



**Northern Illinois
University**

Integrated Pest Management Plan

Environmental Health and Safety

Table of Contents

Integrated Pest Management Plan 3

Goals 3

Strategy 3

Scope 3

Record Keeping 4

Performance Measurements, Quality Assurance and Control..... 4

Responsible Parties 4

Pest Control Contractors 5

Building User Notification..... 5

Emergencies..... 5

Approved Pesticides 5

Practices 6

Licensing 9

Definitions 10

Resources..... 10

Integrated Pest Management Plan

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 Northern Illinois University. Integrated Pest Management (IPM) is defined as managing pests (plants, fungi, insects and/or animals) in a way that protects human health and the surrounding environment and that improves economic returns through the most effective, least-risk option. This document concentrates on insects and animal pests. 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
- Proactive communication

Goals

The goals of the NIU IPM plan are to minimize the impact of site management practices on the local environment, and to reduce the exposure of occupants, staff and maintenance personnel to potentially hazardous chemical, biological and particle contaminants.

The plan addresses environmental best practices for outdoor and indoor integrated pest management. Outdoor IPM should focus on keeping the property's pest populations under control and preventing pests from entering the building, with a focus on the building envelope and landscaping features. Indoor IPM should focus on maintaining the building envelope to avoid intrusions and managing pest attractants.

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 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 pest control strategies approved for use inside and outside of the campus buildings. Provisions for the use of least-toxic pesticides, and toxic chemicals when necessary, are outlined, should a pest infestation occur.

Scope

This IPM Plan applies to the building interiors and grounds of all NIU campus areas. The plan includes approved IPM strategies for managing and eradicating pests that are common to the area, and provides resources to facilitate learning about new and emerging IPM strategies. This plan is applicable at all times.

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. NIU Environmental Health and Safety (EHS) shall maintain records that include the information below:

1. Notification to occupants: date, time method
2. Date, time and location of pesticide application
3. Target pest
4. Prevention and other non-chemical methods of control used
5. Type and quantity of pesticide used, including trade name and active ingredient
6. Summary of results
7. Name of the pesticide applicator
8. Application equipment used

Performance Measurements, Quality Assurance and Control

The environmental performance of the IPM program will be compiled from IPM records and analyzed periodically and reports generated by EHS as necessary. The reports may include severity, and locations (specific buildings) of major pest infestations, amount and types of pesticides used by volume.

Routine inspections and monitoring are performed by EHS personnel. Particular attention will be paid to problem areas referring to the IPM records for guidance. Building occupants are instructed to report any problems through the online work order system (TMA), or EHS online request form, <https://www.niu.edu/ehs/resources/pest-control-request.shtml> which will trigger a response. The response time will be appropriate to the nature of the situation. The overall IPM program will be reviewed on a periodic basis by the Program Manager.

Responsible Parties

The Program Manager is responsible for monitoring consistent and correct implementation of the IPM Plan. The Program Manager and the current pest control vendor are responsible for record keeping and performance measurement. The compiled records from all parties will be synthesized by the Program Manager as part of an annual IPM review.

Title	Contact	Phone	Area of Responsibility
Program Manager	Dept. Contact	815-753-1093	Coordination
ChemWise	Company Contact	630-236-1600	Pesticide Applicator

Pest Control Contractors

When EHS enters into a new pest control contract or extends the terms of an existing contract that authorizes a contractor to apply 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 EHS when requested.

Building User Notification

Application of pesticides at NIU generally does not require notification of building occupants due to the low toxicity and small affected areas of the materials being applied. Should chemical treatment of larger areas be needed the Program Manager and the Pest Control Vendor shall discuss the measures to be performed and make notification to the occupants of the areas to be treated. Notification will be done via email, signage, telephone or combinations thereof allowing sufficient time for occupants to prepare as necessary.

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 if treatment is prolonged. Notification of emergency pesticide applications must be given within 24 hours of the application, in accordance with procedures outlined in the “Building User Notification” section of this plan.

Approved Pesticides

Chemical pesticides are considered a last resort under the tenets of integrated pest management. Pesticides are to be used by NIU after non-chemical options have been exhausted, with a preference for use of a Tier 3 pesticide. The tier rankings are outlined in the 2007 San Francisco Reduced-Risk Pesticide List, where a Tier 3 pesticide was determined by hazard screening to be of “lowest concern,” because the product contains

- no known, likely, or probable carcinogens
- no reproductive toxicants (CA Prop 65 list)
- no ingredients listed by the EPA as known, probable, or suspect endocrine disrupters
- active ingredients has soil half-life of thirty days or less
- and is labeled as not toxic to fish, birds, bees, wildlife, or domestic animals

Nonrodent pesticides are also considered least toxic if they exceed the Tier 3 criteria but are used in self-contained baits and placed in inaccessible locations. Rodent baits are not considered least toxic under any circumstances.

Tier 3 products approved for use under the conditions outlined above at NIU are:

Product Name	Active Ingredient
Advion Ant Bait indoor use	Indoxacarb 0.05%
Advion Roach Bait indoor use	Indoxacarb 0.06%
Gentrol	Hydropene 90.6%

Tier 2 products are of “moderate concern” and to be used under emergency conditions (as defined above) or in the event that both preventative methods and least-toxic pesticides prove to be ineffective at pest control.

Tier 2 products approved for use under the conditions outlined above at NIU are:

Product Name	Active Ingredient
Maxforce FC bait gel	Fipronil
Maxforce Roach killer bait (reservoir)	Fipronil
Quibtox	Cholecalciferol 0.075%
Generation Blocks	Difethialone
Zenprox EC	Piperonyl butoxide
Teprid FX	Imidacloprid

Tier 1 products are not intended for use except when there is a concern for public safety and in situations where the use of a Tier II product is inadequate or unsafe.

Practices

Pest control (pesticides) chemicals for use by contracted services are not stored on NIU property or applied by NIU personnel. NIU Grounds personnel are credentialed pest control providers and utilize best practices for chemical storage, preparation, handling, and disposal of pesticides and herbicides used by non-contracted services.

CHEMICAL APPLICATION PRACTICES	
User Qualifications	<ul style="list-style-type: none"> ▪ All chemical application and advice on pest-management problems will be made by a licensed pest control company, particularly in the creation of customized integrated pest management problems, which may require detailed knowledge of the biology and ecology of a particular species. ▪ If pesticides are required, the Facilities Assistant will determine the best product and application in accordance with approval requirements. ▪ A specialist must prepare and use all chemicals.
Species Considerations	<ul style="list-style-type: none"> ▪ When possible time the treatment to coincide with the presence of the pest. ▪ Use a selective chemical that has the least effect on non-target species and treat only the area affected.
User Safety	<ul style="list-style-type: none"> ▪ Users must wear protective clothing appropriate to the pest chemical application used. ▪ Ensure that anyone handling toxic chemicals never works alone and that the work area is well-ventilated. ▪ Wear a respirator for outdoor spraying or dusting of organic phosphorus compounds ▪ Eating, drinking and smoking must be prohibited when using or handling chemicals ▪ Users must be familiar with the effects on the body of the chemicals they are likely to be using, and how the chemicals may enter the body. ▪ Users must be aware of the signs and symptoms of acute poisoning related to chemicals they are using. They must stop work if they are feeling ill and seek medical advice.
Equipment	<ul style="list-style-type: none"> ▪ Equipment must be frequently checked and properly maintained, both for health and safety reasons and to minimize spray drift.

Weather/Time Restrictions	<ul style="list-style-type: none"> ▪ Spraying must not be carried out in unsuitable weather. Anyone operating sprayers must have access to a wind-speed meter and only spray when the wind speed is negligible. ▪ Hours of work must be controlled so that building occupants are not exposed.
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BASIC ANIMAL PEST CONTROL PRACTICES	
Site/Building Cleanliness	<ul style="list-style-type: none"> ▪ Keep garbage containers clean, free of odors and covered at all times. Sanitation measures reduce habitat and food sources for pests. ▪ Keep areas around garbage containers free of spillage or garbage to prevent the collection of trash or debris on the ground around or underneath the containers. ▪ Keep grounds free of high weeds, trash, old equipment and debris, as these conditions create ideal harborage for rodents.
Structural Integrity	<ul style="list-style-type: none"> ▪ Maintain the building exterior in good repair with no holes or openings larger than ¼ inch including, but is not limited to, windows, doors, fans, vents, etc., to keep pests from entering the building. ▪ Address any deficiencies in the building exterior with corrective measures, i.e., cementing, screening, caulking, installing stripping on door bases, etc. ▪ Maintain door sweeps on all applicable doors to produce a good seal to the ground.
Inspection Schedule and Location	<ul style="list-style-type: none"> ▪ Visual inspections shall be performed on a periodic basis to identify problem areas.

SPECIFIC ANIMAL CONTROL STRATEGIES	
Ants	<ul style="list-style-type: none"> ▪ Always keep food items in sealed containers or store them in the refrigerator or freezer. Clean surfaces and storage areas to remove crumbs and stains. Keep sinks and worktops clean and dry. ▪ Prune branches close to the building or anything that might create a bridge for the ants to cross. ▪ 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. ▪ Treat only areas that have active pest infestations. Temporary blockades can be made using sticky substances such as petroleum jelly or chili powder, cinnamon, and/or boric acid. ▪ Baits are best put in the path of an ant trail and then removed after the ant activity stops. ▪ Identify the ant species for most relevant measures.
Bed Bugs	<ul style="list-style-type: none"> ▪ Call professional pest management to inspect and treat for the presence of bed bugs indicated by the initial inspection.
Cockroaches	<ul style="list-style-type: none"> ▪ There are five main species of cockroaches and effective control depends on identifying them correctly. ▪ All food handling areas should be cleaned frequently. ▪ Integrated pest management measures for controlling cockroaches include effective hygiene and exclusion practices, sticky traps lined with pheromones, boric acid, and insect growth regulators.
Dust Mites	<ul style="list-style-type: none"> ▪ Fabrics, bedding and carpets attract and generate dust and dust mites. To keep dust mites at bay, keep building well-ventilated and dry.
Flies	<ul style="list-style-type: none"> ▪ Collection of waste and residues should be carried out at least twice a week. ▪ Keep refuse areas clean to avoid providing flies with breeding grounds ▪ Ensure bin lids fit tightly and the bins are cleaned regularly. ▪ Use fine mesh window and door screens as a barrier against entry by any flying insect. ▪ Ultra-violet (UV) fly killing equipment is very effective so long as it is situated correctly. In food preparation areas, UV equipment should only be used once all possible precautions have been taken to keep flying insects out. Position the UV equipment close to an entry point, at right angles to the nearest competing light source such as a window. In many catering establishments, poorly-situated UV equipment poses a greater food hygiene hazard than lacking pest repellants altogether. This is because when placed next to the food preparation area, they draw flies to the food which they are likely to contaminate before being killed. ▪ Natural chemical treatments include pyrethrum extracted from the <i>Chrysanthemum cineraria folium</i> plant that can be used in kitchens and restaurants.

Mosquitoes	<ul style="list-style-type: none"> ▪ Find and eliminate their habitat. ▪ Do not allow flower pots, buckets, plastic sheeting or other open containers outside to collect water. ▪ 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 well-clipped. ▪ To prevent mosquitoes from coming indoors, fit fine-mesh screens to porches, doors and windows.
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. ▪ Remove food sources. ▪ Eliminate places of refuge. ▪ Openings in building foundations and walls should be closed or screened with wire mesh that has holes not 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 building 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 bins regularly. Make sure composting bins are designed to prevent rodents from entering. ▪ 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. 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 once the rat or mouse is inside.
Wasps and Hornets	<ul style="list-style-type: none"> ▪ It is recommended that removal of wasp, hornets and bees be handled by professional pest control.

Licensing

In accordance with the State of Illinois statutes, any person applying pesticides must be licensed prior to the use of each pesticide, regardless of toxicity.

In Illinois, any business that provides pesticide management services for hire must have a pest control business license issued by the Illinois Department of Agriculture. NIU hires Chemwise Ecological Pest Management to provide pest control services, and the company does hold a valid pest control license, issued by the Illinois Department of Agriculture.

The Program Manger is the main point of contact for NIU regarding pest management and ensures staff are familiar with the IPM Plan.

Definitions

An **emergency** pest outbreak is one that poses an immediate threat to public health or will cause significant economic or environmental damage.

A **least-toxic pesticide** is any pesticide product for which all active ingredients and known inert ingredients meet the least toxic Tier 3 Hazard criteria under the City of San Francisco's hazard screening protocol. Least toxic also applies to any pesticide product, other than rodent bait, that is applied in a self-contained, enclosed bait station placed in an inaccessible location or applied in a gel that is neither visible nor accessible.

A **pesticide** is 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.

A **first-generation anticoagulant rodenticide** generally requires higher concentrations to be effective and requires multiple feedings over several days but has a shorter duration time in the body. Examples: diphacinone, chlorophacinone.

A **second-generation anticoagulant rodenticide** is far more toxic than first generation, hence it is generally applied in lower concentrations and is lethal after a single ingestion, but it remains in the body far longer. Examples: bromadiolone, brodifacoum, difethialone.

Resources

Illinois Pesticide Act (415 ILCS 60/1 et seq.).

<http://www.ilga.gov/legislation/ilcs/ilcs3.asp?ActID=1596&ChapterID=36>

The University of California Statewide Integrated Pest Management Program (UC IPM) develops and promotes the use of integrated, ecologically sound pest management programs in California to serve agriculture, urban and community, and natural resources audiences. www.ipm.ucdavis.edu

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