

**2007 PARKS DIVISION PESTICIDE REPORT**

**POLICY REGARDING PEST MANAGEMENT ON CITY PROPERTY**

Adopted 5/18/2004

1. The purpose of this policy is to eliminate or reduce pesticide use to the greatest possible extent. The City of Madison agrees with the US EPA that “all pesticides are toxic to some degree, and the commonplace, widespread use of pesticides is both a major environmental problem and a public health issue.” For this reason, all departments will evaluate and give preference to non-pesticide management practices and use reasonably available alternative pest control methods, will minimize their pesticide use through Integrated Pest Management, and will use least risk pesticides as a last resort.
2. Definitions of terms used in this policy.
  - a. Integrated Pest Management (IPM) is a decision making process. The essential parts of IPM are monitoring, setting threshold levels for pests, identifying the causes of the pest problem, addressing the cause of the problem, and using the most effective, least harmful, methods to control the problem, before using chemical controls. IPM develops ways to change the conditions that cause the pest problem, so that pests will be prevented in the future or minimized. Preventive maintenance using pesticides for pest problems does not adhere to IPM. Prevention of pests should be managed with non-toxic methods.
  - b. Biological Controls – support or introduction of natural predators or parasites of the pests to be controlled.
  - c. Cultural Controls - practices that can reduce pests by making the environment less favorable, such as improved sanitation or horticultural practices.
  - d. IPM Coordinator – Department staff person who is responsible for developing and implementing the pest management plan for the Department.
  - e. Mechanical Controls - direct measures that either kill the pest or make the environment unsuitable for their entry, dispersal, or survival, such as tilling the soil to expose insects or hand pulling weeds.
  - f. Physical Controls - practices that physically keep pests from places where they're not wanted, such as window screens and sealing cracks and crevices.
  - g. Pesticides – substances that destroy or repel pests. For the purpose of this document, they include herbicides, insecticides, fungicides, and rodenticides.
3. Chemical pesticide may be considered if:
  - a. The non-toxic methods of pest control, such as Cultural Controls, Physical Controls, Mechanical Controls, and Biological Controls have been shown to be ineffective; and,
  - b. Monitoring has indicated that the pest will cause unacceptable health or safety hazards, or an unacceptable reduction in the intended use of the property.
4. All departments will maintain appropriate records on pest monitoring data collected, pest control actions attempted (both non-chemical and chemical), and results of pest control activity. All departments will submit by February 1st an annual report to the Public Health Commission. This report will contain the following information:

- a. Completed Pesticide Application Summary for all pesticide applications made in the previous year. Application data must include: purpose, location, and amount of each pesticide product applied, including the amount of active ingredient.
  - b. Annual summary of non-chemical pest control activities.
  - c. Estimated size of the total area managed for each pest problem in a given year. The area managed will likely exceed the area treated.
  - d. A summary of any complaints received regarding use or the perceived need for use of pesticides, including the date complaint(s) was (were) received and the nature of the complaint(s).
  - e. A pest management plan for the coming year. The plan will contain the following information for each type of pest problem:
    1. Definition of Roles. Identify who will: serve as the IPM Coordinator, perform pest monitoring, evaluate pest control alternatives, decide which pest control alternative to use, and implement pest control measures.
    2. Pest Management Objectives. Identify the action thresholds (i.e., pest population levels) to be used to decide when some type of action should be taken to control the pest problem.
    3. Monitoring Plan. Describe the methods to be used to monitor the pests and the frequency of monitoring.
    4. Control Method Selection. Describe the types of pest control methods to be evaluated and the criteria used to choose the appropriate control method. IPM control methods may include:
      - i. Modifying the environment to increase the effectiveness of biological, mechanical, cultural, or physical controls such as blocking mouse holes, keeping areas clean where insects may be attracted, improving soil health, etc.
      - ii. Destroying pests breeding, feeding, or shelter habitat.
      - iii. Using pest resistant varieties of seeds, ornamentals, trees, etc.
      - iv. Using chemical control strategies as a last resort only after a mix of other strategies is shown to be ineffective.
      - v. Using mechanical methods and biological methods (parasites, predators, disease).
      - vi. Spot-treating pest problems when chemical methods are used.
  - f. A standard notification plan that provides, at a minimum, readily visible posting for a period of 24 hours prior to a pesticide application (when possible) and a minimum of 48 hours following the application. These time intervals may be extended based on health or safety concerns. For areas that receive pesticide applications on a regular basis, permanent signs will be posted
5. Annual evaluation of pest management activities on City property will be performed in the following manner:
- a. Public Health Department staff will summarize pest management activities. This summary and individual Department reports and plans will be provided to the Pest Management Advisory Subcommittee of the Public Health Commission and the oversight commission of each department applying pesticides.
  - b. The Pest Management Advisory Committee, a commission of experts to be recommended by the Public Health Department and appointed by the Mayor's office, shall review the annual report and make recommendations to the Public Health Commission, will:

1. Review the available data and make recommendations concerning compliance with this Policy to the Public Health Commission.
    - i. Following review of the available data a list of pesticides acceptable for use on city property will be generated.
  2. Report any contractors that are not complying with this policy to the Public Health Commission.
- c. The Public Health Commission will submit recommendations and concerns to each commission charged with oversight of a department that applies pesticide on City property. The public Health Commission will also forward to the Purchasing Supervisor of the Comptroller's office the names of any contractor that does not comply with the City's pesticide policy.
- d. The oversight commission of each Department with a need to manage pests on City property will have the following responsibilities:
1. Review the Department's pest management activities and plans,
  2. Consider recommendations and concerns from the Public Health Commission, the Common Council, and the public.
  3. Take appropriate action to ensure that the Department's pest management activities and plans are in compliance with this Policy
6. All Departments with a need to manage pests on City property will assign a staff person to serve as IPM coordinator. This person will be responsible for developing and implementing the Department's plan.
- a. IPM Coordinators from all Departments will be required to meet annually to discuss past experiences and recent advances in pest management practices. The group may choose to meet more frequently as needed.
  - b. IPM Coordinators will receive IPM training.
7. All Departments will report any complaints regarding health effects possibly related to pesticide applications to the Public Health Department at the earliest opportunity.
8. Any unusual amount of pesticide use due to unusual circumstances will be reported to the Director of Public Health or his/her designee at the earliest opportunity.
9. The IPM Coordinator and all supervisors having responsibility for the handling, application, disposal or storage of pesticides shall be State certified under the Department of Agriculture, Trade and Consumer Protection's Pesticide Applicator Certification Program for the appropriate type of pesticide application engaged in. All employees and volunteers applying pesticides shall be State certified or working under the direct supervision of a certified applicator. All employees having any involvement with pesticide handling, application, disposal or storage shall receive basic training in pesticide safety.
10. All Departments storing, using and disposing of pesticides and pesticide containers will do so safely, according to label directions and any State and Federal regulations where applicable.
11. If the pest control program is performed through a private contractor, the contracts for these services will require the contractor to comply with this policy. The contractor must furnish the IPM Coordinator for the Department served with the following for each pesticide applied:
- a. Date, purpose, location, amount of product, and amount of active ingredient for each application.
  - b. Product labeling and material safety data sheets for each product applied,
  - c. Documentation of applicator certification and conformance with other Federal and State laws.

Monitoring should not be solely performed by the contractor hired to treat the pest problem. The IPM Coordinator should oversee the monitoring.

12. If a private contractor is found to be out of compliance with this policy by the Pest Management Advisory Subcommittee, this non-compliance will be considered grounds for terminating an existing City contract with the contractor and the contractor will not be allowed enter into a contract with any City department for 1 year after the date that non-compliance was determined.
  - a. A list of non-compliant contractors will be kept by the Purchasing Supervisor. The Purchasing Supervisor shall notify all IPM coordinators of non-compliant contractors.
13. This policy does not apply to disinfectants used in the routine maintenance of city facilities.
14. The City shall NOT USE pesticides to control dandelions and other broadleaf weeds on general parklands, median strips, street terraces, roadsides, general lawn areas, and athletic fields that are not reserved, nor are fees paid for their use.
  - a. Guidelines for Pesticide Use
    1. Cosmetic use of lawn and garden areas (including medians) will be managed using non-toxic methods. These methods can be sought out and used on all city properties.
    2. Because of concern over the health of children with repeated exposure to pesticides when playing sports, lower priority athletic fields in particular should have a much higher tolerance for weeds and should use non-toxic weed management methods if desired.
    3. Golf courses have the opportunity for pesticide reduction by incorporating more cultural method and increasing weed tolerance of golfers through educational efforts, following guidelines set forth by the Audubon Golf Sanctuary Program.
    4. Olbrich Gardens and other city property managing large garden areas ought to continually seek out resources for non-toxic garden management.
    5. An Integrated Pest Management professional ought to be used as a resource by the city to help coordinate and integrate non-toxic pest management methods.
    6. All use of pesticides for conservation purposes for the control of invasive species, must be managed by the conservation supervisor and comply with all other aspects of the pest management policy including reporting and posting requirements. No pesticide will be used for conservation management in areas dedicated for use by children.
15. Any use of a pesticide under EPA Special Review is prohibited.

### **Pesticide Report – Parks Division 2007**

The I.P.M. Coordinator for the Parks Division is Ray Shane, Golf Program Supervisor. Ray can be reached at 838-3920. The Parks Division consists of several Sections with each Section Supervisor being responsible for complying with the City's Pesticide Policy. The Section Supervisors are also responsible for following the guidelines of Integrated Pest Management, establishing thresholds, considering alternative control measures, the application of any pesticide, and all record keeping as required.

The Park Division is happy to report that their 2006 Annual Report was reviewed by the Pesticide Management Advisory Committee and that the Committee concluded that we are compliant with the policy and regulations.

## **2007 General Parks**

General Parks is comprised of a wide variety of properties with various uses. This includes small neighborhood parks, area parks, community parks, regional parks, natural areas, mediums, bike paths, and specialty areas such as football, soccer, tennis courts, disc golf, baseball and softball fields. Total acreage of general parks is in excess of 6,000 acres.

Non-Pesticide activities in General Parks include hand weeding in flower and shrub beds, mowing of dandelions and thistle versus treatment, increased low maintenance acreage, string trimming and mulching around trees versus Round-up applications, regular sharpening of blades to reduced plant injury along with aerification of athletic fields for reducing compaction and thatch control.

Parks is thankful to all of the volunteers that assisted us in our non-pesticide control efforts.

Friends of Yahara River

Garlic Mustard removal

Yahara Park Place, Buckthorn removal

Friends of Hoyt Park

Friends of Monona Bay

Owen Park Restoration

Cherokee Marsh wetland restoration

Flower gardens

More than 6,000 hours of labor for mechanical and cultural control was provided by volunteers in 2007!

Pest management will be similar in 2008. No complaints were received.

## **EAST PARKS**

Pesticide applications were made at the Warner Athletic Facility and Olbrich for the control of weeds along the warning track, infields, fences and bleachers.

7.6 lbs. of Glyphosate

8.07 lbs, of 2,4-D

1.22 lbs of Mecopropacid

.51 lbs of Diacamba

.24 lbs. of Sulfertrenzone

Reindahl Soccer Complex – A contractor applied 7.12 lbs. of MCPA, 1.36 lbs. of Mecopropacid, .69 lbs. of Dicamba and 2.01 lbs of Prodiamine for the control of weeds.

## **WEST PARKS**

No Applications were made in 2007.

## **PESTICIDE USE IN CONSERVATION PARKS**

### EXOTIC WOODY PLANT CONTROL IN CONSERVATION PARKS

Purpose: To reduce the presence of these species (chiefly buckthorn, honeysuckle, russian mulberry, box elder) to preserve the natural diversity of plants and animals in the conservation parks.

Cut stump treatment on target species: Spot treatments in various conservation parks.

Amount of pesticides applied: 11.46 lbs. of Glyphosate (active ingredient) of Round-UP, Black Locust control-Tordon RTU: .31 lbs picloram a.i., 1.2 lbs 2,4-D a.i.

### EXOTIC WOODY PLANT CONTROL IN GENERAL PARK NATURAL AREAS

Purpose: To control buckthorn, honeysuckle, Russian mulberry, box elder, and other exotic woody plants to preserve and restore native plant diversity.

Locations: Hoyt Park woods in cooperation with the Friends of Hoyt Park

Amount of pesticide: Garlon 4 (Triclopyr) = 5 lbs. a.i.

### CROWNVETCH & BIRDSFOOT TREFOIL CONTROL

Purpose: To control these aggressive exotic plant while populations are small. They threaten native plant diversity if left unmanaged.

Locations: Owen Conservation Park, Stricker's Pond Conservation Park, Raymond Ridge Park, Edna Taylor Conservation Park.

Amount of pesticide: Transline (Clopyralid) (.56 lbs a.i.) was selectively applied to these weeds. This herbicide is highly effective on legumes, while not impacting native grasses and mints.

### SITE PREPARATION FOR LOW MOW MEADOWS IN GENERAL PARKLAND

Locations: Glacier Crossing (11 ac.), Door Creek (2.3 ac.), Baxter (1.9 ac.), Olin (1.9 ac.), Reston Heights (0.4 ac.), Mc Clellan (0.4 ac.), Marlborough (1.1 ac.).

Purpose: Eliminate existing exotic perennial weeds (e.g. reed canary grass, canada thistle) to prepare sites for seeding prairie plants. Once established these areas require less maintenance, promote rainfall infiltration, and increase biodiversity in our parks.

Amount of pesticides applied: Glyphosate (57.15 lbs a.i.), Sethoxydim (1.17 lbs. a.i.), Clopyralid ( oz. a.i.). Applied on a total of 19 acres.

### ADDITIONAL LOW MOW MEADOWS PLANTED WITHOUT HERBICIDE APPLICATION

Grandview Commons: 4.1 acres of new parkland were seeded to prairie wildflowers without herbicide treatments. The site was newly graded, and weeds were not present.

## WETLAND MITIGATION IN CHEROKEE MARSH AS PART OF RUNWAY SAFETY IMPROVEMENTS

Location: 80 acres of City of Madison wetlands north of CTH CV, and west of Hoepker Rd.

Project objectives: To restore open marshland habitat and natural hydrology. Drainage ditches were dug in the 1960's, which altered hydrology and allowed trees to invade on the spoil banks.

Target specie: Reed canary grass. Two miles of drainage ditches were filled with peat, which came from the adjacent railroad reconstruction project in the marsh. Reed canary grass treated with Poast (0.14 lbs. Sethoxydin on 5/30 and 6/1/2007), (grass specific herbicide) as part of an **ongoing adaptive restoration agreement with the airport, Army Corps of Engineers, and the Wisconsin DNR.**

Applicator information: Herbicides applied Wisconsin DNR Natural Areas crew under contract with Dane County Regional Airport.

## CONTRACTOR HIRED MECHANICAL BRUSH MOWING FOLLOWED WITH HERBICIDE TREATMENT TO RESTORE OAK SAVANNA WOODLANDS AND SEDGE MEADOWS.

Locations: South Cherokee (2 ac. upland meadow), North Cherokee (5 ac. sedge meadow / oak savanna)

Project objectives: Restore native oak savannas, prairie and sedge meadow landscapes in Madison Parks.

Target species: Buckthorn, honeysuckle, box elder, green ash, black cherry. Larger diameter (>4 in.) was treated as cut stumps. Smaller brush was treated as a foliar application on resprouts 4 to 6 weeks after mowing. Willows and red osier dogwood in sedge meadows was not treated with herbicide. The goal is to use fire to keep these species under control with fire after the mechanical brush mowing

Amount of pesticides applied: Tahoe 4E, a.i. Triclopyr 1.213 lbs. ; Escort, a.i. Metsulfuron methyl 0.877 lbs.

## NON-CHEMICAL PEST CONTROL MEASURES SELECTED AS PART OF IPM PROGRAM

1. Wild Parsnip Control: Mowed 10 acres at Cherokee Marsh in prairie restoration areas. Mowing of this biennial weed prevents re-seeding of this exotic weed.
2. Quaking Aspen Control: Girdled trees using sharpened car springs at South Unit of Cherokee Marsh. This process involves removing the outer bark (and the underlying conductive tissues that carry nutrients) so the tree slowly starves to death. Aspen had invaded a high quality sedge meadow due to the absence of fire, and was shading out native forbs. Using this non-chemical method is effective, but very labor intensive.
3. Garlic Mustard Control: This aggressive exotic biennial plant is a threat to decrease diversity in oak woodlands. Volunteers spent **1400 hour's** hand pulling this species at (Edna Taylor, Turville, Owen, Sandburg, Heritage Sanctuary, Hiestand Woods). It is hoped that a biological control agent (insect) will be available within 5 years.
4. Biological control for large infestations of Leafy Spurge: Leafy spurge is an exotic perennial weed that spreads rapidly via vegetative reproduction. It is a significant threat in native and restored prairies. We have released 20,000 flea beetles as a biological control agent over the past 4 years. The larvae of this insect bore into the stems and roots of the plant causing damage, which reduces flower production, and lowers plant vigor. Observed no flowering plants at Prairie Ridge Conservation Park due to insects

weakening plants. We are netting the insects and transferring them to other parks infested with leafy spurge.

5. Prescribed Fire: The use of fire is an important land management practice, which helps promote native species over exotics. The timing of burns can help set back exotics i.e. late spring burns harm cool season weeds, but promote native warm season plants. Burns can also cause mortality to small woody exotics like buckthorn and honeysuckle. If the timing is perfect fire can even kill first year garlic mustard seedlings. Unfortunately, the number of days suitable for burning is limited by both weather conditions and staffing levels. In 200 we burned approximately 100 of our 1600 acres of conservation lands. Ideally we should be burning 400 to 600 acres each year to optimally manage our natural areas.
6. Mechanical brush mowing followed by fire: At the South Unit of Cherokee Marsh a contractor used a brush mower in February to mow 10 acres of brush (buckthorn, honeysuckle, red osier) in a large sedge meadow. Another 5 acres was mowed at the North Unit of Cherokee Marsh. We hope that frequent fires will reduce the amount of herbicide needed to control the exotic shrubs.
7. Hand-pulling Buckthorn Saplings: At Kettle Pond a volunteer spent 5 hours through out the year hand-pulling this exotic woody plant. This control method is very labor intensive, and limited to times when the soil is soft enough to allow pulling.

#### SUMMARY OF COMPLAINTS RECEIVED

- No complaints received in 2007.

#### PLAN FOR 2008

Our IPM Program will be similar to 2007. Adaptive management will continue on the airport mitigation sites, which may require some additional herbicide applications. Woody plants and reed canary grass are the target species. As budgeting allows we will continue to use mechanical brush control in lower quality areas. Brush control will be followed with the planting of native grasses, forbs, shrubs, and trees as part of the restoration process.

#### **OLBRICH BOTANICAL GARDENS**

##### Insect Control in the Bolz Conservatory, Olbrich Botanical Gardens

Since the Bolz Conservatory opened to the public in November of 1991, our insect control program has strived to use the least toxic methods of eradication. Several beneficial insects have been used to control the plant damaging insects. Over the years some target insect species have been all but eliminated while new pests have appeared in the collection seemingly overnight. Some of the beneficial insects that we have released into the conservatory have a broad diet of target insects while others control a single insect. The control of plant damaging insects has not been as simple as releasing large numbers of ladybeetles. Some of the "good bugs" are actually parasitized by other insects so that timing of the release of the beneficial insects is very important. In addition, specific climatic conditions of temperature and humidity are needed for a successful release. Some of the target insects in the conservatory are also "farmed" by ants that protect them from our released beneficial bugs. Following is a list of the beneficial insects that we release into the conservatory from time to time as the situation warrants. Some must be released when the population of a target insect is very low while others are only successful when there are a large number of insects for the beneficials to consume.



## **Beneficial Insect**

Amblyseius cucumeris (predator)  
Aphidoletes aphidimyza (predator)  
Aphytis melinus (parasite)  
Atheta coriaria (predator)  
Chrysoperla spp. (predator)  
Cryptolaemus montrouzieri (predator)  
Encarsia formosa (parasite)  
Metaphycus helvolus (parasite)  
Orius spp. (predator)  
Rhyzobiius lopanthae (predator)  
Steinernema carpocapse (parasite)

## **Target Pest**

Thrips, Mites  
Aphids  
Scale insects  
Soil insects, Thrips  
Several Insects  
Mealybugs, Scales, Aphids  
Whitefly  
Scale insects  
Thrips, Aphids, Mites  
Scale insects  
Gnats, Thrips, Soil insects

\*Birds, specifically Quail (*Coturnix coturnix*), have been effective at controlling the nuisance palmetto bugs found in the conservatory. Assorted frogs, toads, and geckos living in the conservatory also use the palmetto bugs as a food source.

\*Vigorous daily washing of the plants in the conservatory has also proven to be very effective at controlling unwanted insects.

Our conservatory insect control program will continue to evolve as we carefully trial new beneficial insect species and additional control methods. It is obvious from past success that we can continue to maintain a healthy plant collection while relying on least toxic and non-traditional methods of insect control.

## Summary of 2007 Outdoor Pesticide Use and Alternatives

In 2007 Olbrich Botanical Gardens was happy to report a continuing decrease in the variety and amounts of chemical pesticides used in the outdoor gardens. As always, we strive to apply the principles of Integrated Pest Management (IPM) to our gardening practices here. IPM stresses evaluating a wide range of criteria when deciding when and what treatments are necessary for dealing with garden pests, and choosing solutions that minimize the amount and types of products used to combat them. Below is a listing of some of the strategies we employ that fall under the guidelines of our IPM program.

1. Choosing disease resistant varieties. One good example would be our collection of ornamental crabapples. Notoriously prone to fungal diseases such as rust and apple scab, we select and plant varieties that are naturally resistant to these, minimizing, and in most cases eliminating, the need for spraying. Our new Rose Garden, while still showcasing a wide variety of roses, emphasizes the Shrub and Landscape roses that require little or no spraying.
2. Assessing damage thresholds. We are willing to live with certain levels of damage, both aesthetic and physical. For instance, minor cases of powdery mildew on ornamental plants, while easily cured by common fungicides, are usually ignored. The same would hold true for many of the minor insect

problems that we witness. We tend to spray only if the health of the plant is compromised or the visual attraction of the plant is greatly affected, and then start with less toxic solutions rather than immediately reaching for a stronger product. Minor localized problems may be pruned out rather than treating the entire plant with a chemical, for instance a single branch on a fruit tree with tent caterpillars. This would also fall into the category of:

3. Manual controls. While we do use Round-Up and small amounts of other herbicides, the great majority of weed control in the Gardens is by manually pulling them and preventing them in the first place by liberal and frequent applications of leaf and wood mulches. Obviously, our large corps of volunteers helps make this possible.
4. Choosing less toxic pesticides. When possible, we use products such as insecticidal soaps and horticultural oils, both very effective against many insect pests but generally safe for the environment. When we do need chemical alternatives, we look for products with lower toxicities. An example would be Banner-Maxx, the fungicide we use on our hybrid rose collection, which is much safer than many older products while also giving longer control, minimizing the total amounts used over a season. We also like to use products such as Compass, a fungicide, and Avid, a miticide that contains synthetic versions of naturally occurring compounds. 2007 saw us continuing to experiment with repellents such as Hinder to deter rabbits, after earlier trials with hot pepper sprays and Liquid Fence met with limited success. We will continue efforts in this area.
5. Letting Nature help. By keeping our gardens healthy, we help create environments where the natural balances between predator and prey help keep our plant collections protected. Birds and beneficial insects help us keep the bad insects in check and resident foxes and red-tail hawks have helped our rodent and rabbit problems tremendously. In 2007, we continued an effort to control rose midge, a pest that destroys the blooms of roses, with the application of several timed releases of predatory nematodes, microscopic worms that attack the midge in its larval stage. While our efforts have met with limited success so far, we will continue to explore this option, while using least toxic, while still effective, conventional pesticides as our “firewall”.

#### Pesticide Use Update 2007:

All chemical applications are made by, or under the supervision of, licensed pesticide applicators including Wil-Kil Pest Control.

#### Citizen Complaints

There were no complaints regarding the use of pesticides in the outdoor gardens or the greenhouses.

#### Pesticide Management Plan for the 2008 Season:

The garden staff will continue to work with an Integrated Pest Management (IPM) program. Staff will monitor the Garden’s plant collection for optimum health and vigor, strive to improve the cultural and biological environment, provide mechanical eradication if possible, use resistant plant varieties, eliminate the plant if the problem persists and as a final option use pesticides to control plant pests. This past year saw a continuation of the use of beneficial insects in the conservatory with satisfactory results. The quail will continue to be maintained in the conservatory, as they have been very effective at controlling the palmetto bug population. The garden staff will continue to seek out less toxic pesticides that will provide control of pests while providing a safe environment for visitors. The staff will continue to experiment with alternatives to the use of traditional pesticides.

## Safe Handling, Application, Storage, and Disposal of Pesticides:

- a. Safe handling: Staff using pesticides are licensed and properly trained to handling pesticides in a safe manner. All employees handling pesticides are provided proper personal protective equipment required for the safe transfer of pesticides.
- b. Application: Staff using pesticides is licensed and has been properly trained to apply pesticides on botanical collections. Pesticide label procedures are followed for application and re-entry periods.
- c. Storage and Disposal: Pesticides are stored in a marked and locked chemical storage room, complete with a vented hood and handling facilities.

## Notification Plan:

Outdoor Garden areas are posted prior to treatment and 24 hours following application of pesticides. Greenhouse areas are posted for at least 12 hours (24 hours for Orthene) following application of pesticides. Application information for the greenhouse is posted for 30 days.

## Chemical names & amounts of active ingredients used at Olbrich Botanical Gardens

ADVANCE DUAL CHOICE ANT BAIT – 1 bait station (0.011%) was used in the Conservatory for Ant control.

Avid -.00015 lbs of a.i. (0.15 lbs of abamectin per gallon) was applied in the outdoor gardens and in the greenhouse for insect and mite control.

Banner Maxx – 1.02 lbs. of a.i. (1.3 lbs of propiconazole per gallon) applied in the outdoor gardens for disease control.

Banrot - .05 lbs of a.i. (15% thiophanate-methyl) was applied in the greenhouse and outdoor gardens for disease control

Compass -.026 lbs of a.i. (50% trifloxystrobin) was applied in the outdoor gardens and greenhouse for disease control.

Confront –.09 lbs. of a.i. (2.25 lbs per gallon of triclopyr) and .03 lbs. of a.i. (0.75 lbs per gallon of clopyraid) was applied in the outdoor gardens for weed control.

Conserve - .143 lbs of a.i. (1 lb of spinosad per gallon) was applied in the outdoor gardens and greenhouse for insect control.

Contrac All-Weather Blox - 0.018 lbs of a.i. (0.005% bromadiolone) was applied to various sites in the building for rodent control.

Citrine Plus – 0.11 lbs. of a.i. (0.91 lbs of elemental copper per gallon) was applied in the outdoor gardens for algae control.

Cycocel - .004 lbs. of a.i. (1 lb chlormoquat per gallon) was applied in the greenhouse for plant growth control.

Decathlon – .05 lbs. of a.i. (20% cyfluthrin) was applied in the outside gardens for insect control.

Drive – 1.69 lbs of a.i. (75% quinclorac) was applied in the outside gardens for weed control.

Generation Mini-Blocks - .00875 lbs of a.i. (0.0025% Difenthialone) was applied to various sites in the building for rodent control.

Gourmet Ant Bait – 16 bait stations (2 % Disodium Octoaborate Tetrahydrate) were used in the conservatory for Ant Control.

Hinder - .72 lbs of a.i. (13.8% ammonium soaps of higher fatty acids) was applied in the outdoor gardens as an insect repellants.

Judo .164 lbs of a.i. (4 lbs spiromesifin per gallon) was applied in the greenhouse for mite control

Marathon – .18 lbs. of a.i. (1% imidacloprid) was applied in the greenhouse for insect control.

Marathon II – .112 lbs of a.i. (2 lbs imidacloprid per gallon) was applied in the greenhouse for insect control.

Mavrik - .01 lbs of a.i. (2 lbs tau-fluvalinate per gallon) was applied in the outdoor gardens for insect control.

Olympic Insecticidal Soap - .31 lbs. of a.i. (25% potassium salts of fatty acids) was applied in the outdoor gardens for insect control.

Orthene - .31 lbs. of a.i. (97% acephate) was applied in the outdoor gardens and greenhouse for insect control.

Pistil - 0.02 lbs. of a.i. (0.33 lbs per gal) was applied in the outdoor gardens as a growth regulator.

Preclude TR - .0026 oz a.i. (4.8% Fenoxycarb) was used as an aerosol overnight growth regulator fumigant for the control of soft skin insects such as scale, mealy bugs, aphids, thrips, and white fly in the greenhouse.

Quick-Pro – 4.6 lbs of a.i. (73.3% glyphosate) and .18 lbs of a.i. (2.9% diquat dibromide) was applied in the outdoor gardens for weed control.

Round-Up – 2.53 lbs. of a.i. (4 lbs of glyphosate per gallon) was applied in the outdoor gardens for weed control.

Sluggo - .026 lbs of a.i. (1% Iron Phosphate) was applied in the greenhouse for slug control.

Subdue - .023 lbs. of a.i. ( 2 lbs of metalaxyl per gallon) was applied in the greenhouse for disease control.

Sunspray Ultra-Fine Oil – 1.46 lbs. of a.i. (98.8% paraffinic oil) was applied in the greenhouse and outdoor gardens for insect control.

Talstar - .01 lbs of a.i. (7.9% bifenthrin) was applied in the outdoor gardens for insect control.

Terraclor - .031 lbs. of a.i. (75% pentachloronitrobenzene) was applied in the greenhouse for disease control.

Thuricide – .0004lbs. of a.i. (0.8% bacillus thuringiensis) was applied in the outdoor gardens and for insect control.

Vantage - .28 lbs of a.i. (13% sethoxydim) was applied in the outdoor gardens for weed control.

WeatherBlok XT - 65 blocks with .005% concentration of a.i. was applied to various sites in the facility for the control of rodents

## **Forestry**

Street terrace and boulevard trees occasionally support insect outbreaks, which are so severe that it could cause the decline or death of trees, which are already stressed due to their urban environment. Tent caterpillars, leafhoppers, and ash plant bugs are the most frequently observed pests. Oak Wilt continues to be a problem in the Madison area.

The Forestry Section did treat individual egg masses of Gypsy Moth with Golden Pest Spray Oil. This product's active ingredient is soybean oil and a total of 3.72 lbs. of the active ingredient was applied to egg masses in trees. No complaints were received regarding these applications.

In cooperation with the DNR, 327 gallons of Foray 48B with an active ingredient of 2.1% Bacillus thuringiensis was applied by aerial spray on 436 acres. The City did receive one complaint from a citizen reporting that he became ill shortly after an aerial application.

For 2008, Forestry plans to hire an aerial applicator (through the DNR) to apply BT to a minimum of 419 acres of land in three spray blocks. Exact spray boundaries are not been finalized, so the exact acreage is not known. Forestry also plans to treat large egg masses on an individual basis as needed this spring.

## **Goodman Park Maintenance Facility**

A private contractor made monthly inspections and did apply control measures for mice as necessary. Weatherblok XT Bait – 6 ea of .005% of active ingredient.

## **Beaches**

City beaches are not chemically treated to control lake weeds. Weeds are controlled by manual cutting and removal. Approximately 440 cubic yards of lake weeds are removed each year from our beaches and boat landings. In concessions, mechanical traps are used for rodent control. Staff stores all food items in pest proof containers and inspects all food deliveries. Keeping buildings clean and eliminating pest entrance points aides in the control of pests.

Beach sand is raked daily to expose waterfowl droppings during the summer. Signs are also posted asking patrons not to feed waterfowl. The decision to close beaches and the actual posting is done by the Health Department.

No pesticide applications were made in 2007.

## **Forest Hill Cemetery**

Cemetery visitors are often very concerned about the level of maintenance in the cemetery. Many people believe that cemeteries should be maintained at the highest level of aesthetics. We tolerate complaints about dandelions and do not anticipate the use of a broadleaf herbicides in the future. Roundup may be used to kill vegetation near trees or stones to minimize trimming. Other treatments such as growth regulators to minimize mowing and trimming have been used experimentally in the past.

### Non-Pesticide Control Utilized

Increasing mowing operations of the 73 acres when Dandelions are at their peak.  
String trimming of 30,000 headstones along with hundreds of trees.  
Topdressing and seeding weak and thin turf areas.  
Hand removal of volunteer trees and suckers that sprout around the grave markers.  
Hand removal of weeds within flower and shrub beds.  
Mechanical trapping of rodents.

Pesticide applications in 2007 were performed by a private contractor for the control of Phorid-Flies in the Mausoleum.

N Octyl bicycloheptene dicarboximide – 2.74 oz. of active ingredient.  
Piperonyl Butoxide – 1.76 oz. of active ingredient  
Pyrethrin – 1.2 oz. of active ingredient.  
Demand CS (Lambda-cyhalothrin) - .036 oz. of active ingredient.

Complaints were received regarding the weeds in the turf along with complaints about the flies in the mausoleum.

No change in pesticide usage is anticipated for 2008.

### **2007 City of Madison Golf Courses**

The four golf courses are laid out on 960 acres of property. Of this 960 acres, 14.5 acres are putting greens, 23.5 acres are tees, 147 acres are fairways and the remaining 775 acres are composed of roughs and natural areas. In 2004, all four City golf courses achieved Audubon Certification for the completion of their Environmental Planning and Site Evaluation. Ecological improvements included the success and expansion of our Bluebird nesting boxes. We also saw the installation of turtle nesting beds and bat houses on the Odana Hills Golf Course. Buildings that were heated through the winter months are now being winterized and the heat turned off.

A major environmental improvement project was completed 2007 in cooperation of MG&E and the State of Wisconsin. Odana Hills is the site for an experimental groundwater recharge project. This project takes storm water, filters the water, and is pumped below ground to replenish the groundwater. This is a benefit to both the groundwater and to Lake Wingra. This helps control the water that flows through the Odana Hills Golf Course, reducing pollutants and erosion into Lake Wingra. Through this project and the extensive testing of the pond water, it was good to learn that no golf course pesticides have been detected in the samples. With careful use, protecting surface waters can be achieved.

Pesticide use on golf courses is essential because turf conditions affect play. Tolerance levels of weeds and turf diseases are low because they would have an adverse effect on the play. A wide variety of fertilizers, herbicides, insecticides and fungicides are used to maintain turf conditions acceptable for golf. Algae control is also necessary in ponds which are used for irrigation to prevent clogging of pumps, valves and filters. (A complete report of pesticide use is attached.)

All golf courses have a high level of non-pesticide turf maintenance. A variety of cultural, biological and mechanical practices helps reduce disease activity and are environmentally friendly. We also monitor for active diseases. Weather conditions play a major role in our program. Not only do they have an affect on the disease levels, but also dictate when an application can be made safely to minimize drift. Weather also affects the amount of stress to turf and its disease tolerance levels. As you can see, treatment considerations must be made by monitoring the environment, threshold levels, cultural options, pesticide options, length of control and the amount of control desired. Greens are the heart of any golf course and City greens are maintained to the same standards as private courses. Semi-preventive treatments for fungi are applied on a schedule that considers all of the factors mentioned above.

We did not receive any complaints regarding pesticide applications in 2007. All four courses experienced turf loss due to high populations of turf feeding insects. Damage was mainly a result of wildlife destroying the turf to get at the root-feeding insects.

The program in 2008 will be the continuation of the current IPM policy. We are also going to be using new products that either reduce application rates or offer safer packaging when mixing and loading. Insect damage continues to increase with turf loss becoming a major concern. Japanese Beetle populations caused turf loss at all four courses and we will continue to work closely with the U.W. on our monitoring and treatment options. The heavy infestation of Japanese Beetles require that we prepare for preventative treatments in 2008. Without preventative action, more toxic and larger dosages of a pesticide would be required to control the established pests.

The golf program will continue to seek out “Least Risk” pesticides along with the new technology that permits lower application rates and safer alternatives.

To simplify the reporting standards, all amounts listed are in lbs. of active ingredients applied no matter if it was applied in a liquid or a granular form. Also the active ingredient is now being identified by the common chemical name.

#### Non-Chemical Control Measures

- Hand weeding of flower and planting beds.
- Increased area of low maintenance turf.
- Used recycled tires as a mulch in flower beds.
- Created wildflower planting beds at Monona.
- Use of heavy mulch around trees to reduce string trimming and possible tree damage.
- Irrigating greens early in the morning to reduce time excess moisture is on the surface.
- Mowing greens early in the morning to remove dew and moisture.
- Using a wetting agent to improve moisture penetration into the soil.
- Keeping mowers sharp to reduce plant damage for a healthier plant.
- Frequent topdressing to reduce thatch and encourage biological activity.
- Changed equipment to biodegradable lubricants when possible.
- Changed vents on fueling tanks for reduced vaporization and employee safety.
- Use of a dew whip on fairways and tees.
- Aerification of turf
- Verticutting greens to increase putting speeds without lowering mowing height.
- Syringing and hand water to cool greens and prevent turf loss.
- Increased mowing frequency to control dandelion flower production.
- Light and frequent fertilization to promote plant health and reduce disease pressure.
- Annual soil tests for accurate planning and implementation of fertilizer programs.
- Trim trees to improve sunlight exposure and increase air movement.
- Overseeded some greens with a new disease resistant variety of grass.

#### Pesticide Applications 2007

No private contractor applications were made in 2007.

All staff using or directing the use of pesticides have been properly trained in IPM, Storage, Handling, Application and Disposal of pesticides. They are certified by the State of Wisconsin in the category of Turf and Ornamentals with some individuals also having Aquatic Certification.

### Golf Course Pesticide Use Report - Lbs.

Area Location Key 1-Greens, 2-Tees, 3-Fairways, 4-Roughs and Misc Areas and 5-Ponds

	<b>Areas</b>	<b>2007</b>	<b>2006</b>
Chlorathalonil (Fungicide)	1,2,3	359.18	221.18
Glyphosate (Herbicide)	4	14.2	20
MCPA (Herbicide)	3,4	3.2	19.2
Clopyralid (Herbicide)	3,4	0	3.84
Dichlorprop (Herbicide)	3,4	.64	3.84
PCNB (Fungicide)	1,2	13.86	476.31
Iprodione (Fungicide)	1,2	115	148
Chloroneb (Fungicide)	1,2	59.09	95.11



Thiophanate methyl (Fungicide)	1,2	0	21.26
Bentashiornitrobenzene (Fungicide)	1	23.6	0
Myclobutanil (Fungicide)	1,2	5.12	3.49
Indoxacarb (Insecticide)	1	.76	0
Imidacloprid (Insecticide)	3	5.83	65.7
Trinexapac-ethyl (Growth Retardent)	1	3.55	8.17
Polyhroxyethyl alkoxy aklylene oxides (Wetting agent)	1	0	22
Thiomethoxam (Insecticide)	2	1.2	0
Boscalid (Fungicide)	1	11.37	3.5
Climethoxybenzene (Fungicide)	1,2	18.82	0
Pyraclostrobin (Fungicide)	1	1.6	4.68
Propiconazole (Fungicide)	1	74.65	53.3
Ethephon (Growth Retardent)	1	45	40
Fluroxypyr(Herbicide)	4	.32	0
Vinclozolin ( Fungicide)	1,2,3	57.75	111.87
Triadimefon (Fungicide)	1	25.51	21.93
Mefenoxam (Fungicide)	1	6.6	8.5
Trifloxystrobin (Fungicide)	1	3.91	3
Mancozeb (Fungicide)	1	26.1	4.8
CuOH2 (Algaecide)	1	69.13	14.7
o-ethyl phosphonate (Fungicide)	1	0	92
Carbaryl (Insecticide)	3	0	75
Clorophenoxy (Fungicide)	1	1.1	0

### **WARNER PARK COMMUNITY RECREATION CENTER**

WPCRC thanks it's numerous landscape volunteers for their 400+ hours of landscape service utilizing non-pesticide control methods.

In 2007, the WPCRC used a product called Ground Force, an organic herbicide for weed control in the cracks of our sidewalks. Ground Force contains 10% citric acid, .2% garlic extract, vinegar and yucca extract.  
No pesticide applications were made in 2007.

### **MALL/CONCOURSE MAINTENANCE**

The Mall/Concourse staff has taken several steps to reduce unwanted plant growth in our area.

Seasonal adjustment of mowing height to promote healthy turf  
Irrigate turf to promote healthy plants  
Use of torch/weed burner to eliminate unwanted plant growth  
Hand pulling weeds in unwanted areas

No pesticides were used in 2007