

# INTEGRATED PEST MANAGEMENT PLAN FOR THE OUTDOOR ENVIRONMENT

August 2012



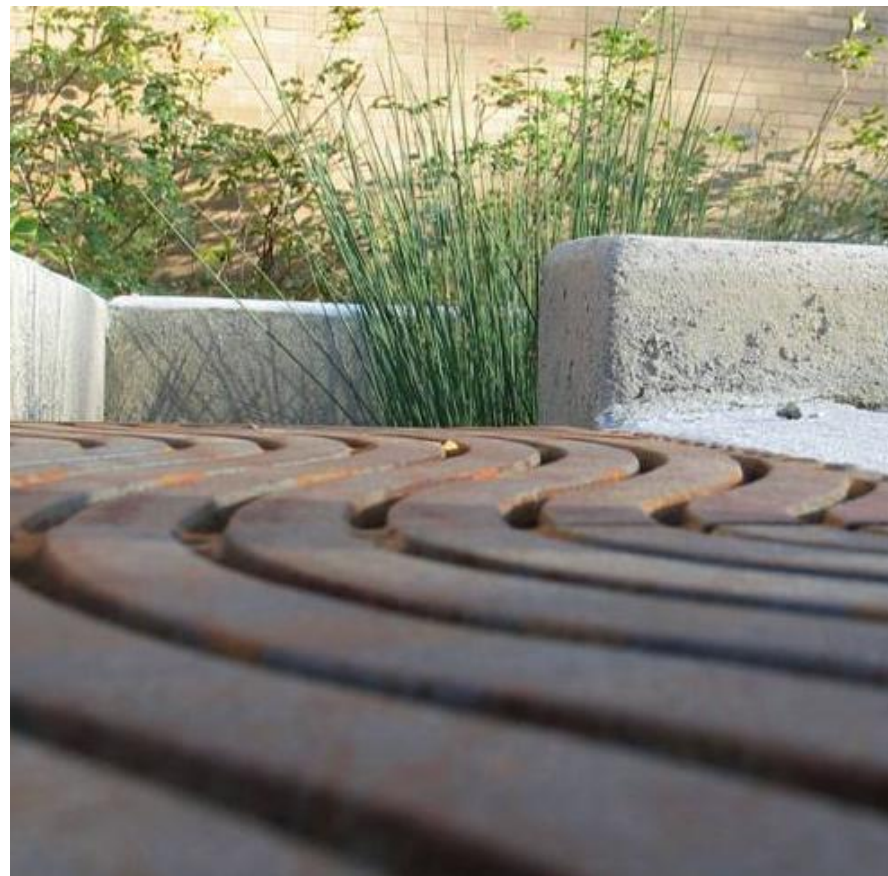


## A COMMITMENT TO INTEGRATED PEST MANAGEMENT

Portland State University Outdoor Pest Management Program strives to minimize the use of pesticides while ensuring balanced protection of human, horticultural and environmental health. To accomplish this, the principles of Integrated Pest Management (IPM) are utilized on campus grounds.

Integrated Pest Management is designed to promote effective and economical management of pests, reduce risks to human health from pests and pest management practices, and minimize the potential negative environmental impacts to aquatic, terrestrial, and atmospheric habitat systems.

This *Integrated Pest Management Plan for the Outdoor Environment* provides a comprehensive guide for pest management decisions and specific policy-based direction for implementing integrated pest management principles on PSU campus grounds. The finalization and adoption of the plan protects and embodies Portland State's commitment to provide a safe and healthy learning environment to all members of the campus community.



X

---

Robyn Pierce  
Director of Facilities & Property Management

X

---

Heather Randol  
Environmental Health & Safety Manager

X

---

Jennifer McNamara  
Sustainability Manager



## ACKNOWLEDGEMENTS

The Integrated Pest Management Plan for the Outdoor Environment was a collaborative effort of PSU's Facilities & Property Management Department and the Campus Sustainability Office. It would not have been possible without the leadership and collaborative spirit of these departments and their staff.

The Plan was compiled by Kellee Jackson, Sustainability Project Manager in the Campus Sustainability Office.

Key contributions were made by Gerry Gadberry, Assistant Director for Operations & Maintenance, Ernest Tipton, Campus Design & Planning Manager, and Suzan Wilson, PSU's Lead Gardener.

Overall support and assistance provided by Jenny McNamara, Sustainability Manager and Dan Zalkow, Executive Director for Campus Planning & Development.



# Contents

INTRODUCTION.....	3
Mission .....	3
Campus Context.....	3
Integrated Pest Management .....	4
INTEGRATED PEST MANAGEMENT METHODOLOGY .....	5
Criteria for Choosing a Pest Management Method .....	5
Integrated Pest Management Strategies .....	5
Pest-Specific IPM Strategies .....	6
PESTICIDES APPROVED FOR LIMITED USE .....	7
Pesticides Phased Out of Use .....	8
RUNOFF AND DRIFT MANAGEMENT STRATEGIES .....	9
RESTRICTED USE ZONE.....	9
PESTICIDE STORAGE, RINSATES, AND DISPOSAL .....	9
LICENSING, TRAINING, AND EDUCATION .....	10
PESTICIDE TRACKING SYSTEM .....	10
CONTRACT LANDSCAPE MANAGEMENT.....	11
IPM PROGRAM EVALUATION .....	11
APPENDICES .....	11
Storm Drainage Routes and Pipe Locations on Campus.....	12
Portland State University Pesticide Storage, Rinsates, and Disposal Policy .....	13
Portland State University Pesticide Use Tracking Form.....	14

## INTRODUCTION

The purpose of this document is to provide PSU employees with an overview of integrated pest management principles and specific policy-based direction for implementing those principles.

### Mission

The mission of the Portland State University Pest Management Program is to provide a safe and healthy learning environment that is relatively pest-free. PSU strives to minimize the use of pesticides while ensuring balanced protection of human, horticultural and environmental health. To accomplish this, the principles of Integrated Pest Management (IPM) are utilized on its campus.

### Campus Context

PSU's 49-acre campus is located about one-half mile from the western shore of the Willamette River near the downtown urban core of the City of Portland. The PSU campus, including the City of Portland South Park Blocks (which mainly includes trees and turf) is comprised of roughly 79% impervious surfaces. These areas include developed shrub beds, turf, athletic fields, etc. PSU does not contain, nor is it directly adjacent to any in-stream habitat, wetland, or riparian areas located within campus boundaries. However, PSU campus management works to protect or improve the water quality of stormwater runoff, as it can significantly influence downstream conditions for aquatic life, such as salmon. Examples of green infrastructure on campus include buffer strips, bioswales, pervious pavement, onsite stormwater detention, flow-through planters, eco-roofs, and stormwater infiltration systems.



PSU Facilities & Property Management Department is charged with maintaining campus landscapes in a safe, healthy, attractive, and useful condition. To best manage pests on campus, PSU campus management utilize the principles of Integrated Pest Management (IPM).



## Integrated Pest Management

Integrated Pest Management is an effective, economical, and environmentally sensitive approach to pest management. It is designed to promote effective and economical management of pests, reduce risks to human health from pests and pest management practices, and minimize the potential negative environmental impacts to aquatic, terrestrial, and atmospheric habitat systems.

Integrated Pest Management is defined by the Oregon Statutes (ORS 262.1), Chapter 943 as follows:

"Integrated pest management means a coordinated decision-making and action process that uses the most appropriate pest control methods and strategies in an environmentally and economically sound manner to meet pest management objectives. The elements of integrated pest management include: (a) preventing pest problems; (b) monitoring for the presence of pests and pest damage; (c) establishing the density of pest population, which may be set at zero, that can be tolerated or corrected with a damage level sufficient to warrant treatment of the problem based on health, public safety, economic or aesthetic threshold; (d) treating pest problems to reduce population below those levels established by damage thresholds using strategies that may include biological, cultural, mechanical and pesticidal control methods and that shall consider human health, ecological impact, feasibility and cost effectiveness; and (e) evaluating the effects and efficacy of pest treatments."

This PSU Integrated Pest Management Plan for the Outdoor Environment applies to all pest control activities and pesticide use on university grounds and landscaping. Recipients of this plan include faculty, staff, and employees including landscape contractors who monitor and/or treat pest problems.

IPM Plan Goals include:

- Consideration of the relationship between pest biology and pest management methods.
- Consideration of alternative physical, mechanical, or biological control pest management methods before chemical pesticides are used.
- Improved methods for pest controls, in consideration of the impact on human health and the environment.
- Continued evaluation of the integrated pest management program.
- Continued training and education.



## INTEGRATED PEST MANAGEMENT METHODOLOGY

### Criteria for Choosing a Pest Management Method

An Integrated Pest Management decision at Portland State University shall consist of the following steps:

1. IDENTIFICATION - Careful monitoring of existing problems can help determine pest populations. Identification of the pest's life cycle, under what conditions damage occurs, and to determine if and when aesthetic threshold levels are reached.
2. INTERVENTION/ACTION THRESHOLDS - Estimate pest populations and compare to established action thresholds. Factors considered in setting established action thresholds include economics, health and safety, public opinion, and aesthetic concerns.
3. EVALUATION - Selection of appropriate management tactic(s) based on an evaluation of the area, the pest organism, the impact it has on the host species, size and topography of the area, proximity to environmentally or culturally sensitive areas, cost, timing and any other relevant factors.
4. ASSESSMENT – Assess effectiveness of pest management.
5. TRACKING - Keep appropriate records.

### Integrated Pest Management Strategies

Proper planning and management decisions begin the IPM process. Making decisions about pest management involve weighing the severity of the problem, a tolerance level of damage, resources available, and best management practices. Pest management strategies may include education, prevention, physical, cultural, biological and mechanical controls, and pre-approved, site-appropriate pesticides. Often a combination of methods is used. Methods selected to manage specific pest populations are evaluated by licensed and trained professionals on a case-by-case basis.

Non-chemical methods of preventing pest infestations are always preferable to fixing them after they happen. Mechanical methods, such as hand pulling, hoeing, and dead heading to prevent weeds from going to seed; cultural controls include mulching, using groundcovers and dense plantings, changes in irrigation pattern/reducing irrigation, etc. Grass clippings can be mulched and left on lawns to compost, which increases soil tilth and microbial activity at the lawn rhizoplane. This approach further reduces the need for fertilizers and irrigation while improving lawn health.

If further monitoring, identifications and action thresholds indicate that less risky controls are not working, then additional pest control methods would be employed. Chemical methods will be used only as a last resort and at the lowest effective rate. Consideration of alternatives to managing pests includes “no action”. When it is necessary to use pesticides as part of an IPM approach, PSU minimizes risk by careful product selection and application.



### **Pest-Specific IPM Strategies**

Integrated pest management strategies are tailored to target specific pests within the landscape. Preventing the establishment of noxious weeds and invasive species is the priority of PSU's IPM program. Mechanical methods are preferred in weed control. Hand pulling, hoeing, and dead heading (to prevent the spread of seeds) is done on a regular basis.

PSU Landscaping Personnel manages small weeds and horsetail thistle predominately by hand weeding. Mulch and/or compost are applied if problem areas become too extensive. For highly visible, high-traffic locations and places that are difficult to hand weed, such as sidewalk cracks and gravel paths, small amounts of the herbicide Glyphosate is applied using hand powered, low volume, backpack sprayer equipped with a hood to prevent drift to non-targeted plants. Dependent on landscaping staff capacity, it may be applied to small weed seedlings to prevent them from going to seed, and thus saving on labor hours to hand weed.

Glyphosate is also occasionally used around poles, signs, and rogue trees in lawns to reduce labor costs using line trimmers. The rogue tree is cut at the stump, an angled hole is made, and the herbicide is injected within tree tissue.

PSU uses insecticides as a last resort in balancing human, horticultural and environmental risks. Insecticides are used only on rare occasion, such as the use of aerosol wasp spray to control wasps in high foot-traffic areas. The Landscaping department may choose to use chemical insecticides if deemed an appropriate measure.





## PESTICIDES APPROVED FOR LIMITED USE

If a pesticide is chosen as the best method for pest management, the Landscaping Department shall choose appropriate materials only from the list of Pesticides Approved for Limited Use. This list is established and reviewed on an annual basis by the Facilities & Property Management Department and the Campus Sustainability Office to ensure that potential environmental harm is minimized.

The suitability of the material, nature of the site, potential health and safety effects, potential environmental effects, specifically to salmon and aquatic ecosystems, overall costs, characteristics of the product and any other special considerations related to the situation shall be taken into consideration. After control measures have been taken, the site should be monitored to assess impact and effectiveness.

PESTICIDES APPROVED FOR LIMITED USE					
<i>Product Name</i>	<i>Active Ingredients</i>	<i>Application Method</i>	<i>Frequency</i>	<i>Timing and Location</i>	<i>High Risk Y/N</i>
<b>HERBICIDES</b>					
<b>Roundup Pro, Ranger Pro, Rodeo</b>	Glyphosate, non-selective post-emergent systemic herbicide	Hand powered, low volume backpack sprayer	As needed during April to October	Early in day. Locations vary primarily sidewalk cracks and large breakouts in bed areas	Not listed as high risk
<b>Ornamec</b>	Selective post-emergent herbicide	Hand powered, low volume backpack sprayer	Not typically used, but retained on list if large breakouts occur	Used to control annual and perennial grasses	Not listed as high risk
<b>INSECTICIDES</b>					
<b>Aerosol Wasp Spray</b>	Pyrethroids	Directed sprays used for individual wasp treatment	Not typically used, but retained on list if safety issues are created by wasp presence	For individual wasp treatment posing health and safety threats to users	Not listed as high risk
<b>Green Light Neem Concentrate</b>	Neem, organic insecticide		Not typically used, but on list for use if plant loss is unacceptable	For control of aphids and other insect pests	Not listed as high risk



## Pesticides Phased Out of Use

Over the past five years, PSU identified alternatives to *replace or reduce* the use of the following five herbicides: 1) *Atrimmec*, 2) *Oxadiazon (Ronstar G)*, 3) *Dichlobenil (Casoron 4G)*, 4) *Triclopyr and 2, 4-D (Crossbow)*, and 5) *Glyphosate (Roundup)*.

PSU phased out the use of the following four pre-and post-emergent chemicals: **1) Atrimmec, 2) Oxadiazon (Ronstar G), 3) Dichlobenil (Casoron 4G), and 4) Triclopyr and 2, 4-D (Crossbow)**, which were used to manage invasive weed infestations and retard tree stump growth. Pesticide use on PSU grounds is currently limited to the post emergent herbicide, Glyphosate (Roundup).

PSU does not use pesticides on the following Salmon Safe “High Risk” list of restricted pesticides, which pose excessive risks to salmon and aquatic ecosystems. However, if at any time, PSU were to identify a clear need for one time or ongoing use of a pesticide on the Salmon Safe “High Risk” list of restricted pesticides, PSU will provide written documentation to Salmon Safe demonstrating a clear need for one time or ongoing restricted use of the pesticide, that no safer alternative exists, and that the method of application (such as timing, location, and amount used) represents a negligible risk to water quality and fish habitat.

PESTICIDES PHASED OUT OF USE					
Product Name	Active Ingredients	Application Method	Frequency	Timing and Location	High Risk Y/N
<b>PHASED OUT HERBICIDES</b>					
<b>Ronstar G</b>	Oxadiazon, selective pre-emergent herbicide	Gravity drop/shaker (SpreadRite G)	Phased out, but retained on list for unusual circumstances	When temp is below 70 degrees and irrigation or rainfall expected. Locations vary, primarily shrub bed areas	No, not listed as high risk
<b>Atrimmec</b>	Plant growth regulator	Hand powered, low volume backpack sprayer	Phased out, as planting areas were replaced	Used primarily on hedges up to two weeks after major pruning	No, not listed as high risk
<b>Crossbow</b>	Triclopyr and 2, 4-D, selective post-emergent broadleaf herbicide	Hand painted on undesirable stumps	Phased out, due to threat to salmon and aquatic ecosystems	Painted directly on stump within 10 minutes of cutting	Yes, listed as high risk
<b>Casoron 4G</b>	Dichlobenil, selective pre and post-emergent	Gravity drop/shaker (SpreadRite G)	Phased out, due to threat to salmon and aquatic ecosystems	Used to target horsetail	Yes, listed as high risk



## **RUNOFF AND DRIFT MANAGEMENT STRATEGIES**

PSU's IPM requires great care be taken to ensure that pesticide drift does not reach non-targeted areas by using appropriate equipment and methods. All chemical applications are performed in a manner that minimizes drift and runoff. Pesticides are applied as indicated on label; considerations of wind drift, temperature, rainfall, and other atmospheric conditions are taken into account as follows:

- Application will occur according to the product label.
- If wind speed is above 8 mph, then application of sprays or powders is delayed.
- If temperature is above 85 F or below 55 F then application of sprays is delayed.
- If rainfall is predicted within 1-4 hours (depending on product) of application of liquids or powders or if irrigation is scheduled, then application is delayed.
- Highly targeted spray applications are equipped with a hood to prevent drift to non-target plants. Majority of spray applications occurs early in the day.
- Cutting and painting of stems with concentrated herbicide also prevents runoff and drift

## **RESTRICTED USE ZONE**

PSU's campus does not directly contact any waterway buffer zones. However, campus management works to protect or improve the water quality of stormwater runoff, as it can significantly influence downstream conditions for aquatic life.

PSU Landscaping personnel are specifically aware of primary drainage routes and pipes for storm, sanitary and combined systems in and around the campus. See Appendix 1: Storm Drainage and Pipe Locations on Campus.

## **PESTICIDE STORAGE, RINSATES, AND DISPOSAL**

PSU policy for pesticide storage, rinsates, and disposal defines the method and procedures for the storage, use and disposal of pesticide materials by PSU Landscaping Personnel applicators. It outlines methods for use of remaining pesticide solutions and rinses in a legal and safe manner. See Appendix 2: Pesticide Storage, Rinsates, and Disposal Policy.

Pesticide products will be kept in their original containers or in a labeled service container, and stored in a locked and ventilated pesticide storage container. Containers will triple-rinsed and wrapped in paper or plastic prior to disposal. Rinsates will be collected into a disposal drum and then properly disposed of by PSU's Environmental Health and Safety Department, or they will be poured into a labeled sprayer to be used in a future mix. Obsolete chemicals will be labeled as hazardous material and picked up for proper disposal by the Environmental Health & Safety Department.



## LICENSING, TRAINING, AND EDUCATION

PSU is committed to maintaining a high level of expertise in our workforce. State pesticide applicator licensing assures a level of expertise and familiarity with pest management practices and pesticide materials. The continuing education requirements of state licensing also help to keep personnel up-to-date on pest management theory and practice.

Therefore, PSU requires that all personnel applying pesticides on PSU-managed property maintain a Certified Public Applicator license through the Oregon State Department of Agriculture. In order to maintain a valid license the applicator currently must acquire a minimum of 40 hours of state accredited supplementary education over a five-year period, with no more than 15 hours accumulated in any given year.

Ultimate responsibility for maintaining a valid license lies with the applicator. PSU will keep pesticide applicators informed of approved education to meet continuing certification and licensing requirements. Information regarding state licensing requirements and status may be found at the Oregon Department of Agriculture's website at <http://www.oregon.gov/ODA/PEST>.

All applicators must comply with the IPM policy and follow appropriate regulations and label precautions when using pesticides in or around PSU facilities. New applicators are supervised during their initial application process to ensure correct mixing procedures and worker safety. IPM training sessions occur periodically throughout the year. Topics addressed include improvements to current IPM strategies, education of staff regarding pesticides approved for limited use, and alternative methods to pesticides.

## PESTICIDE TRACKING SYSTEM

Detailed records will be maintained for all pesticide applications consistent with state requirements. Pesticide applications will be tracked by the Facilities & Property Management Department on the PSU Pesticide Use Tracking Form, and will be trended and reported by the Campus Sustainability Office. See Appendix 3: Pesticide Use Tracking Form.

- Each application of each pesticide is documented separately on the Pesticide Use Tracking Form by date of application.
- Each location in which each pesticide is applied on that date is to be noted on the Pesticide Use Tracking Form.
- A description of site conditions and approximate square feet treated at each location in which each pesticide is applied on that date is to be noted on the Pesticide Use Tracking Form.
- An estimate of the amount of pesticide applied on that date is to be documented.
- The application method (spray, sprinkle granules, paint on, etc.) used is to be documented.



## **CONTRACT LANDSCAPE MANAGEMENT**

The Outdoor IPM Plan applies to pest control activities and pesticide use on university grounds and landscaping. Recipients of this plan include contractors who monitor and/or treat pest problems\*. Contract landscapers are committed to the management policies and field practices outlined in the IPM Plan. PSU includes compliance language in contracts with landscape management to ensure ongoing compliance. All pesticide use, including any applications by landscape contractors, occurs within the context of the IPM program.

## **IPM PROGRAM EVALUATION**

PSU Facilities & Property Management Department and the Campus Sustainability Office will review the IPM Plan at a minimum once a year to make any necessary updates or changes, which may include new best management practices employed, or to address problems that may arise. An evaluation of any pesticides used will also be part of this annual review.

## **APPENDICES**

**Appendix 1: Storm Drainage Routes and Pipe Locations on Campus**

**Appendix 2: Pesticide Storage, Rinsates, and Disposal Policy**

**Appendix 3: Pesticide Use Tracking Form**

\* Excludes landscape contractors maintaining grounds on leased buildings located off-campus.



### Storm Drainage Routes and Pipe Locations on Campus





## **Portland State University Pesticide Storage, Rinsates, and Disposal Policy**

This policy defines the method and procedures for the storage, use and disposal of pesticide materials by PSU Landscaping Personnel applicators. It outlines methods for use of remaining pesticide solutions and rinses in a legal and safe manner.

Pesticides or pesticide containers shall be kept in secure and safe locations in accordance with the requirements of the Federal Insecticide, Fungicide, and Rodenticide Act (7 United States Code 136 et seq.), Environmental Protection Agency regulations 40 CFR, Occupational Safety and Health Administration regulations, PSU policies and procedures, and local ordinances.

They shall be kept in a secure, well-ventilated location. Pesticides shall be safeguarded from environmental damage such as extreme temperature, photodecomposition or moisture. All pesticides in storage shall be inspected regularly and, if necessary, rotated on the shelf to assure that the oldest dated items are used first.

Pesticide solutions and rinses should be applied according to the label directions, and to legal target sites so there are no pesticides remaining. This shall be accomplished by accurately gauging the amount of pesticide needed for the job. PSU promotes the use of advance planning to minimize the number of times it is necessary to switch pesticides in spray equipment. In order to reduce the amount of excess rinsate, it is the policy of PSU to rinse equipment only at the end of the spray cycle or when changing to pesticides that are incompatible with those in the tank. It is a legal requirement to fully and legally label all tanks and sprayers containing leftover pesticides at the end of each day.

PSU shall dispose of pesticides and empty pesticide containers in accordance with all State and Federal regulations and label recommendations.



PESTICIDE USE TRACKING FORM								
Application Date	Site Conditions	Pesticide Name & EPA#	Location Applied	Application Method	Amount Applied	Approx. Sq. Ft. Treated	Applicator Signature	Comments
	Windspeed: Temp: Rainfall Predicted within: <input type="checkbox"/> 1 hr <input type="checkbox"/> 4 hrs <input type="checkbox"/> >4 hrs							
	Windspeed: Temp: Rainfall Predicted within: <input type="checkbox"/> 1 hr <input type="checkbox"/> 4 hrs <input type="checkbox"/> >4 hrs							
	Windspeed: Temp: Rainfall Predicted within: <input type="checkbox"/> 1 hr <input type="checkbox"/> 4 hrs <input type="checkbox"/> >4 hrs							
	Windspeed: Temp: Rainfall Predicted within: <input type="checkbox"/> 1 hr <input type="checkbox"/> 4 hrs <input type="checkbox"/> >4 hrs							
	Windspeed: Temp: Rainfall Predicted within: <input type="checkbox"/> 1 hr <input type="checkbox"/> 4 hrs <input type="checkbox"/> >4 hrs							
	Windspeed: Temp: Rainfall Predicted within: <input type="checkbox"/> 1 hr <input type="checkbox"/> 4 hrs <input type="checkbox"/> >4 hrs							
	Windspeed: Temp: Rainfall Predicted within: <input type="checkbox"/> 1 hr <input type="checkbox"/> 4 hrs <input type="checkbox"/> >4 hrs							