed by their owners to run loose on district fields increase the hazards by digging into the burrows.

<b>LEVEL 1: Action approved for College supervised volunteer or District staff</b>					
<i>Action</i>	<i>Threshold</i>	<b>DONE BY:</b>			<b>IPM RESPONSE</b>
		<i>Volunteer</i>	<i>Staff</i>	<i>Code</i>	<i>Comments</i>
Site Inspection	Complaint	X	X	T	Area not actively used
Reduce deep rooted weeds/plants through cultivation practices. Dress, Irrigating, (Gophers only)	Complaint/work order/site inspection One fresh mound in playing field	X	X	P/E	Effective for gophers only; Top Fertilize, Re-seeding
<b>LEVEL 2: Action approved for licensed applicator, (District staff or contractor)</b>					
<i>Action</i>	<i>Threshold</i>	<b>DONE BY:</b>			<b>IPM RESONSE</b>
		<i>Volunteer</i>	<i>Staff</i>	<i>Code</i>	<i>Comments</i>
Trap	Complaint/work order/site inspection		X	P	Use in any weather; No trapping when students are present without on-site monitoring. Trap location needs identification.
Rodenticide	Complaint/work order/site inspection		X	P	Follow notification-posting-reporting requirements in IPM Plan; Use in wet season - Early in morning before students arrive
<b>LEVEL 3: Action approved for licensed applicator (District staff or contractor) required</b>					
<i>Action</i>	<i>Threshold</i>	<b>DONE BY:</b>			<b>IPM RESONSE</b>
		<i>Volunteer</i>	<i>Staff</i>	<i>Code</i>	<i>Comments</i>
No currently approved treatment					

IPM (Integrated Pest Management) RESPONSE CODE REFERENCE:

P – Prevention E – Exclusion S – Structural Modification T – Tolerance X = Person responds to action items listed

## f. GROUND PESTS:

### 4. Yellow Jackets and Paper Wasps

#### GENERAL DESCRIPTIONS:

There are two types of common stinging wasps in Oregon school environments:

- Yellow Jackets (*Vespula* spp. and *Dolichovespula* spp), and
- Paper Wasps (*Polistes* spp and *Mischocyttarus flavitarsis*).

These wasps often nest in, on, and near school structures, as well as on playgrounds and sports fields. They are also able to sting multiple times (unlike honeybees), making yellow jackets and paper wasps a significant pest for many school districts.

Colonies of both yellow jackets and paper wasps begin with a single queen each spring. The queen overwinters in various natural and man-made protected habitats. She emerges in early to mid-spring; the timing varies inter-annually based on weather conditions and therefore may occur as early as March in some years. Upon emerging, the queen selects a nest site, begins construction, and lays the first generation of eggs. Once the first generation of workers reaches maturity, they assume various roles including foraging, nest construction and maintenance, defense, and tending the young. The queen is then able to focus more of her energy on egg-laying and colony growth from that point on.

Yellow jacket and paper wasp colonies continue to grow in nest size and number of individuals throughout the summer, reaching a maximum nest size in August- September; however, some yellow jacket species may persist into November. In late summer colonies begin to produce a limited number of male wasps to fertilize new queens. As cooler fall weather sets in, workers and males die leaving only the inseminated queen to overwinter and begin the cycle anew the following spring.

Nests are not reused in Oregon by either yellow jackets or paper wasps. Paper wasps exhibit a high fidelity to specific nest sites, and are known to construct new nests in the same location each year. In some cases, if the old nest is still present, paper wasps may attach a new nest onto the previous year's nest.

Beyond these basic life history features, yellow jackets and paper wasps differ significantly in their biology, temperament, and particularly their management. Therefore, identification to determine which wasp type you have is a critical first step when assessing a wasp issue. [Note: bees are not wasps, and care should be taken with identification for this reason as well. Many species of bees are critical pollinators of both urban and agricultural environments.]

**See chart on next page of Yellow Jackets and Paper Wasps . . . .**

Characteristics of Yellow Jackets and Paper Wasps		
	Yellow Jackets	Paper Wasps
Pictures:		
Appearance:	Workers are ½” long; stocky body, black and yellow or black and white; anterior portion of thorax at right angle	Workers are ¾” long; thin body, long legs trail in flight; anterior portion of thorax tapers backward
Basic life cycle (inseminated queen overwinters, emerges following spring, begins new nest and colony):	same	same
Nest type:	Encased in paper envelope, with multiple tiers of comb	Exposed, single comb attached to a surface by a thin, short stalk
Nest location:	Variable – most likely to notice and have problems with ground nests, but may be in buildings, or enclosed spaces	Highly variable – under protected eaves, in pipes, handrails, playground equipment, utility boxes, etc.
Behavior:	Aggressive, likely to sting in proximity of nest	Less aggressive, less likely to sting unless provoked

See next page for descriptions of Yellow Jackets and Paper Wasps . . . .

## **YELLOW JACKETS**

Yellow jackets are stocky in appearance with a ½” long body length. They have a sleek look and are fast fliers. Yellow jackets may initially appear similar to bees, but yellow jackets lack the fuzzy (hairy) appearance of bees, and also do not forage for nectar on flowers.

In Oregon school environments, yellow jackets include aerial (e.g., tree) nesters (*Dolichovespula* spp.) and those that most often nest in the ground, structures, or cavities (*Vespula* spp.). The two aerial, or tree-nesting, *Dolichovespula* typically seen include *D. maculata* – a black and white wasp also known as the “bald-faced hornet” – and *D. arenaria* – a yellow and black wasp that typically nests in trees.

Ground nesting (*Vespula* spp.) yellow jackets comprise the great majority of yellow jackets responsible for stinging incidents and management concerns in Oregon school environments. Perhaps the most commonly encountered ground-nester in Oregon is the Western yellow jacket, *Vespula pensylvanica*, which is native to western North America. The common yellow jacket, *Vespula vulgaris*, is also native, and in spite of its name it is less commonly encountered in urban environments. The common yellow jacket prefers to nest in the ground or logs, and is more typical of forested areas. The German yellow jacket, *Vespula germanica*, was introduced to the East coast of North America in the mid-1800 and arrived in Oregon in the mid-1990. Its occurrence seems to be correlated with areas of high urban population along the I-5 corridor as well as areas along the Oregon coast. While a ground-nester, the German yellow jacket also shows a preference for nesting in structures between walls, in attics or other cavities, abandoned cars, etc. German yellow jackets are behaviorally different from our native yellow jackets; they tend to be less responsive to mowing activities, wall-pounding (for wall void or attic nesters), and other forms of disturbance.

Queens select ground nests by searching for indentations in the soil, which may occur from old mammal burrows. She, and later the workers, will additionally excavate the space to make room for the growing nest. At their peak size, bald-faced hornet nests may reach several hundred individuals, and ground-nesting (or cavity-nesting) yellow jackets may reach several thousand individuals. Unfortunately, by the time cavity and ground nests become noticeable, they are quite large and more likely to sting in defense of their nest. Nests reach peak size in late summer to early fall, and colonies tend to persist longer than paper wasps. German yellow jackets, for example, reach a peak colony size in October to early November.

Yellow jackets are aggressive in their foraging habits and are known for their eager invasion of outdoor lunch areas. They are particularly fond of fish (including sandwiches) and sweet beverages (fruit and soda). Yellow jackets will readily land on food as it is being eaten, and often crawl inside pop or juice cans to drink. They may also land on human skin to consume the salt in our perspiration. While this foraging behavior often leads to close encounters between yellow jackets and students or staff, these wasps sting less readily when foraging and away from the nest (unless swatted at or otherwise threatened). They have been documented to forage up to 165 feet from their nest and unfortunately have demonstrated a keen memory for food sources. After just one successful feeding from a student lunch or open garbage can, they may return repeatedly – even after the food source has been removed.

## **PAPER WASPS**

While paper wasps are generally regarded as less aggressive than yellow jackets, their habit of nesting in the eaves outside of school entrances, playground equipment, inside utility boxes, etc., gives them a high level of visibility. Paper wasps have a slender body 1/2 – 3/4” long. Their legs trail in flight, giving them a floaty-flier appearance that helps to differentiate them from yellow jackets and bees. The paper wasp nest is a single-layer comb that lacks a paper envelope surrounding it and is therefore completely exposed. The nest faces downward and is attached to a surface via a slender stalk. Nest location may vary in height from head-level to more than two stories. Nest size is typically 100 cells (the European paper wasp) to 200 cells (native paper wasps), but may reach up to 400 cells in size. In ideal conditions, paper wasps may take as little as 40 days to develop from an egg to adult. Paper wasp females can and will sting if provoked (e.g., as when wasps become trapped between clothing and skin, if nest destruction is attempted, etc.).

There are several species of paper wasps in Oregon that may be found in school environments. The European paper wasp, *Polistes dominula*, was introduced to the United States east coast in the 1970's and

## APPENDIX 2

has since spread to most areas of the West by the early 2000's. The European paper wasp is slightly smaller than other paper wasps. It is also synanthropic (associates strongly with human environments) and as such often nests in protected spaces in and on man-made structures such as areas under eaves, in and around playground equipment, bird houses, utility boxes, pipes, handrails, etc. Nesting in these types of habitats is not exclusive to the European paper wasp, but this wasp is more consistent at nesting in and around human structures and equipment than Oregon's native paper wasps.

Other species of paper wasp that may be found in school environments in Oregon include *Polistes fuscous*, the golden paper wasp, which has narrow yellow bands and may appear overall more dark. *Mischocyttarus flavitarsis* has a long, narrow petiole (or "waist") that clearly distinguishes it from yellow jackets and other types of paper wasps. *M. flavitarsis* is more variable in its selection of nest sites. Nests located in natural habitats are commonly positioned in tight places such as cracks in rocks or the underside of rocks, boards, logs, etc. In urban environments, *M. flavitarsis* nests may be more hidden than other paper wasps'.

Paper wasps do not exhibit a preference for human foods, and are not the picnic- crashers that yellow jackets are so well known for being. Adult paper wasps frequent flowers to feed on nectar. Adults are considered a beneficial insect for their role in biological control of soft-bodied insects (including several species of caterpillar pests, aphids, etc.) and spiders, all of which they grind up and feed to the developing wasp larvae (Crenshaw - CO State, 04/08). They have also been known to scavenge for dead insects and spiders for their young.

## WASP MANAGEMENT

Following identification to determine whether it is a paper wasp or yellow jacket, the threshold for the wasp should be considered. Thresholds define at what point action is taken to manage a pest. Each pest should have a threshold associated with it that is based on their ability to proliferate, cause harm to humans or the environment, damage resources/structures, and the likelihood of them coming into contact with students or staff. Thresholds may also take into consideration the values and tolerance levels of your school district, or even the individual school site.

1. Thresholds - There are numerous situational factors that may also affect thresholds and whether or not action should be taken (and what type of action that should be). Among these factors are weather and the time of year. In late summer or early fall, for example, the approaching cold weather will reduce or eliminate wasp activity for the year, so a wasp nest located in a low-traffic area of the school could be "waited out" in some cases.

Consider the following when crafting your thresholds for yellow jackets and paper wasps:

- a. Type of wasp (e.g., the level of aggression likely to be exhibited if staff or students come into contact it)
- b. A nest versus foraging wasps. For each wasp type, it may make sense for your district to establish thresholds for foraging wasps, and another set of thresholds for the nest.
- c. Type of nest and its location on the school property (e.g., in a tree, in the ground, or in a swing set, etc.) and its likelihood to be encountered.
- d. Time of year and near-term seasonal weather.
- e. The level of wasp knowledge of students and staff, and their ability to cooperate with instructions to avoid being stung. NOTE: when educating staff, students, and parents about your district's thresholds, it is important to include information about the biology of the wasp to support your choice of action. Education is often instrumental in reducing concerns.

When responding to a yellow jacket or paper wasp complaint, it is therefore critical to begin by assessing the situation *in person*, knowing which wasp type you have, whether it includes foragers or a nest, etc., and from there deciding whether any thresholds are being reached.

2. Preventative Maintenance:
  - a. Brush up, know your pest: as a facilities or maintenance personnel, learning about your pest is the single most valuable thing you can do to manage it effectively.
  - b. Inspect: regular inspections consist of walking around your structures and looking for nests tucked under eaves, in/on playground equipment, inside utility boxes, etc. Early detection and removal is

## APPENDIX 2

- less likely to result in stings of students, staff, and those removing the nest.
- c. Rodent management: collapse rodent burrows once/year – particularly in areas where there is regular rodent burrow activity and human foot traffic. This is best done December – February to avoid stirring up ground-nesting yellow jackets.
3. Chemical-Free Methods - Chemical-free methods are most effectively employed at night or near-dawn, when most wasps are in the nest and activity is at its lowest. Any action taken against a nest will incite some degree of response from the wasps that may take many hours to subside – particularly later in the season when nests are larger, and particularly in the case of yellow jackets. Therefore, any action against a nest should take place outside of regular school hours when students are not expected to return for at least several hours.
    - a. Paper wasp nests that are less than 10' off the ground can simply be knocked down with a long-handled tool (e.g., a rake or shovel). Caution: you will need to do this when students are not present. If you do not have a bee suit, be prepared to move away quickly after agitating the nest. If you are unsuccessful, let the nest calm down and approach it at a later time.
    - b. Vacuuming is commonly used for ground-nesting yellow jacket nests. A vacuum hose may be placed near the nest entrance. Careful observation of nest response may convey the size of the nest and therefore how long it may take (2-3 hours). Yellow jackets may begin to ignore the vacuum, so it may be effective to turn the vacuum off for 20 minutes after the first hour, and then resume vacuuming. Wearing a bee suit is strongly recommended.
    - c. Soapy water poured down a nesting hole, or sprayed/hosed onto a paper wasp nest. Water alone will simply bead up on the exterior of their waxy cuticle, but the soap will facilitate not only suffocation, but make it difficult for them to fly as well. This knock-down method allows you to vacuum up the wasps and remove the nest.
    - d. Aerial wasp nests (those in trees, for example) may be enclosed in an extra-thick plastic bag, frozen for 24 hours, and discarded.
  4. Products and applications:
    - a. Yellow jacket traps attract foraging wasps with formulated lures, soda pop, etc. While there is no scientific evidence that trapping queens reduces the number of nests, traps can be used to help draw foraging wasps away from buildings and high traffic areas.
    - b. If pesticides are used, the district is responsible for following the proper posting and notification requirements, using “caution” label products only (except in cases involving a declared pest emergency), and making sure any pesticides used are applied by licensed applicators.
  5. Preventative approaches - Staff and student awareness of wasp behavior as well as the importance of sanitation is going to make any facilities and maintenance personnel job easier. A wasp “Pest Press” for staff and students is available from Oregon State University’s School IPM Program. Additionally:
    - a. The presence of foraging wasps (e.g., there is no identified nest) is often an educational issue. Soda (spilled or in cans), juice and other sweet beverages, and a variety of meaty or sweet foods will attract wasps. Quick clean-up is necessary, and prevention is even better given the keen memory for food sources that yellow jackets have.
    - b. If foraging wasps are a recurring problem in a given area, encourage those in charge to corral food and drink to a given area of the school.
    - c. Make sure trash cans have tight-fitting lids. During the fall, these lids should be hosed off regularly to discourage foraging yellow jackets.
    - d. Take a proactive approach. Educate staff at the start of each school year (when wasp colonies are at their largest): who to notify for wasp complaints; who to notify in the event of spilled food and beverages outdoors; staff and students should never swat at wasps, but rather move away slowly from aggressive foragers (swatting is perceived as a threat and may induce stinging); avoiding the color yellow and perfumes in late summer through early fall may also help discourage wasps from landing on students and staff.

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For further reading on yellow jackets or paper wasps with complete in-text citations available upon request:

- University of California Yellow Jacket curriculum: [apps.cdpr.ca.gov/schoolipm/training/curricula/yellowjackets.pdf](https://apps.cdpr.ca.gov/schoolipm/training/curricula/yellowjackets.pdf)
- Washington State University Cooperative Extension publication: Yellow Jackets and Paper Wasps. <http://www.pesticide.org/solutions/home-and-garden-toolbox/pest-solutions/yellow-jackets>

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Acknowledgements: Colorado State University (W. Cranshaw), Washington State University (Todd Murray, A. Antonelli and R. D. Akre), USDA (P. J. Landolt), Jim Digiulio, US EPA Office of Pesticide Programs, Iowa State University (J. Hahn, P. Pellitteri, and D. Lewis).

## f. GROUND PESTS

### 5. Poison Oak

**MATRIX OF HIERARCHICAL STEPS TO MANAGE PESTS:**

- Level 1 is the preferred first action
- Level 2 is the preferred second action
- Level 3 is the preferred last action

This matrix is to be used in conjunction with PCC IPM Plan, and identifies a pest problem or issue and defines approved practices for proper control. The IPM Plan Coordinator (or designee) must approve any additional strategies before they are used. Site personnel must always consult the IPM Plan Coordinator (or designee) prior to taking action against pests on District property.

Poison Oak can spread rapidly without proper detection. This native plant is problematic in that, when contacted by skin, the leaves release a substance called urushiol, in oil form, which causes severe contact dermatitis in most people. It may also have dangerous (to the point of life-threatening) systemic impact on a limited number of people. There is the obvious danger of severe allergic reaction to poison oak. A secondary problem can be just as dangerous: children (and adults) can scratch skin infected by the poison oak with finger nails that contain bacteria. There is a very real danger of life-threatening staph, strep, and other bacterial infections.

<b>LEVEL 1: Action approved for College supervised volunteer or District staff</b>					
<i>Action</i>	<i>Threshold</i>	<b>DONE BY:</b>			<b>IPM RESPONSE</b>
		<i>Volunteer</i>	<i>Staff</i>	<i>Code</i>	<i>Comments</i>
Site Inspection	Complaint	X	X	T	Inform staff; instruct children: no play area. Proximity to exposure
Hand/Machine Removal/Prune Dig Out	Complaint/work order/site inspection Localized patch 1' x 1'	X	X	P	Dig out preferred
<b>LEVEL 2: Action approved for licensed applicator (District staff or contractor)</b>					
<i>Action</i>	<i>Threshold</i>	<b>DONE BY:</b>			<b>IPM RESPONSE</b>
		<i>Volunteer</i>	<i>Staff</i>	<i>Code</i>	<i>Comments</i>
	Complaint/work order/site inspection Localized patch 2' x 2'		X	P	Follow notification-posting-reporting requirements in IPM Plan. Localized patch 2' x 2'
Herbicide	Complaint/work order/site inspection Greater than 2' x 2"		X	P	Follow notification-posting-reporting requirements in IPM Plan.
<b>LEVEL 3: Action approved for licensed applicator (District staff or contractor) required</b>					
<i>Action</i>	<i>Threshold</i>	<b>DONE BY:</b>			<b>IPM RESPONSE</b>
		<i>Volunteer</i>	<i>Staff</i>	<i>Code</i>	<i>Comments</i>
EPA Registered Herbicide	Complaint/work order/site inspection		X	P	Follow Notification Guidelines; Spray before leaves turn red.

IPM (Integrated Pest Management) RESPONSE CODE REFERENCE:

P – Prevention E – Exclusion S – Structural Modification T – Tolerance X = Person responds to action items listed.

f. GROUND PESTS

6. Athletic Field Weeds –Irrigated

MATRIX OF HIERARCHICAL STEPS TO MANAGE PESTS:

- Level 1 is the preferred first action,
- Level 2 is the preferred second action,
- Level 3 is the preferred last action.

This matrix is to be used in conjunction with PCC IPM Plan, and identifies a pest problem or issue and defines approved practices for proper control. The IPM Plan Coordinator (or designee) must approve any additional strategies before they are used. Site personnel must always consult the IPM Plan Coordinator (or designee) prior to taking action against pests on District property.

Although irrigation, top dressing, over seeding, fertilization, and aeration are the dominant variables in maintaining quality turf, there are instances in which fields are so infested with broadleaf plants that they are no longer usable for athletic events. The uneven playing surfaces caused by the mix of grass and broadleaf weeds, such as plantains, create significant variations in footing. Sometimes the fields are just difficult on which to play; sometimes they are unsafe for play. Besides the uneven playing surfaces the presence of a large number of weeds also improves the habitat for gophers, which prefer this vegetation for food, resulting in a very uneven surface for running with large mounds and deep holes. These render the field unplayable, and have resulted in a number of injuries to people who try to play on them. Facilities have embarked on a more aggressive gopher and mole control program. Eliminating their preferred food source (the roots of broadleaf vegetation) improves the effectiveness of this program. (See: Gophers and Moles matrix)

<b>LEVEL 1: Action approved for College supervised volunteer or District staff</b>					
Action	Threshold	DONE BY:			IPM RESPONSE
		Volunteer	Staff	Code	Comments
Site Inspection	Presence/ Complaint	X	X	T	Small number of localized weeds
Inspect and adjust irrigation system	Presence/ Complaint	X	X	T/P	Adjustment by appropriate staff
Hand Cultivating	Complaint	X	X	P	Baseball diamonds
Increased Mowing	Complaint/work order/site inspection	X	X	P	Reduce Seeds
Over Seeding	Complaint/work order/site inspection	X	X	P/S	Helps grass compete with weeds
Field Renovation/ Repair Irrigation, Top Dressing, Over Seeding, Fertilization, Aeration	Complaint/work order/site inspection	X	X	P/S	Could be routine maintenance if labor is available; District specified fertilizer; Compost may be used as fertilizer if budget allows.
<b>LEVEL 2: Action approved for licensed applicator (District staff or contractor)</b>					
Action	Threshold	DONE BY:			IPM RESONSE
		Volunteer	Staff	Code	Comments
No currently approved treatment					
<b>LEVEL 3: Action approved for licensed applicator (District staff or contractor) required</b>					
Action	Threshold	DONE BY:			IPM RESONSE
		Volunteer	Staff	Code	Comments
No currently approved treatment					

IPM (Integrated Pest Management) RESPONSE CODE REFERENCE:

P – Prevention E – Exclusion S – Structural Modification T – Tolerance X = Person responds to action items listed..

**f. GROUND PESTS**

**7. Athletic Field Weeds - Non-Irrigated**

MATRIX OF HIERARCHICAL STEPS TO MANAGE PESTS:

- Level 1 is the preferred first action
- Level 2 is the preferred second action
- Level 3 is the preferred last action

This matrix is to be used in conjunction with PCC IPM Plan and identifies a pest problem or issue and defines approved practices for proper control. The IPM Plan Coordinator (or designee) must approve any additional strategies before they are used. Site personnel must always consult The IPM Plan Coordinator (or designee) prior to taking action against pests on District property.

Although top dressing, over seeding, fertilization, and aeration are the dominant variables in maintaining quality turf, there are instances in which fields are so infested with broadleaf plants that they are no longer usable for athletic events. The uneven playing surfaces caused by the mix of grass and broadleaf weeds, such as plantains, create significant variations in footing. Sometimes the fields are just difficult on which to play; sometimes they are unsafe for play. Besides the uneven playing surfaces the presence of a large number of weeds also improves the habitat for gophers, which prefer this vegetation for food, resulting in a very uneven surface for running with large mounds and deep holes. These render the field unplayable, and have resulted in a number of injuries to people who try to play on them. FMS has embarked on a more aggressive gopher and mole control program. Eliminating their preferred food source (the roots of broadleaf vegetation) improves the effectiveness of this program. (See: Gophers and Moles matrix). Athletic fields which are not irrigated have the same issues as irrigated fields, plus the added issue that the lack of irrigation makes it more difficult for the grass to compete with the weeds. The control actions are slightly different than for irrigated fields.

<b>LEVEL 1: Action approved for College supervised volunteer or District staff</b>					
<i>Action</i>	<i>Threshold</i>	<b>DONE BY:</b>			<b>IPM RESPONSE</b>
		<i>Volunteer</i>	<i>Staff</i>	<i>Code</i>	<i>Comments</i>
Site Inspection	Presence/Complaint	X	X	T	Small number of localized weeds
Hand Weeding, Cultivating, Digging	Complaint	X	X	P	Baseball diamonds
Increased Mowing	Complaint/work order; site inspection	X	X	P	Reduces Seeds
Over Seeding	Complaint/work order; site inspection	X	X	P/S	Helps grass compete with weeds
Top Dressing; Over Seeding, Fertilizing, Aeration	Complaint/work order; site inspection	X	X	P/S	Could be routine maintenance if labor available.
<b>LEVEL 2: Action approved for licensed applicator (District staff or contractor)</b>					
<i>Action</i>	<i>Threshold</i>	<b>DONE BY:</b>			<b>IPM RESONSE</b>
		<i>Volunteer</i>	<i>Staff</i>	<i>Code</i>	<i>Comments</i>
Herbicide	Complaint/work order; site inspection		X	P	Follow IPM Plan notification, posting, reporting requirements
Herbicide	Complaint/work order; site inspection		X	P/S	Follow IPM Plan notification, posting, reporting requirements
<b>LEVEL 3: Action approved for licensed applicator (District staff or contractor) required</b>					
<i>Action</i>	<i>Threshold</i>	<b>DONE BY:</b>			<b>IPM RESONSE</b>
		<i>Volunteer</i>	<i>Staff</i>	<i>Code</i>	<i>Comments</i>
No currently approved treatment					

IPM (Integrated Pest Management) RESPONSE CODE REFERENCE:

P – Prevention E – Exclusion S – Structural Modification T – Tolerance X = Person responding to action items listed.

## IPM Inspection Checklist

### Pests and Pest Conducive Conditions

Date: \_\_\_\_\_

Campus/Center and Address: \_\_\_\_\_

Inspected By: \_\_\_\_\_

**Building or Site:** \_\_\_\_\_

Entryways	Yes	No	Not Sure	N/A
Doors closed when not in use				
Doors shut tight and close on their own				
Door sweeps installed with no ¼" gaps				
Cracks and crevices around door sealed				

If pests are present in the area, write what kind here: \_\_\_\_\_

Notes:

Outside Areas	Yes	No	Not Sure	N/A
Area free from trash, old vehicles, other pest attractants				
All trash cans have secure lids				
Trash cans cleaned regularly				
Site has good drainage and is free from standing water				
Bushes, shrubs, trees at least 18" from building				
Tree branches not overhanging roof				
All dumpsters located away from building				
All dumpsters clean				
No gaps between windows or screens and frame				
Eaves and roofs free from birds, wasps, etc.				
Play structures free from wasp harborage areas				

If pests are present in the area, write what kind here: \_\_\_\_\_

Notes:

<b>Kitchen and Food Preparation Areas</b>	<b>Yes</b>	<b>No</b>	<b>Not Sure</b>	<b>N/A</b>
Free of unauthorized pesticides				
Trash emptied daily				
Door sweeps installed with no ¼" gaps				
Floor at every corner is clean and without signs of pests				
Area is free of standing water				
Floor drains and floor sinks are clean				
All faucets close properly and have no leaks or drips				
Under stoves, sinks, and dishwasher kept clean				
No open holes or other access to outside				
Any cracks in walls or floors are sealed properly				
Windows have screens				
Vents are free of grease and dirt				
Storage is kept off the floor on wire rack shelving				
Food put away and stored properly in sealed containers				
Cardboard boxes present				
No long term storage of anything in cardboard boxes				
Pest monitors (sticky traps) are present and dated				
Pest Log is posted				
Breaker boxes free of evidence of pests				

If pests are present in the area, write what kind here: \_\_\_\_\_

Notes:

<b>Custodial and Custodial Closets</b>	<b>Yes</b>	<b>No</b>	<b>Not Sure</b>	<b>N/A</b>
Area is free of unauthorized pesticides				
Mops are clean and hanging up when not in use				
Closets are free of trash and food				
Custodial closets are in good order and organized				
Trash cans and maid carts are cleaned and emptied daily				
Break area is clean and free of food, crumbs, and trash				
Storage areas free of items stored in cardboard boxes				
Custodians are trained in the IPM Plan				
IPM records (including Pest Logs, monitoring trap data, pest management, actions, etc.) are on file				

If pests are present in the area, write what kind here: \_\_\_\_\_

Notes:

<b>Boiler Rooms and Fan Rooms</b>	<b>Yes</b>	<b>No</b>	<b>Not Sure</b>	<b>N/A</b>
Free of unauthorized pesticides				
Room is free of standing water				
Room is cleaned regularly				
Room is free of trash and food				
Room is free of storage, especially in cardboard boxes				
Floor drains are clean				
Plumbing is free of leaks and condensation				
Crack or holes in floors and walls are sealed properly				
Outside air intakes properly screened and free of trash				

If pests are present in the area, write what kind here: \_\_\_\_\_

Notes:

<b>Staff Break Room</b>	<b>Yes</b>	<b>No</b>	<b>Not Sure</b>	<b>N/A</b>
Microwave is clean behind and under				
Vending Machines are clean under and behind machines				
Refrigerator is clean inside, under, and behind				
Counters are clean and free of food and crumbs				
Floor at every corner is clean and without signs of pests				
Under sink is kept clean				
Cupboards are clean and any food in sealed containers				
Area is free of unauthorized pesticides				
Pest monitors (sticky traps) are present and dated				
Pest Log is posted				

If pests are present in the area, write what kind here: \_\_\_\_\_

Notes:

<b>Classrooms / Offices - Room #</b>	<b>Yes</b>	<b>No</b>	<b>Not Sure</b>	<b>N/A</b>
Free of unauthorized pesticides				
Free of clutter				
Indoor plants are healthy and free of pests				
Desks, closets, cubicles are clean and free of food, clutter				
All food items are stored in sealed plastic containers				
Animal or bird cages are clean in and around the area				
Any pet food is stored in sealed plastic containers				
Sinks are free of dripping or standing water				
Gaps or holes under sinks or counters have been sealed				
Holes or gaps to the outside are sealed				
Outside windows and doors close tightly and have no gaps				
Window screens (if any) are in good repair				
Nothing (except short-term) is stored in cardboard boxes				

If pests are present in the area, write what kind here: \_\_\_\_\_

Notes:

<b>Classrooms / Offices - Room #</b>	<b>Yes</b>	<b>No</b>	<b>Not Sure</b>	<b>N/A</b>
Free of unauthorized pesticides				
Free of clutter				
Indoor plants are healthy and free of pests				
Desks, closets, cubicles are clean and free of food, clutter				
All food items are stored in sealed plastic containers				
Animal or bird cages are clean in and around the area				
Any pet food is stored in sealed plastic containers				
Sinks are free of dripping or standing water				
Gaps or holes under sinks or counters have been sealed				
Holes or gaps to the outside are sealed				
Outside windows and doors close tight and have no gaps				
Window screens (if any) are in good repair				
Nothing (except short-term) is stored in cardboard boxes				

If pests are present in the area, write what kind here: \_\_\_\_\_

Notes:

Classrooms / Offices - Room #	Yes	No	Not Sure	N/A
Free of unauthorized pesticides				
Free of clutter				
Indoor plants are healthy and free of pests				
Desks, closets, cubicles are clean and free of food, clutter				
All food items are stored in sealed plastic containers				
Animal or bird cages are clean in and around the area				
Any pet food is stored in sealed plastic containers				
Sinks are free of dripping or standing water				
Gaps or holes under sinks or counters have been sealed				
Holes or gaps to the outside are sealed				
Outside windows and doors close tight and have no gaps				
Window screens (if any) are in good repair				
Nothing (except short-term) is stored in cardboard boxes				

If pests are present in the area, write what kind here: \_\_\_\_\_

Notes:

Classrooms / Offices - Room #	Yes	No	Not Sure	N/A
Free of unauthorized pesticides				
Free of clutter				
Indoor plants are healthy and free of pests				
Desks, closets, cubicles are clean and free of food, clutter				
All food items are stored in sealed plastic containers				
Animal or bird cages are clean in and around the area				
Any pet food is stored in sealed plastic containers				
Sinks are free of dripping or standing water				
Gaps or holes under sinks or counters have been sealed				
Holes or gaps to the outside are sealed				
Outside windows and doors close tight and have no gaps				
Window screens (if any) are in good repair				
Nothing (except short-term) is stored in cardboard boxes				

If pests are present in the area, write what kind here: \_\_\_\_\_

Notes:

## Pesticide Application Notification Form

Application **is** scheduled for: *Date/Time:* \_\_\_\_\_

**OR**

Application **was** performed on: *Date/Time:* \_\_\_\_\_

Location of PESTICIDE application: / \_\_\_\_\_ / \_\_\_\_\_  
Campus Area

Expected duration of application: \_\_\_\_\_

Area closed TIMES - from/to: \_\_\_\_\_

<i>Pesticide Common Name</i>	<i>Pesticide Trade Name and Type of Pesticide Product</i>	<i>EPA Registration Number</i>

Reason for the application:

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# WARNING

## *PESTICIDE-TREATED AREA*

A pesticide application is scheduled for or was performed on:

DATE: \_\_\_\_\_

TIME(S): \_\_\_\_\_

Expected or Actual re-entry time: \_\_\_\_\_

*For further information regarding this notice please contact:*

X \_\_\_\_\_  
*Name/Department*

X \_\_\_\_\_  
*Telephone Number*

Date of Application: \_\_\_\_/\_\_\_\_/\_\_\_\_  
Month Day Year

CAMPUS/CENTER: \_\_\_\_\_

**PESTICIDE APPLICATION RECORD**

This form meets all pesticide record keeping requirements for schools in Oregon. **Note additional attachments may be required.**

**Applicator**

Name		Phone	
License No.		Certificate No.	
Address			
City	State	Zip Code	

**Pesticide Product Used**

Product (Brand) Name	EPA Registration No
Product Type (granular, liquid, etc.)	

**Attach the following documents:**

Pesticide Label:       SDS:       Copies of all required notices (including dates the notices were given):

Date and time for placement and removal of warning signs: **Placement:** \_\_\_\_\_ **Removal:** \_\_\_\_\_

**Application Information**

Time began:	Time ended:		
Temp:	Wind Speed and Direction:		
Amount of Product Applied:			
Total Product Volume or Weight:	Total Area of Application(s) (acres, feet, etc.):		
Product Concentration (amount per area; note units):			
Location(s) of Application:			
Type of Application:			
Backpack <input type="checkbox"/>	Bait <input type="checkbox"/>	Boom Sprayer <input type="checkbox"/>	Crack/Crevice <input type="checkbox"/>
Other (describe):			
Did the Application prove effective? <b>YES / NO</b> Explain:			

### REFERENCES AND SOURCE MATERIALS

The following materials are used in the preparation of the Model IPM Plan for Oregon Schools (accessed 8/26/2011):

- **School IPM 2015**  
An exhaustive list of resources and web links.  
[http://www.ipminstitute.org/school\\_ipm\\_2015/resources.htm](http://www.ipminstitute.org/school_ipm_2015/resources.htm)
- **US Environmental Protection Agency How-To Manual**  
Chapters 1 – 3 have good information on monitoring, setting injury/action levels, and treatment strategies. Appendix D has good information on contractor performance specifications.  
<http://www.epa.gov/pesticides/ipm/schoolipm/index.html>
- **Outdoor IPM for Maine Schools —** A good basic, general manual.  
<http://www.maine.gov/agriculture/pesticides/schoolipm/pdf/outdooripm.pdf>
- **Portland Public Schools IPM Program Manual**  
Click on “District’s IPM Program Manual” link in second-to-last paragraph.  
<http://www.pps.k12.or.us/departments/facilities/3416.htm>
- **Eugene School District 4J Landscape Management**  
Matrices of hierarchical steps to manage various outdoor pests.  
<http://www.4j.lane.edu/facilities/pesticide>
- **Portland Parks & Recreation IPM Program**  
A detailed “Pesticide Spill Response” section begins on page 29.  
<http://www.portlandonline.com/shared/cfm/image.cfm?id=116237>
- **Salt Lake City School District IPM Plan**  
Click on “SLCSD IPM Plan 2010” link.  
<https://aal.slcschools.org/pls/apex/f?p=118:40:1695263352950185>
- **California School IPM Guidebook, California Department of Pesticide Regulation**  
This has a sample chart on injury/action levels; also various sample forms and examples in appendices.  
[http://apps.cdpr.ca.gov/schoolipm/managing\\_pests/guidebook.cfm](http://apps.cdpr.ca.gov/schoolipm/managing_pests/guidebook.cfm)
- **North Carolina State University IPM for Schools and Child Care Facilities**  
“IPM for North Carolina Schools Manual” link goes to a well written basic manual. Part Four has good information on how to develop bid invitations for IPM services.  
<http://schoolipm.ncsu.edu/resources.htm>

## The Low-Impact List from Oregon State University

- Do not apply pesticides to classrooms, athletic fields, or any other space while it is being used.
- Store all pesticides in a cool, dry place with limited access.
- Store liquids below granules and dusts, just in case the liquid container leaks.
- *At the very least*, wear long pants, long sleeves, shoes and socks when handling or using any pesticide product.
- Keep people and pets off treated areas until sprays or wetted granules have dried.
- Do not apply products in a way that will contact people, either directly or through drift.

Attend a training event for School IPM Coordinators presented by the [OSU School IPM Program](#), and check out the templates, training tools, and model IPM plans [here](#).

### WARNING:

- “**Non-crop areas**” include uncultivated agriculture, farmyards, fuel storage areas, fence rows, rights-of-way, and fallow land. That term does NOT include ornamental sites, turf, or sports fields.

Oregon law<sup>i</sup> requires pesticide applicators to use only low-impact pesticide products in and around schools. The law defines “low-impact” in specific terms.<sup>ii</sup> School districts may evaluate products according to the law and maintain their own list(s) of low-impact pesticide products. Oregon State University (OSU) has evaluated products upon request and created this list, which governing bodies are welcome to use in lieu of, or in addition to, their own low-impact lists. Maintenance activities, including new additions and verification of continued product registration status, were suspended in December 2015.

**Disclaimer:** The Low-Impact Pesticide List was last updated in December 2015 and pesticides on the list met the requirements of ORS 634.705 (5) at that time. Pesticide registrations and labels are subject to change. The list is a guide and not intended as a recommendation or endorsement of the pesticides listed within. Consult with your supplier, pest management professional, or Oregon Department of Agriculture prior to pesticide use. Always read the label and follow all directions before you apply any pesticides. ***The Label is the Law!***

The products listed here meet the criteria under the law for use in and around Oregon schools and they are registered for sale in the state of Oregon. <sup>iii</sup> **Use the EPA Registration number** to match products on the list. **The same product name can be used for different products, so matching the product name(s) below to products on the shelf is not sufficient.** This table is sorted by EPA Registration number (lowest to highest).

## Herbicides

Product Name	EPA Reg. No.	Active Ingredient(s)	Read the label, use products only for labeled uses, and be aware of the following:
<i>Refuge</i>	100-1362	glyphosate	In agricultural settings, this product requires a restricted-entry interval of 12 hours and chemical resistant gloves in Category A. Consider applying that same standard in your school setting. Do not mix, store, or apply this product in galvanized steel or unlined steel (except stainless steel) containers.
<i>Onslaught FastCap Spider &amp; Scorpion Insecticide</i>	1021-2574	esfenvalerate, prallethrin, piperonyl butoxide	This product causes moderate eye irritation. Wear protective eyewear. Do not use this product in or on electrical equipment due to the possibility of shock hazard. This product is toxic to fish and other aquatic life. Do not discharge this product or equipment rinsate into water bodies without a permit (NPDES). If swallowed, do not induce vomiting. Do not repeat applications within 14 days of one another.
<i>Drexel Simazine 4L</i>	19713-60	simazine	This product is labeled for use on ornamental lawns. There are no other school sites listed (i.e. athletic fields). This product causes moderate eye irritation, and it can be harmful if absorbed through the skin. Avoid contact with eyes, skin or clothing. All handlers must wear chemical-resistant gloves. Do not apply this product to sandy soils where the water table is close to the surface. This product is toxic to aquatic organisms. Do not mix this product within 50 feet of water bodies or wells. When used in agriculture, this product requires a re-entry interval of 12 hours. Consider applying that same standard in your school setting. Do not use on alkaline soils (pH above 7.8). Do not apply over the rooting zone of trees or ornamentals that are not listed on the label.
<i>Simazine</i>	19713-252	simazine	This product is labeled for use on lawns. There are no other school sites listed (i.e. athletic fields). This product causes moderate eye irritation, and it can be harmful if absorbed through the skin. Avoid contact with eyes, skin or clothing. All handlers must wear chemical-

			resistant gloves. Do not apply this product to sandy soils where the water table is close to the surface. This product is toxic to aquatic organisms. Do not mix this product within 50 feet of water bodies or wells. When used in agriculture, this product requires a re-entry interval of 12 hours. Consider applying that same standard in your school setting. Do not use on alkaline soils (pH above 7.8). Do not apply over the rooting zone of trees or ornamentals that are not listed on the label.
<b>Gordon’s Agricultural Products Brushmaster Herbicide</b>	2217-774	2,4-D ethylhexyl ester, 2,4-DP, dicamba	The only school sites on the label (under “Recommended Noncropland sites”) are roadsides, fencerows, fence-lines, and areas adjacent to athletic fields. Avoid contact with eyes, skin or clothing, or inhaling spray mist. This product is harmful if absorbed through the skin or inhaled. Over time, it may cause allergic reactions in individuals who are repeatedly exposed. Applicators must wear chemical-resistant gloves. A chemical resistant apron is needed when working with the concentrate. Application to sandy soils, particularly where the water table is shallow, could result in groundwater contamination. Do not apply this product to shorelines, wetlands, or ditch-banks. Do not apply this product where drift may occur to ornamentals, fruit trees, vegetables, and other susceptible broadleaf plants. Do not apply when humidity is low and temperatures are high because this product may turn to vapor and move, damaging desirable plants.
<b>Gordon’s Proform Professional Formulations Speed Zone Broadleaf Herbicide for Turf</b>	2217-833	2,4-D ethylhexyl ester, mecoprop-p, dicamba, carfentrazone ethyl	Avoid contact with skin, eyes, or clothing. All handlers, including mixer/loaders must wear chemical resistant gloves. A chemical resistant apron is needed when working with the concentrate. This product causes moderate eye irritation. Prolonged or frequently repeated skin contact may cause allergic reactions. Application to sandy soils, particularly where the water table is shallow, could result in groundwater contamination. Do not apply to wetlands or shorelines.
<b>Gordon’s Proform Professional Formulations Speed Zone</b>	2217-835	2,4-D ethylhexyl ester, mecoprop-p, dicamba, carfentrazone-ethyl	Avoid contact with skin, eyes, or clothing. All handlers, including mixer/loaders must wear chemical resistant gloves. A chemical resistant apron is needed when working with the concentrate. When finished, users should remove PPE immediately and change into clean clothing as soon as possible. Application to sandy soils, particularly where the water table is shallow, could result in groundwater contamination. Do not apply to wetlands or shorelines.

<b>Gordon's ProForm Professional Formulations T Zone Broadleaf Herbicide</b>	2217-920	dicamba, 2,4-D (2-ethylhexyl ester), sulfentrazone, and triclopyr, butoxyethyl ester	Avoid contact with eyes or clothing. This product causes moderate eye irritation. Chemical resistant gloves are required for all activities. When you might be exposed to the concentrate (mixing, loading, cleaning up spills), you must wear a chemical resistant apron. Users should change clothes immediately after handling this product. Application around a cistern or well may result in contamination of drinking water. Small amounts of this product can damage sensitive plants like grapes, vegetables, and many ornamentals. Do not allow spray drift. Vapor drift is also possible after the application if temperatures rise and humidity falls.
<b>Gordon's ProForm Professional Formulations Q4 Plus Turf Herbicide for Grassy &amp; Broadleaf Weeds</b>	2217-930	quinclorac, 2,4-D, dicamba, sulfentrazone	This product causes moderate eye irritation. All handlers must wear protective eyewear and chemical-resistant gloves. If you might be exposed to the concentrate (mixing, loading, etc.), you must wear a chemical-resistant apron. In agricultural settings, the label requires a restricted entry interval (REI) of 48 hours. Consider applying that same standard in your school setting. It may be toxic to fish and other aquatic life, and highly water-soluble. Groundwater could be contaminated if this product is applied where soils are permeable and the water table is shallow.
<b>Razor Pro Herbicide Razor Herbicide Primera Razor Pro T Zone SE</b>	228-366	glyphosate	This product causes moderate eye irritation. Avoid breathing vapor or spray mist. Do not mix, store, or apply this product in galvanized steel or unlined steel (except stainless steel) containers.
	2217-976	triclopyr butoxyethyl ester, sulfentrazone, 2,4-D	Prolonged or frequent exposure can cause allergic reactions. All handlers must wear chemical-resistant gloves. When handling the concentrate, a chemical-resistant apron is required. In agricultural settings, this product requires a re-entry interval of 24 hours. Consider applying that same standard in your school setting. This product is toxic to fish and other aquatic life, and it has properties associated with groundwater contamination. Use caution around cisterns or wells to prevent drinking water contamination.
<b>Lesco Momentum Q Herbicide Qunincept Herbicide</b>	228-531	2,4-D (diethylamine salt), quinclorac, dicamba	This product causes moderate eye irritation. Avoid contact with eyes or clothing. All handlers must wear chemical-resistant gloves, and they should be washed and removed (in that order) immediately after handling the product. In agricultural settings, the label requires a restricted entry interval (REI) of 48 hours. Consider applying that same

			standard in your school setting. It is toxic to fish and other aquatic life, and highly water soluble. Groundwater could be contaminated if this product is applied where soils are permeable and the water table is shallow.
<b>Plateau Herbicide</b>	241-365	imazapic, ammonium salt	Remember, “non-crop areas” do not include ornamental or turf sites. On school grounds, the only eligible locations would be fence rows and rights-of-way. Avoid breathing spray mist. Applicators must wear chemical resistant gloves. Application to sandy soils, particularly where the water table is shallow, could result in groundwater contamination. This product has a high potential for runoff for several months or more after application. Do not rinse equipment on or near desirable trees or plants, or on areas where their roots may extend, or in locations where the chemical may be washed or moved into contact with their roots.
<b>Pendulum AquaCap Herbicide</b>  <b>Lesco Pre-M Aqua Cap Herbicide</b>	241-416  241-416-10404	pendimethalin	Avoid contact with eyes, skin, or clothing. Applicators and other handlers must wear chemical resistant gloves. Do not apply this product in greenhouses, or any enclosed structure. This product is toxic to fish. This is a pre-emergent herbicide. It keeps weed seeds from germinating through the soil surface, but only after it is "activated" by rainfall or irrigation (about a half inch).
<b>Quicksilver T+O Herbicide</b>	279-3265	carfentrazone-ethyl	Avoid contact with eyes, skin, or clothing, and avoid breathing spray mist. This product causes moderate eye irritation and moderate inhalation toxicity. Applicators must wear waterproof gloves. Do not allow people or pets on the treatment area until sprays have dried. This product only works when light is present, and it can take 7-14 days for susceptible plants to die.
<b>Makaze</b>  <b>Mad Dog Plus</b>  <b>Kleenup Pro</b>  <b>Four Power Plus</b>	34704-890	glyphosate, isopropylamine salt	This product is harmful if absorbed through skin, and it causes moderate eye irritation. Applicators and other handlers must wear chemical resistant gloves. When used in agriculture, this product requires a re-entry interval of 4 hours. Consider applying that same standard in your school setting. Do not mix, store, or apply this product in galvanized steel or unlined steel containers; it may form a highly combustible gas mixture. Be sure to follow the directions for non-crop areas and industrial sites. These do not include ornamental beds, or locations where children have easy access.

<b>Casoron 4G</b>	400-168  400-168-59807	dichlobenil	Avoid contact with skin, eyes, or clothing. This product is harmful if inhaled. Chemical-resistant gloves are required for all activities. Users should change clothes immediately after handling this product. Application to sandy soils, particularly where the water table is shallow, could result in groundwater contamination. When working around desirable plants, do not allow granules to lodge in foliage, or accumulate in contact with tree trunks. <i>Casoron comes in paper bags that are known to rip easily.</i>
<b>Gly-Star Original</b> <b>Agristar</b>	42750-60	glyphosate, isopropylamine salt	Avoid contact with eyes or clothing. This product causes moderate eye irritation. Do not mix, store, or apply this product in galvanized steel or unlined steel (except stainless steel) containers.
<b>Gly Star Plus, Gly Star Pro</b>  <b>Gordon's Farm Pronto Big N' Tuf, Gordon's Farm Pronto BigN'Tuf2 Nonselective Herbicide</b>  <b>Hi-Yield Super Concentrate Kill-Zall II</b>	42750-61  42750-61-2217  42750-61-7401	glyphosate, isopropylamine salt	Avoid contact with eyes, skin or clothing. This product causes moderate eye irritation. Do not mix, store, or apply this product in galvanized steel or unlined steel (except stainless steel) containers.
<b>Landmaster BW</b>	42750-62	2,4-D, isopropylamine salt, and glyphosate, isopropylamine salt	Avoid contact with eyes, skin or clothing. This product causes moderate eye irritation, and it may be harmful if absorbed through the skin. When you might be exposed to the concentrate (mixing, loading, cleaning up spills), you must wear a chemical resistant apron and gloves. Application around a cistern or well may result in contamination of drinking water. Do not mix, store, or apply this product in galvanized steel or unlined steel (except stainless steel) containers. Do not apply this product in the vicinity of grapes, tomatoes, or other 2,4-D sensitive plants.
<b>Specticle 20 WSP Herbicide</b>	432-1499	indaziflam	Do not open soluble packets; the envelop will dissolve in water. This product causes moderate eye irritation, and it's harmful if absorbed through the skin. Avoid contact with eyes, skin or clothing. All handlers must wear chemical-resistant gloves, and they should be washed and removed (in that order) immediately after handing the product. In agricultural settings, the product requires a re-entry interval of 12 hours.

			Consider applying that same standard in your school setting. It is toxic to fish and groundwater could be contaminated if this product is applied where soils are permeable and the water table is shallow.
<b>Specticle Flo</b>  <b>Marengo</b>	432-1518  432-1518-59807	indaziflam	Keep out of children's reach. In agricultural settings, the label requires a restricted entry interval (REI) of 12 hours. Consider applying that same standard in your school setting. This product is toxic to fish and other aquatic life, and it is water-soluble. Do not apply within 25 feet of surface water, including seasonal wetlands. Adjacent properties with perennial ryegrass could be significantly damaged by drift. Do not allow drift.
<b>Specticle G</b>  <b>Marengo G</b>	432-1523  432-1523-59807	indaziflam	This product has no signal word, which can indicate very low toxicity. It is a pre-emergent herbicide for annual grasses. It is toxic to fish and other aquatic life. This product has a high potential to contaminate surface water and/or groundwater. The residue found in runoff can be active against aquatic life for months. Runoff can be reduced by timing applications when rain is not expected for 48 hours.
<b>Esplanade EZ</b>	432-1528	diquat dibromide, indaziflam, glyphosate isopropylamine salt	This product is not intended to be used on turf grass. This product is harmful if absorbed through skin, and it causes moderate eye irritation. It is also toxic to fish, and prone to groundwater contamination. To minimize risk, apply the product when rain is not expected for 24 hours.
<b>Aquamaster Herbicide</b>  <b>Roundup Custom for Aquatic &amp; Terrestrial Uses</b>	524-343	glyphosate, isopropylamine salt	Do not mix, store, or apply this product in galvanized steel or unlined steel (except stainless steel) containers.
<b>RoundUp Pro Concentrate</b>	524-529	glyphosate, isopropylamine salt	Avoid contact with eyes or clothing. This product causes moderate eye irritation. Do not mix, store, or apply this product in galvanized steel or unlined steel (except stainless steel) containers.
<b>Quikpro Herbicide</b>  <b>Roundup QuikPro Herbicide</b>	524-535	glyphosate, diquat dibromide	This product causes moderate eye irritation, and applicators must wear protective eyewear. Avoid breathing dust from the granules. Do not mix, store, or apply this product in galvanized steel or unlined steel (except stainless steel) containers. Only protected handlers may be in the area during application. Remove PPE immediately, and change clothes as soon as possible.

<b>Roundup Promax Herbicide</b>	524-579	glyphosate, potassium salt	Avoid contact with eyes or clothing. This product causes moderate eye irritation. Do not mix, store, or apply this product in galvanized steel or unlined steel (except stainless steel) containers.
<b>Barrage HF Low Volatile Herbicide</b>	5905-529	2,4-D ester	Harmful if absorbed through skin. This product causes moderate eye irritation. Prolonged or frequently repeated skin contact may cause allergic reactions. All handlers must wear chemical-resistant gloves. When handling the concentrate, a chemical-resistant apron is required. Application to sandy soils, particularly where the water table is shallow, could result in groundwater contamination. After application, if the temperature rises over 85 degrees, vapors from this product may injure susceptible plants growing nearby, including vegetables and ornamentals. Avoid applications in the vicinity of susceptible plants. Use the directions for "ornamental and recreational turf grasses, lawns, golf courses and cemeteries" rather than the directions for "Roadsides, medians, highway, railroad, utility, and pipeline rights of way, etc."
<b>Payload Herbicide</b>	59639-120	flumioxazin	Remember, “non-crop areas” do not include ornamental or turf sites. On school grounds, the only eligible locations would be fence rows, bare ground parking areas, and rights-of-way. This product causes moderate eye irritation, and it can be harmful if inhaled or absorbed through skin. This product is toxic to aquatic organisms and plants.
<b>Broadstar Herbicide</b>	59639-128	flumioxazin	Avoid breathing dust and spray mist. This product is harmful if absorbed through the skin. Applicators and other handlers must wear chemical-resistant gloves. This product is toxic to aquatic invertebrates. Take care not to allow runoff toward desirable plants. This product is most effective as a pre-emergent herbicide. Do not apply in enclosed, greenhouse structures.
<b>Envoy Plus Herbicide</b> <b>Select Max Herbicide with Inside Technology</b> <b>Select Max Herbicide</b>	59639-132	clethodim	Avoid contact with eyes, skin or clothing. This product causes moderate eye irritation. It also contains potential allergens. Applicators and other handlers must wear chemical-resistant gloves and protective eyewear. Small amounts of this product may damage grass crops such as corn, rice, small grains, sorghum, or turf. Do not allow spray drift.
<b>Gallery 75 Dry Flowable Herbicide</b>	62719-145	isoxaben	This product causes eye irritation, and it can be harmful if inhaled. When used in agriculture, this product requires a re-entry interval of 12 hours. Consider applying that same standard in your school setting. There is 'suggestive evidence' of carcinogenicity for the active ingredient, isoxaben. It meets the lawful criteria (not a 'likely' human carcinogen), but it's close. Take steps to minimize potential exposure.

<b>Snapshot 2.5 TG, Snapshot DG</b>	62719-175	trifluralin, isoxaben	Avoid contact with skin, eyes, or clothing. Avoid breathing spray mist. This product causes moderate eye irritation and is harmful if inhaled. It also contains potential allergens. Users should change clothes immediately after handling this product.
<p><b>Crossbow</b> has been removed from the Low-Impact list.  There was confusion about the term “non-crop areas,” which do not include ornamental and turf sites.  Crossbow is not registered to be used in school-type settings.  (EPA Registration numbers beginning with 62719-260)</p>			
<b>Rodeo Accord Concentrate Aquapro Herbicide</b>	62719-324  62719-324-67690	glyphosate, isopropylamine salt	Avoid breathing spray mist. This product is harmful if inhaled. Do not mix, store, or apply this product in galvanized steel or unlined steel (except stainless steel) containers.
<b>Dimension Ultra 40 WP</b>	62719-445	dithiopyr	Avoid contact with skin, eyes or clothing. Avoid breathing dust. This product is harmful if absorbed through skin, and it causes eye irritation. All handlers must wear chemical resistant gloves. Do not contaminate water with equipment rinsate or run-off. This product is formulated in water-soluble packaging. Do not open the outer package until you're ready to put the water-soluble package in water.
<b>Gallery SC Specialty Herbicide</b>	62719-658	isoxaben	This product causes eye irritation, and it can be harmful if inhaled. When used in agriculture, this product requires a re-entry interval of 12 hours. Consider applying that same standard in your school setting. There is 'suggestive evidence' of carcinogenicity for the active ingredient, isoxaben. It meets the lawful criteria (not a 'likely' human carcinogen), but it's close. Take steps to minimize potential exposure.
<b>Glyphogan Plus Herbicide Quali-Pro Glyphosate Plus</b>	66222-176	glyphosate, isopropylamine salt	Avoid contact with eyes, skin or clothing. This product causes moderate eye irritation. Do not mix, store, or apply this product in galvanized steel or unlined steel (except stainless steel) containers.
<b>Bayer Advanced Natria Grass &amp; Week Killer RTU/Organic Gardening</b>	67702-7-72155	ammonium salts of fatty acids	Avoid contact with eyes or clothing. This product causes moderate eye irritation. Avoid breathing vapor. This product is not for use on roofs.

<b><i>Sedgehammer Turf Herbicide</i></b>	81880-1-10163	halosulfuron-methyl	Avoid contact with eyes or clothing. This product causes moderate eye irritation. Application to sandy soils, particularly where the water table is shallow, could result in groundwater contamination.
<b><i>Sedgehammer &amp; Turf Herbicide</i></b>	81880-24-10163	halosulfuron-methyl	Avoid contact with eyes or clothing. This product causes moderate eye irritation. Application to sandy soils, particularly where the water table is shallow, could result in groundwater contamination.
<b><i>Moss Melt Concentrate</i></b>	82052-1-91094	d-Limonene	This product is combustible. All handlers must wear eye protection. This product is harmful if absorbed through skin. In agricultural settings, people are not allowed to re-enter treated areas for four hours. Consider applying that same standard in your school setting.
<b><i>Avenger AG Burndown Herbicide</i></b>	82052-4	d-Limonene	Avoid contact with skin, eyes, or clothing. This product is harmful if absorbed through skin, and it causes eye irritation. All handlers must wear chemical resistant gloves and protective eyewear. Do not use or store this product near heat or open flame. When using the product, spray weeds until thoroughly wet.
<b><i>Worry Free Moss &amp; Algae Control</i></b>	82052-6-33116	d-Limonene (citrus)	Avoid contact with skin, eyes, or clothing. This product causes moderate eye irritation. This product is labeled for use on roofs, walkways, driveways, and fences.
<b><i>EZ-Ject Diamondback Herbicide Shells</i></b>	83220-1	glyphosate	Remember, “non-crop areas” do not include ornamental or turf sites. On school grounds, the only eligible locations would be fence rows and rights-of-way. Avoid contact with eyes or clothing. This product comes in water-soluble shells for trunk/stem injection. It’s a closed system with low exposure potential. It may be applied to trees/brush that are standing in water, but not below the water level.
<b><i>The Andersons Professional Turf Products Dimension 0.25g With Agpro</i></b>	9198-213	dithiopyr	Avoid contact with eyes or clothing. Avoid breathing dust. This product contains potential allergens. It may also damage some species of turf grass.

The products listed here meet the criteria under the law for use in and around Oregon schools and they are registered for sale in the state of Oregon. **Use the EPA Registration number** to match products on the list. **The same product name can be used for different products, so matching the product name(s) below to products on the shelf is not sufficient.** If there is no EPA Registration Number, match the product name *and* the manufacturer/distributor name when comparing the list to products on the shelf. This table is sorted by EPA Registration number (lowest to highest).

## Insecticides

Product Name	EPA Reg. No.	Active Ingredient(s)	Read the label, use products only for labeled uses, and be aware of the following:
<b><i>EcoEXEMPT G Granular Insecticide from Envincio/Prentiss LLC</i></b>	None - 25(b)	eugenol (clove oil), thyme oil (other: wintergreen oil, corn cob)	Avoid contact with eyes.
<b><i>Essentria IC-3 Insecticide Concentrate from Envincio/Prentiss LLC</i></b>	None - 25(b)	rosemary oil, geraniol, peppermint oil (Other: oil of wintergreen, white mineral oil, vanillin, polyglyceryl oleate)	May cause eye and skin irritation. Avoid contact with eyes, skin and clothing. Protective eyewear and chemical resistant gloves are recommended. Do not use or store this product near heat or open flame. When diluting with water, prepare only the amount needed for immediate use, and maintain agitation during use. Do not store spray solution overnight. When used in confined spaces, prolonged exposure to the fragrance may be objectionable to some individuals.
<b><i>EcoExempt D</i></b>	None - 25(b)	2-phenethyl propionate, eugenol (clove oil) (other: calcium silicate, sodium bicarbonate, calcium carbonate, soybean oil, wintergreen oil)	Avoid contact with eyes.
<b><i>WHY Spray for Wasp, Hornet, &amp; Yellow jacket Nests from Rescue</i></b>	None - 25(b)	lemmongrass oil, clove oil (eugenol), rosemary oil, geranium oil	Avoid contact with eyes and skin. Contents under pressure. Do not use or store near heat or open flame. When spraying nests, spray the opening first, and stand a safe distance from the nest.

<b>Demand CS Patrol</b>	100-1066	lambda-cyhalothrin	This product may be harmful if absorbed through skin. It may also contain potential allergens. Avoid contact with skin, eyes, or clothing. Avoid breathing spray mist of vapor. Do not use this product in or on electrical equipment due to the possibility of shock hazard. Take extreme care to ensure the product is not introduced into the air. Avoid contamination of food and food processing surfaces. Spot treatments should not exceed 20% of the treated area. Individual spot treatments should not exceed 2 square feet.
<b>Speckoz Border Insecticide</b>	100-1066-72113		
<b>Grenade ER Insecticide</b>	100-1066-773		
<b>Demand G Insecticide</b>	100-1240	lambda-cyhalothrin	This product causes moderate eye irritation. Avoid contact with eyes, or clothing.
<b>Optigard Ant Gel Bait</b>	100-1260	thiamethoxam	Do not treat food preparation surfaces. In food handling areas, only crack and crevice treatments are allowed.
<b>Acelepryn</b>	100-1489	chlorantraniliprole	This product is toxic to aquatic organisms, and it's prone to runoff. It can be helpful to maintain a level vegetative buffer strip between application areas and water bodies. In agricultural settings, the product label requires a re-entry interval of 4 hours. Consider applying that same standard in your school setting.
<b>Share Corp Wasp &amp; Hornet Killer</b>	10088-91-11547	tetramethrin, permethrin, piperonyl butoxide	This product causes moderate eye irritation. Contents under pressure. This product is toxic to fish and other aquatic life. Stay a safe distance away from nests when spraying, and do not contaminate food or food-handling equipment. Avoid spraying plants.
<b>Terro Ant Killer II Liquid Ant Baits/Killer</b> <b>Terro Outdoor Liquid Ant Bait Stakes</b> <b>Terro Outdoor Liquid Ant Baits Pre-Filled RTU</b>	149-8	sodium tetraborate decahydrate	Do not use in food handling areas.
<b>Terro-PCO Liquid Ant Bait</b>	149-8-64405		
<b>Grant's Kills Ants Ant Control</b>	1663-33	hydramethylnon	Keep out of reach of children, even after application.
<b>Amdro Kills Ants Ant Killing Bait</b>	1663-33-73342		

<b>Down and Out</b>  <b>Sting-X</b>	1769-370  1769-370-66114	tetramethrin, permethrin, piperonyl butoxide	This product causes moderate eye irritation. Contents under pressure. Chemical-resistant gloves are required for all handlers. This product is flammable, and extremely toxic to fish. Prolonged or frequent exposure could cause allergic reactions. Stay a safe distance away from nests when spraying, and do not contaminate food or food-handling equipment. Avoid spraying plants.
<b>Phantom Termiticide-Insecticide</b>	241-392	chlorfenapyr	Harmful if swallowed, inhaled or absorbed through skin. This product causes moderate eye irritation. DO NOT get in eyes, on skin, or on clothing. All handlers must wear chemical resistant gloves. For termite uses, eye protection and a mask may be needed; see the label for specific instructions. Do not apply this product around electrical equipment due to the possibility of shock hazard. Do not apply into heating and air conditioning vents. Do not treat classrooms while in use. Do not contaminate food, utensils, or handling surfaces.
<b>Talstar Professional Insecticide</b>  <b>Ortho Max Pro</b>  <b>Lesco CrossCheck Plus Multi-Insecticide</b>	279-3206  279-3206-10404	bifenthrin	Harmful if swallowed, inhaled or absorbed through the skin. Avoid contact with skin, eyes or clothing. Avoid breathing spray mist. All handlers must wear chemical resistant gloves when mixing/loading, and perhaps, waterproof gloves when applying. See the label. When working in a non-ventilated space, a respirator and protective eyewear are required. Do not apply to any electrical equipment because of possible shock hazard. Do not allow spray to contact food, utensils, or handling surfaces.
<b>Advion Cockroach Gel Bait</b>	352-652	indoxacarb	Avoid contact with skin, eyes, or clothing. This product contains potential allergens. Do not use this product in or on electrical equipment where a possibility of shock hazard exists. In food handling areas, this product may only be applied as a crack and crevice treatment where you can be sure that food, utensils, and food handling surfaces won't become contaminated.
<b>Advion Ant Gel</b>	352-746, also found as 100-1498	indoxacarb	Avoid contact with skin, eyes, or clothing. Do not use this product in or on electrical equipment where a possibility of shock hazard exists. In food handling areas, this product may only be applied as a crack and crevice treatment where you can be sure that food, utensils, and food handling surfaces won't become contaminated.
<b>Safer Brand Wasp and Hornet Killer</b>  <b>Safer Brand Flying Insect Killer</b>	36488-47	d-limonene, pyrethrins, potassium salts of fatty acids	Avoid contact with skin or clothing. Contents under pressure. Do not sure near heat or open flame. Do not apply this product to conduits, motor housings, junction and switch boxes, electrical equipment, or any surface that may be damaged by water. When used indoors, leave the room after spraying and ventilate upon return.

<b>Maxforce Professional Insect Control Roach Killer Bait Gel</b>	432-1254	hydramethylnon	Harmful if swallowed or absorbed through skin. This product causes moderate eye irritation. Avoid contact with eyes, skin or clothing. Do not apply bait to areas where food, utensils, or handling surfaces may become contaminated.
<b>Maxforce FC Professional Insect Control Roach Killer Bait Gel</b>  <b>Maxforce FC Select Professional Insect Control Roach Killer Bait Gel</b>	432-1259	fipronil	Harmful if absorbed through skin. This product causes moderate eye irritation. Avoid contact with skin, eyes, and clothing. Do not use this product in or on electrical equipment where a possibility of shock hazard exists. In food handling areas, only crack and crevice treatments are allowed. Do not treat food preparation surfaces.
<b>Maxforce FC Ant Killer Bait Gel</b>  <b>Maxforce FC Professional Insect Control Ant Killer Bait Gel</b>	432-1264	fipronil	May be harmful if swallowed. Avoid contact with skin and clothing. Keep exposed gel away from open foods and food contact surfaces. Do not use this product in or on electrical equipment where a possibility of shock hazard exists.
<b>Merit 75 WSP Insecticide</b>	432-1318	imidacloprid	Water-soluble packets provide a nearly closed system. This product is highly toxic to bees, and it not allowed for use on linden trees, basswood trees, or any Tilia species. Avoid breathing dust or vapor, and avoid contact with skin, eyes, or clothing. This product is harmful if absorbed through skin. Applicators and handlers must generally wear gloves. This product is highly toxic to bees and aquatic invertebrates. Groundwater may be contaminated if applications are made where the soil is permeable, particularly where the water table is shallow.
<b>Tempo SC Ultra Insecticide</b>	432-1363	beta-cyfluthrin	Avoid contact with eyes or clothing. Harmful in inhaled or absorbed through skin. This product causes moderate eye irritation. It is also extremely toxic to fish and highly toxic to bees. The label has very specific instructions about how to keep this pesticide out of water bodies. If you have to spray overhead, wear safety glasses, goggles, or face shield with a dust/mist respirator. Cover exposed food and/or food handling equipment or remove them from the area being treated. Do not apply to food handling surfaces. Allowed for use on buses.

<b>Tempo 1% Dust Insecticide Ready to use</b>	432-1373	cyfluthrin	This product causes moderate eye irritation, and it can be harmful if inhaled or absorbed through skin. This product is toxic to fish. In food-handling establishments, this product is permitted in non-food-handling areas only, and it can only be used as a void or crack/crevice treatment. It is not allowed in the food-handling areas.
<b>Temprid SC Insecticide</b>	432-1483	imidacloprid, beta-cyfluthrin	Harmful if swallowed or absorbed through skin. This product causes moderate eye irritation. Avoid contact with skin, eyes or clothing. Gloves are required. Do not apply to furniture or upholstery where prolonged contact with humans will occur. Do not apply in food handling areas. Do not apply more than 5 gallons of diluted product indoors per applicator per day. When treating overhead areas, wear safety glasses, goggles, or face shield and a dust/mist respirator.
<b>Delta Dust Insecticide</b>	432-772	deltamethrin	May be harmful if absorbed through skin. Avoid contact with skin, eyes, or clothing. In living areas, make applications in such a manner as to avoid depositions on exposed surfaces or introducing the material into the air. Do not allow food, utensils, or processing surfaces to become contaminated.
<b>Raid Wasp &amp; Hornet Killer 33</b>	4822-553	cypermethrin, prallethrin	Harmful if absorbed through skin. Avoid contact with skin, eyes, or clothing. Keep the product away from fire, sparks and heated surfaces. Do not expose the container to temperatures above 130° F. The best time of day to treat the nests of flying insects is in the evening or early morning. Wait at least 24 hours before removing the nest. Do not contaminate food or utensils.
<b>Monterey Horticultural Oil</b>	48813-1-54705	Mineral Oil	Avoid contact with eyes, skin, or clothing. Prolonged or repeated contact with skin may cause allergic reactions. All handlers must wear chemical resistant gloves. Harmful if absorbed through skin. Do not apply during drought. In school settings, this product is only allowed for ornamental plants, including interior courtyards and greenhouse plants.
<b>PT 545 Plus XLO Pressurized Contact Insecticide, Prescription Treatment 565 Plus XLO Formula 2</b>	499-290	pyrethrins, piperonyl butoxide, n-octyl bicycloheptene dicarboximide	For prolonged exposure to spray mist, avoid unpleasant drying of the nose and throat by wearing a respirator with an organic vapor cartridge. See the label for more details. This product may be used on bedding, upholstered furniture, and carpeting.

<b>Prescription Treatment Wasp Freeze Wasp &amp; Hornet Killer</b>	499-362	d-trans allethrin, d-phenothrin	Harmful if swallowed, inhaled, or if absorbed through the skin. Avoid breathing vapors or spray mist. Avoid contact with skin, eyes, or clothing. This product is flammable, and its contents are under pressure. Keep away from heat, sparks and open flame. May cause staining of asphalt and shingles. For outdoor use only. The best time of day to treat nests is in the evening or early morning. Stand 6-15 away from elevated targets, not directly underneath.
<b>MotherEarth D Pest Control Dust</b>	499-509	diatomaceous earth (amorphous silica)	This product causes moderate eye irritation. Avoid contact with eyes or clothing. Use adequate ventilation and avoid breathing dust. For prolonged exposure to dust, use a suitable dust mask approved by NIOSH. In living areas, make applications in such a manner as to avoid deposits on exposed surfaces or introducing the material into the air. In food handling areas, only crack, crevice, and spot treatments are allowed.
<b>Alpine D Dust Insecticide, Prescription Treatment Brand Alpine Dust</b>	499-527	dinotefuran, diatomaceous earth	This product causes moderate eye irritation. Applications in food handling areas are limited to crack & crevice, void or spot treatment only. Do not apply to bedding of any kind.
<b>MotherEarth Granular Scatter Bait</b>	499-515	boric acid	Harmful if absorbed through skin. This product causes moderate eye irritation. Avoid contact with skin, eyes, and clothing. Applicators and handlers must wear chemical-resistant or waterproof gloves. Avoid contamination of food.
<b>PT Wasp-Freeze II</b>	499-550	prallethrin	This product causes moderate eye irritation. If swallowed, do not induce vomiting. Do not apply this product or allow it to drift on blooming plants in order to protect bees. This product is toxic to fish, as well. This product is not for our door use, except attics and crawl spaces. Do not stand directly underneath treatment areas.
<b>Orange Guard</b>	61887-1	d-limonene	Avoid contact with eyes or clothing. This product causes moderate eye irritation. When using the product indoors, wait three minutes after spraying before wiping off any excess fluid.
<b>Mosquito Dunks Biological Mosquito Control</b>  <b>Summit B.t.i. Briquets Floating Sustained-Release Larvicide</b>	6218-47	<i>Bacillus thuringiensis</i> subspecies <i>israelensis</i>	Avoid breathing dust. This product causes moderate eye irritation. Avoid contact with eyes or clothing.
<b>Conserve SC Turf &amp; Ornamental</b>	62719-291	spinosad	To control insect pests on ornamental plants growing outside, or in greenhouses. Do not apply to edible plants. This product is toxic to bees for three hours after treatment. It is also toxic to aquatic animals. Follow specific label instructions to protect bees and streams.

<b>EcoPCO WP-X Wettable Powder Insecticide</b>	67425-25-655	pyrethrins, 2-phenylethyl propionate, oil of thyme	Harmful if swallowed or inhaled. This product causes moderate eye irritation. Avoid breathing dust. Avoid contact with skin, eyes, or clothing. Carefully open the container by holding it near its base, avoid squeezing the container as this may cause contents to puff out. In food handling areas, only crack, crevice, and spot treatments are allowed. Exposed food should be covered or removed.
<b>InTice Liquid Ant Bait</b>	73079-7	sodium tetraborate decahydrate	Harmful if swallowed or absorbed through the skin. In food handling areas, only crack and crevice treatments are allowed. Any product remaining outside of cracks and crevices must be cleaned up and removed.
<b>InTice Gelamino Ant Bait</b>	73079-8	sodium tetraborate decahydrate	Harmful if swallowed. In food handling areas, only crack and crevice treatments are allowed. Any product remaining outside of cracks and crevices must be cleaned up and removed.
<b>Gourmet Liquid Ant Bait</b>	73766-2	disodium octaborate tetrahydrate (basically boric acid)	Applicators and other handlers must wear chemical resistant or waterproof gloves. Keep out of reach of children. Do not contaminate food.
<b>Revenge Pre-filled Liquid Ant Baits</b>	73766-2-4		
<b>Combat Liquid Ant Bait</b>	73766-2-64240		
<b>Bee Bopper II</b> <b>ARI Wasp and Hornet Killer</b>	7754-44	tetramethrin, d-phenothrin	Harmful if swallowed, absorbed through the skin, or inhaled. Causes moderate eye irritation. Avoid contact with skin, eyes, or clothing. Avoid breathing vapor or spray mist. Do not use in commercial areas where food is handled, stored, or served. The contents of this product are under pressure. Do not store near heat, sparks or open flame. Contains petroleum distillates.
<b>Termidor SC</b>	7969-210	fipronil	Harmful if swallowed, absorbed through skin or inhaled. Do not get in eyes, on skin or on clothing. Do not breathe spray mist. All handlers must wear chemical-resistant gloves. When working in an unventilated space, protective eyewear and a respirator are required. Do not apply indoors except for wall voids.
<b>TriStar 8.5 SL Insecticide</b>	8033-106-1001	acetamiprid	This product is harmful if absorbed through the skin or inhaled. Avoid contact with eyes, skin and clothing, and avoid breathing vapors or spray mist. All handlers must wear chemical-resistant gloves. This product is highly toxic to bees. Do not apply this product when bees are visiting the area. In agricultural settings, the label requires a restricted entry interval (REI) of 12 hours. Consider applying that same standard

			in your school setting. Linden and Basswood trees are highly attractive to bees, and they have some inherent toxicity to bees. Consider choosing a non-neonicotinoid insecticide for trees in this family ( <i>Tilia</i> species).
<b><i>Rescue! WHY Attractant</i></b>	84565-3-49407	heptyl butyrate, acetic acid, 2-methyl-1-butanol	This product causes moderate eye irritation. Do not allow contact with your clothing because wasps, hornets, and/or yellow jackets may become attracted to you. Outdoor use only.
<b><i>Spectracide Wasp and Hornet Killer 3</i></b>	9688-190-8845	prallethrin, lambda-cyhalothrin	Never use indoors. Do not apply near sewers, drains, or gutters where drainage might reach water bodies. Do not use in or on electrical equipment. Stand a safe distance from the nest, never underneath. Storage temperatures above 130° F may cause bursting.

The products listed here meet the criteria under the law for use in and around Oregon schools and they are registered for sale in the state of Oregon.<sup>iii</sup> **Use the EPA Registration number to match products on the list. The same product name can be used for different products, so matching the product name(s) below to products on the shelf is not sufficient.**

### Molluscicides

Product Name	EPA Reg. No.	Active Ingredient(s)	Read the label, use products only for labeled uses, and be aware of the following:
<i>Sluggo</i>	67702-3-54705	iron phosphate	This product causes moderate eye irritation. Avoid contact with eyes or clothing. Keep out of children’s reach, before and after the application. Sweep any granules off driveways and sidewalks, back into treatment areas to avoid excess runoff.

### Fungicides

Product Name	EPA Reg. No.	Active Ingredient(s)	Read the label, use products only for labeled uses, and be aware of the following:
<i>Headway</i> <i>(not Highway)</i>	100-1216	azoxystrobin, propiconazole	This product causes moderate eye irritation. All handlers must wear chemical-resistant gloves. In agricultural settings, the label requires a restricted entry interval (REI) of 24 hours. Consider applying that same standard in your school setting. Do not allow any of this product to come in contact with apple trees. It is toxic to fish and other aquatic life, and highly water-soluble. Groundwater could be contaminated if this product is applied where soils are permeable and the water table is shallow.
<i>Monterey Horticultural Oil</i>	48813-1-54705	mineral oil	Avoid contact with eyes, skin, or clothing. Prolonged or repeated contact with skin may cause allergic reactions. All handlers must wear chemical resistant gloves. Harmful if absorbed through skin. Do not apply during drought. In school settings, this product is only allowed for ornamental plants, including interior courtyards and greenhouse plants.

<b>Rodenticides</b>
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<b>Product Name</b>	<b>EPA Reg. No.</b>	<b>Active Ingredient(s)</b>	<b>Read the label, use products only for labeled uses, and be aware of the following:</b>
<b><i>Amdro Mole &amp; Gopher Bait</i></b>	12455-30-73342	zinc phosphide	This product is harmful if inhaled, and it causes moderate eye irritation. All handlers must wear gloves, including handlers of retrieved carcasses or unused bait. This product is extremely toxic to fish and birds. It may only be applied underground, according to very specific label directions.
<b><i>Fastrac All-Weather Blox</i></b>	12455-95	bromethalin	Any person who handles bait or retrieves carcasses must use gloves. This product is harmful if swallowed, and it's extremely toxic to mammals, birds, and fish. Tamper-resistant bait stations are required for certain locations; read the label. Protect bait from rain or snow.
<b><i>Rampage All-Weather Bait Chunx</i></b>	12455-95-3240		
<b><i>Tomcat Rat Killer II</i></b>	12455-140	bromethalin	Any person who handles bait or retrieves carcasses must use gloves. This product is harmful if swallowed, and it's extremely toxic to mammals, birds, and fish. Tamper-resistant bait stations are required for certain locations; read the label.
<b><i>Kaput Mouse Blocks</i></b>	72500-7	warfarin	All handlers must wear gloves, including handlers of retrieved carcasses or unused bait. This product is extremely toxic to mammals and birds. It may only be applied in places inaccessible to children, pets, domestic pets, and non-target wildlife, Orin tamper-resistant bait stations. Bait stations are mandatory for outdoor, above-ground use.
<b><i>Brigand SB Soft Bait Rodenticide</i></b>	87235-1	bromadiolone	This product poses a significant risk to wildlife and pets that may eat sickened rodents. Be sure to employ other options, such as trapping, before using this product. This product may only be used in and around (within 100 feet) of man-made structures to control Norway rats, roof rats, and house mice. For all outdoor uses, bait stations are mandatory. If applied indoors where children pets, non-target mammals, or bids could gain access, tamper-resistant bait stations are required.

<sup>i</sup> Oregon Revised Statutes (ORS) 634.700 – 634.750

<sup>ii</sup> ORS 634.705, Section 5: A governing body shall adopt a list of low-impact pesticides for use with the integrated pest management plan. The governing body may include any product on the list except products that: (a) contain a pesticide product or active ingredient that has the signal words “warning” or “danger” on the label; (b) contain a pesticide product classified as a human carcinogen or probable human carcinogen under the United States Environmental Protection Agency 1986 Guidelines; or (c) contain a pesticide product classified as carcinogenic to humans or likely to be carcinogenic to humans under the United States Environmental Protection Agency 2003 Draft Final Guidelines for Carcinogen Risk Assessment [2009 c.501 §3]

iii Pesticide products must be registered for sale and/or distribution in the state of Oregon each year. Current product registration is verified semi-annually using this search tool from the Oregon Department of Agriculture: [http://oda.state.or.us/dbs/pest\\_productsL2K/search.lasso](http://oda.state.or.us/dbs/pest_productsL2K/search.lasso).