

UNIVERSITY OF CALIFORNIA, SANTA BARBARA

PHYSICAL FACILITIES

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INTEGRATED PEST MANAGEMENT PLAN

**Division of Facilities Management
University of California, Santa Barbara
Santa Barbara, CA 93106**

Effective from October 10, 2012

SECTION 1: Statement of Purpose

The purpose of this Integrated Pest Management (IPM) plan is to guide the use of environmentally sensitive pest management strategies and least - toxic control methods at the University of California Santa Barbara to enhance the health and safety of building users and the natural environment. IPM is defined as managing outdoor pests (plants, fungi, insects and/or animals) in a way that protects human health and the surrounding environment while improving economic returns through the most effective, least - risk option. Core elements of IPM include:

- Use of least-toxic chemical pesticides
- Minimum use of chemicals
- Use of chemicals and pesticides only in targeted locations and for targeted species
- Routine inspection and monitoring
- Regular review of practices ensure compliance and determine areas for improvement
- Proactive communication

To ensure building users are informed and empowered to care for their own health with regard to pest management activities, the plan includes procedures for notifying occupants and visitors in advance of any pesticide application other than a least-toxic pesticide.

SECTION 2: Goals

The goals of the IPM program at the University of California Santa Barbara are:

1. Protect human health and the surrounding environment by employing a range of preventative strategies and using least-toxic products for pest control and eradication.
2. Inspect and monitor pest populations and locations to enhance control strategies.
3. Minimize the quantity and toxicity of chemicals used for pest management.
4. Minimize environmental impacts by using species-specific pesticides and targeting application areas carefully.
5. Establish clear criteria for acceptable circumstances in which using a pesticide other than a least-toxic pesticide is necessary; toxic pesticides shall only be used when there is a threat to public health and safety, or to prevent economic or environmental damage, and only after other alternatives have been implemented and are shown to be ineffective.
6. Provide building occupants and visitors with advanced notice of IPM activities involving use of a pesticide other than a least-toxic pesticide.

SECTION 3: Strategy

IPM promotes the use of a range of preventative and non-chemical approaches to control pest populations and stave off infestation. If an infestation with unacceptable impacts occurs, thereby warranting additional treatment, IPM then favors the use of least-toxic pesticides. The targeted application of a toxic pesticide is allowed only after all other reasonable non-toxic options are exhausted. This plan outlines preventative best practices

and eradication strategies approved for use by UCSB Facilities Management. Provisions for the use of least-toxic pesticides, and toxic chemicals when necessary, are outlined should a pest infestation occur.

SECTION 4: Scope

This IPM plan applies to the building interior and grounds maintained by the UCSB Facilities Management Division. All pest control vendors will follow best practices for pest management and uphold UCSB Facilities Management's commitment to environmental stewardship by implementing the following operational plan for integrated pest management. This plan is applicable at all times at University of California Santa Barbara.

SECTION 5: Definitions

Emergency – A pest outbreak that poses an immediate threat to public health or will cause significant economic or environmental damage.

Least-toxic pesticide – Any pesticide product that meets San Francisco's Tier 3 hazard criteria is low hazard, and considered a least-toxic pesticide. Tier 3 products are the next line of defense against pests after preventative measures are exhausted.

Pesticide – Any substance, or mixture of substances, used for defoliating plants, regulating plant growth, or for preventing, destroying, repelling, or mitigating any pest, which may be detrimental to vegetation, humans, or animals.

Tiered Materials – The City of San Francisco's pesticide classification system based on hazard potential. Products are evaluated against comprehensive list of hazard criteria including carcinogenicity, reproductive toxicity, endocrine disruption, acute toxicity, hazard to birds/fish/bees/wildlife, persistence, and soil mobility, and are placed within the Tier structure based on the evaluation results.

Tier 1: Highest concern

Tier 2: Moderate concern

Tier 3: Lowest concern

Tier 4: Insufficient information available to assign to above tiers

SECTION 6: Record Keeping

Monitoring the effectiveness of the IPM plan over time requires diligent tracking of several items: pest populations and locations; management strategies employed; quantities and types of chemicals and products used; and the outcome of pest management activities. The pest control vendor is responsible for maintaining records that include the information below. See the appendix for the Record Keeping form that shall be used at UCSB to standardize all record keeping activities.

1. Target pest
2. Prevention and other non-chemical methods of control used
3. Type and quantity of pesticide used
4. Location and date of the pesticide application
5. Name of the pesticide applicator
6. Application equipment used
7. Summary of results

SECTION 7: Performance Measurements

The performance of the IPM program shall be compiled from IPM records and analyzed on an annual basis. An IPM report identifying the types of pest problems encountered at the building and the types and quantities of all pesticides used shall be generated by the pest control vendor and presented to the Associate Director of Landscape, Environmental & Custodial Services for review each year. The following metrics shall be tracked throughout the year and documented in the report to evaluate the IPM plan at UCSB over time:

1. The severity and location of all major pest infestations
2. IPM measures taken
3. The amount of each pesticide product used by volume
4. Dates, pest species, location and control method for emergency pest outbreaks

Quarterly meetings will be held to discuss IPM and performance on campus.

SECTION 8: Quality Assurance/Quality Control

Integrated pest management performance measures will be evaluated at quarterly meetings with the pest control vendor. Regular and emergency services provided on site will be reviewed at these meetings. Pest control vendors are required to follow all aspects of this IPM plan. Documentation and verification of plan implementation will be verified at all quarterly meetings.

SECTION 9: Pest Control Contractors

All pest control vendors contracted to work at are responsible for adhering to this plan. When UCSB Facilities Management enters into a new pest control contract or extends the terms of an existing contract that authorizes the application of pesticides in the building interior or grounds, the contract shall require that the contractor comply with this IPM plan. The contract documents shall also require the contracted company to maintain records in accordance with the IPM plan and submit this information to the Associate Director of Landscape, Environmental & Custodial Services when requested. All pest control contractors will also be asked to submit a description of their staff IPM training and education programs.

SECTION 10: Building User Notification

Notifying building users of pesticide applications other than a least-toxic pesticide is a critical component of the IPM plan. Providing occupants and visitors with the appropriate information at the appropriate time enables individuals to take precautions as they see necessary to protect their personal health. At UCSB, a 72 hour advance notice to building occupants is required for the application of any pesticide other than a least- toxic pesticide. Advance notice procedures shall take the following form:

1. Post signs at least 3 business days before application of the pesticide product, and leave signs in place for at least 3 business days after application.
2. Post signs at every entry point to where the pesticide is applied, if applied in an enclosed area. In highly visible, open area locations, post signs around the perimeter of the area where the pesticide is applied.
3. Signs must be standardized and easily recognizable. See the appendix for the approved notification sign template.
4. Each sign must contain the following information:
 - a. The name and active ingredient of the pesticide product
 - b. The targeted pest
 - c. The application date
 - d. The signal word indicating the toxicity category of the pesticide product
 - e. The name and contact information of an individual that is responsible for fielding questions regarding the application.
5. Copies of posted signs shall be retained for record keeping purposes for one year.

SECTION 11: Tenant Communication Plan

Building occupants utilize a work order management system to inform Facilities Management of pest control needs. They have a log-in credential unique to them and utilize a web portal, call, or email Facilities Management Customer Service to submit a work order request. The request is vetted by Customer Service staff, and if verified, a work order is created and then sent electronically to the technician's tablet, where they work with the requestor to perform the service necessary for treatment. The technician makes note of any treatment practices conducted and records them on the work order. When finished, they then close the work order out, and its notes and status are logged in the work order management system.

SECTION 12: Emergencies

A pest outbreak is considered an emergency when it poses an immediate threat to public health or will cause significant economic or environmental damage. Emergency pesticide applications require a 24-hour advance notice to building users in accordance with procedures numbered 2 through 6 in Section 10 of this plan.

SECTION 13: General Preventative Practices

General preventative practices are simple housekeeping and landscaping procedures that eliminate sources of food, water and shelter that attract pests to the building grounds and interior. UCSB Facilities Management shall use the following methods as the first and primary means for controlling pests and preventing outbreaks:

Landscaping and Site

1. Use mulch and other landscaping best practices to promote soil and plant health.
2. Use weed-free soil amendments.
3. Maintain and plan landscape features to eliminate safe havens for pests and rodents.
4. Keep vegetation trimmed 18 inches from the building and fill area with stones or similar material to prevent nesting.
5. Clean up plant debris, especially from fruit-bearing trees.
6. Remove invasive plants that are known to harbor or provide food for pests.

Building Infrastructure

1. Maintain the building envelope by weather-stripping around windows and doors, installing door sweeps, screens or other barriers, and sealing cracks and crevices to prevent pests from entering the building.
2. Remove hiding places by cleaning up clutter such as cardboard boxes, crates, used tires, woodpiles.
3. Manage trash receptacles and dumpster areas for clutter and cleanliness to minimize food sources and hiding places.
4. Eliminate water sources by fixing leaky pipes, cleaning out drains and rain gutters, and preventing water from pooling on concrete or soil after irrigating landscape.
5. Rinse all food and beverage containers before placing in recycling bins.

SECTION 14: Species-specific Control Practices

The following pest species are common to the building grounds. The strategies specified in the table below are the preferred control methods to be used by UCSB Facilities Management

Common Species	Control Strategies
Ants	<ul style="list-style-type: none">• In areas where ants are present, wipe the areas down with soapy water in order to prevent the formation of major scent trails. If there already is an established trail, wipe backwards from the food source to the entrance of the trail.• Seal all entry points to the building – ants will give up trying to find a way through after 1-2 days. Temporary blockades can be made using sticky substances, such as petroleum jelly and chili powder, cinnamon, or boric acid.• Always keep opened foodstuffs in sealed containers, or store them in the refrigerator or freezer. Clean out kitchen cabinets, drawers, and shelves to remove crumbs and stains. Keep sinks and worktops clean and dry.

	<ul style="list-style-type: none"> • Baits are best placed in the path of an ant trail and then removed after the ant activity stops, before they lure ants from another colony to the area. • Prune branches close to the building and removed fences or anything that might create a bridge for the ants. • Low-toxicity compounds to control ants include boric acid and diatomaceous earth (DE), a chalk-like powder consisting of the fossilized remains of diatoms, a type of hard-shelled algae.
Aphids	<ul style="list-style-type: none"> • Manage sap-sucking mites and whiteflies by releasing predatory mites, ladybugs, and lacewings onto the grounds several times over a period of weeks. • Consider using parasitic wasps to control scales on trees, shrubs, and flowers. • If it is difficult to obtain supplies of beneficial insects for release into the garden, then purchase a branded lure that simulates the scent of aphids and attracts ladybugs and lacewings to the area.
Caterpillars	<ul style="list-style-type: none"> • Bacterial insecticides derived from natural ingredients are available to control caterpillars.
Mosquitos	<ul style="list-style-type: none"> • The best control method for mosquitoes is to destroy their habitat. • Because mosquitoes like moisture and lay their eggs in standing water, it is important not to leave flower pots, buckets, plastic sheeting, or other open containers outside collecting water. Ensure that any rainwater collectors are fitted with lids. • Clear debris from gutters and drains to ensure that there is no standing water after rain, and drain unused pools or fountains so that the water cannot become stagnant. • Drain or fill depressions, mud flats, and other areas that might hold water. • Repair leaking taps and air-conditioning units so that puddles cannot form, and ensure that septic tanks and sewage systems are properly maintained and in good working order. • Avoid over-irrigating lawns and gardens, and keep weeds and grass (where the insects rest) trimmed. • If you have a pond or lake on the building grounds, fill it with mosquito-eating fish, such as top-feeding minnows or goldfish; they will eat the mosquito larvae before they mature into adults. • To prevent mosquitoes from coming indoors, fit fine-mesh screens to porches, doors, and windows. • If these measures are insufficient, area repellents such as citronella candles, coils, or sprays will repel mosquitoes from porches, patios, and other unscreened outdoor areas, although they only work well when the air is still.

Rodents	<ul style="list-style-type: none"> • Rodent control should start with a survey to determine the source of the problem and the conditions that encourage the infestation. Following the survey, implement a program to kill the rodents by removing their sources of food and water, eliminating their place of refuge and making it rodent-proof, and educating and obtaining the cooperation of employees. If the food supply is removed before you eradicate them, the rodents will migrate to other areas, making elimination more difficult. • Openings in building foundations and walls should be closed or screened with wire mesh that has holes no more than 1.25 cm (0.5 in) wide. Where pipes enter masonry, force heavy hardware cloth or steel wool into the opening, then fill it with concrete. • Continuous surveillance is necessary, and places where rodents have been gnawing to gain entry to a building should be sealed with metal flashing. • Doors are particularly vulnerable to rodent entry, so ensure that external doors and windows close tightly with no gaps at the bottom. • Materials stored in the open, in sheds, or in buildings should be stacked at least 30 cm (1 ft.) above the ground. • Stringent waste disposal practices should be observed; secure all waste in closed containers and not just plastic bags. • Wash recycling and refuse areas regularly. Make sure composting bins are designed to prevent rodents from entering. • Traditional rodent traps, or snap traps, kill instantly. If trapping efforts fail, it is usually due to too few traps being used. • Bait should be sticky to ensure that the mouse triggers the trap mechanism, even if it only lightly touches the bait. Mice prefer peanut butter or chocolate to cheese. Bacon, oatmeal, or apples can also be used as bait. • An alternative to snap traps is a battery-operated trap that generates a high-voltage shock once the rat or mouse is inside. The design is relative safe and can be used in areas where children, pets, or wildlife may be present.
Slugs and Snails	<ul style="list-style-type: none"> • There are various non-chemical solutions to eliminate slugs and snails, including putting salt or sharp shingle around vulnerable plants, drowning them in beer, or hand-picking them and destroying them. Elemental copper bands also repel snails and slugs.

SECTION 15: ACTION THRESHOLDS

Regular treatment includes the use of first non-chemical controls (sanitation, exclusion, mechanical traps), followed by the use of least-toxic control methods if the situation is not resolved, and then non-least toxic control methods if the situation is still not resolved. Emergency treatment includes the use of the most effective control method as a first step, which may be non-least toxic.

SECTION 16: Tier 3 Materials – Least Toxic Pesticides

Chemical pesticides are considered a last resort under the tenets of integrated pest management. This control strategy is to be used at UCSB only after general preventative practices and non - chemical options are exhausted. Pesticides that meet the requirements of Tier 3 are considered least toxic and may be applied without building user notification when chemical product use is required. To qualify as a Tier 3 material, all of the following statements must be true:

1. Product contains no known, likely, or probable carcinogens
2. Product contains no reproductive toxicants (California Prop 65 list)
3. Product contains no ingredients listed by Illinois EPA as known, probable, or suspect endocrine disrupters
4. Active ingredients has soil half-life of thirty days or less
5. Product is labeled as not toxic to fish, birds, bees, wildlife, or domestic animals

Due to its high toxicity, rodent bait is not considered least toxic under any circumstance.

SECTION 17: Tier 2 Materials – Toxic Pesticides

Should both preventative methods and least-toxic pesticides prove ineffective at suppressing an emergency pest infestation, a toxic pesticide that meets the requirements of Tier 2 may be applied.

SECTION 18: Responsible Parties

The Associate Director of Landscape, Environmental & Custodial Services is responsible for overseeing the implementation of the IPM plan and ensuring contractor compliance.

The Associate Director of Landscape, Environmental & Custodial Services is responsible for supervising record keeping and performance measurement, which is primarily the responsibility of contracted pest control companies.

The Associate Director of Landscape, Environmental & Custodial Services is responsible for quality assurance/quality control processes. This position shall verify that the plan is being implemented consistently and correctly, that performance persists over time, and that performance measurement methods truly reflect actual outcomes.

All pest control vendors contracted to work at the UCSB Facilities Management are responsible for adhering to this policy.

SECTION 19: Contact Information

Please contact Associate Director of Landscape, Environmental & Custodial Services Jon Cook (805) 893-2661 with questions concerning this plan, pest sightings, or other questions related to integrated pest management.

SECTION 20: Training

All pest control contractors hired for the UCSB Facilities Management will submit a description of their staff IPM training and education programs.

SECTION 21: Resources

The City of San Francisco has an award-winning Integrated Pest Management program.

www.sfenvironment.org/our_programs/topics.html?ti=1

The Integrated Pest Management Institute of North America, Inc. provides news, standards, and information about upcoming IPM conferences and webinars.

www.ipminstitute.org

Beyond Pesticides is a non-profit organization committed to pesticide safety.

www.beyondpesticides.org

SECTION 22: Appendix

1. Notification sign template for toxic pesticide applications
2. IPM Record Keeping form