UNIVERSITY OF
NORTHERN COLORADO

INTEGRATED PEST MANAGEMENT POLICY FOR TURF, ORNAMENTALS AND EXTERIOR SURFACES

LANDSCAPING & GROUNDS

December 2021

UNIVERSITY OF
NORTHERN COLORADO

Integrated Pest Management
For Turf, Ornamental and Exterior Surfaces

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UNIVERSITY OF
NORTHERN COLORADO

Integrated Pest Management Policy
For Turf, Ornamental and Exterior Surfaces

I. General Intent of Policy

It has become necessary to promote safer and more sound practices in the application of pesticides on property owned by the University of Northern Colorado (UNC). Integrated Pest Management fosters practices that reduce the impact on humans, wildlife, and the environment, as well as preserve those beneficial insects and microorganisms that enhance healthy turf, trees, and other plant populations.

II. Definitions

Integrated Pest Management or IPM: This is an approach to pest control that uses regular monitoring to determine when treatments are required, and employs physical, mechanical, cultural, and biological tactics to keep pest numbers low enough to prevent intolerable damage or annoyance. The least Toxic chemical controls are to be used as a last resort.

Pests are those plants, mammals, insects that can harm or destroy desired turf, trees, and shrubs on university property. They also can reduce the aesthetic value of the campus.

Tolerance Thresholds are subjective in some circumstances and less subjective in others. The presence of dandelions on-campus turf has a low threshold as well as old-growth Blue Spruce being infested with Ips Engraver Beetle. Another example is the presence of Puncture vine that has a Zero Tolerance level.

Biological Control: is an approach that utilizes Non-Chemical methods. Examples would include utilizing predatory insects that feed on target pests, using disease-resistant cultivars of turf, trees, and other ornamental plants. It could also include prohibiting the use of turf, trees, and other plants that are hosts of certain disease and insect problems

Cultural Control: involves practices that promote good plant health that in turn reduces pest populations and the respective need to apply chemical pesticides. These practices may include, proper irrigation, fertilization, mowing frequency and height of mowing. Other controls include the care of soil that involves aerification and applying soil amendments, such as topdressing and compost.

Physical/Mechanical Control: This method of control involves the actual physical removal of the target pest or pest host by hand or by pruning or digging.

For example, trees infested with Bark beetles must be removed to prevent spread of the insect and the fungus it carries. This is referred to as sanitation removal. Hand digging weeds would also be an example of this method.

Herbicides are chemicals that either prevent seed germination(pre-emergent) or kill the plant directly (post-emergent). They are also categorized as selective or non-selective. These chemical compounds are available in ranges of low to high toxicity. Highly toxic formulations are “Restricted-Use” and regulated by the Federal Government. Restricted Use pesticides require Licensed applicators to apply.

Insecticides are those chemicals that will control pest insects. Some insecticides are applied as a “preventative” and those that are applied to eradicate targeted species. These chemical compounds are available in ranges of low to high toxicity as well. Highly toxic formulations are “Restricted-Use” and regulated by the Federal Government. Restricted Use pesticides require Licensed applicators to apply.

Rodenticides: are chemicals that are used to eradicate certain rodent pests, such as prairie dogs, grounds squirrel, moles, mice, and rats. Some of these compounds require State or Federal authority.

Fertilizers: are not pesticides, but are chemical compounds that are applied to turf, trees, shrubs, and other ornamental plants in the landscape. These chemicals come in many formulations and differing Analyses. Fertilizers are typically formulated by the following: NPK (Nitrogen, Phosphorous, and Potassium. These are the basic soil nutrients required for plant growth. Fertilizers may be liquid or granular, organic and inorganic., slow-release or fast release

Turf and Ornamentals: Turf refers to our typical bluegrass, perennial rye, or any blends that are on our campus as well as native grasses. Ornamentals refer to hardy shrubs, trees, ornamental grasses, groundcovers, and herbaceous flowers.

Exterior Surfaces: Include but are not limited to sidewalks, parking lots, generator and dumpster enclosures, electrical substations, outdoor storage facilities.

III. Goals

A. **Define Threshold Tolerances**: Define what are the acceptable standards of turf, tree, and shrub appearance and the respective locations on campus.

B. **Soil Maintenance:** encourage and foster a diverse population of beneficial soil organisms such as bacteria, fungi protozoa, and invertebrates (earthworms, etc.) that provide proper soils percolation/infiltration, fertility, and nutrients.

C. **Irrigation Practices:** Improving methods of irrigation should promote deep healthy root grown for turf, trees, and shrubs. Deeper and less frequent watering is better for turf and ornamental plantings. It promotes good turf density and will reduce stress due to heat and traffic. Central control Irrigation system will allow better programming to meet various terrain and soil conditions that are present on our campus.

D. **Fertilization:** A good turf fertilization program is also a good tree and shrub program. Proper fertilization helps build soil nutrient reserves, and we will incorporate more synthetic slow-release fertilizers that provides longer residual, greater uniformity in nutrient release, and less “surge growth”

E. **Mowing and Pruning:** Proper frequency and height of mowing promotes water conservation and turf density. Mulch-mowing returns nutrients to the soil and reduces the amount of fertilizer in the soil. Proper pruning schedules of trees and shrubs promotes plant vigor and encourages resistance to pest infestation.

F. **Chemical Applications:** Incorporate the least toxic formulations into our arsenal of pesticides to control weeds and insects. Pre-emergent application of herbicides will also reduce the amount of Post-emergent (more toxic) applications. RUPs (chemicals with a higher potential hazard) will only be used sparingly as a last resort measure.

G. **Monoculture Planting**: Utilizing blended turf mixes that have disease-resistant varieties as well as avoiding planting disease/insect-prone species of trees in monoculture plantings. Promote diversified populations of trees, shrubs that are more sustainable and require less or no pesticide applications.

H. **Sanitation Pruning and Removals**: the removal of disease-prone trees and shrubs from the campus and replacing them with disease-resistant,

drought-tolerant cultivars. Pruning and removing insect or disease-infested branches is a viable alternative to pesticides application

I. **Pest Monitoring Practices.** Requires training staff in the identification of the pests and respective host plants. Knowing what pests exist on campus and when to look for them is key. Noting plant condition, the occurrence of pest is important. These inspections assist in determining where, when, and how much to apply- or what other control methods to use.

J. **Tactics or Methods of Control.** Incorporating the least toxic methods is our ultimate goal. Tactics should be appropriate to the scale of the specific problem. The one concern is to preserve the natural enemies of the landscape pests (beneficial insects or organisms). Many chemicals will eliminate both good and bad pests and allowing the bad pests to gain a major foothold the following year because all the beneficial organisms that feed on the bad pests have been eliminated. Mechanical and biological controls are also a viable alternative to chemical applications

K. **Evaluation and Record-Keeping *(Performance Metric)*:** Assessment of pest eradication is essential to this program. Landscape inspections are conducted 2x per year by the Manager of Landscaping & Grounds to assess the effectiveness of control measures. Effectiveness of control method, Appearance, and quality of landscape, frequency of pest, and application are all factors that must be considered. Accurate histories, and accurate pesticide or other control measures must be recorded on Pest Control Sheets, which include applications of chemical and non-chemical control measures

IV Establishing Thresholds

The university currently has **Zero Tolerance for dandelions, puncturevine, thistle, nutsedge, and bindweed.** Existing plants should be pulled as seen. If numbers are greater than 5 plants to 100sqft of turf, treatment though spraying is warranted. It is the responsibility of the zone gardener to communicate these needs with the spray tech as they arise. Ornamental infestations will be dealt with either mechanically or chemically on a case-by-case basis.

Zero tolerance for ips and Japanese beetle. If turf and or tree damage is observed contact the spray tech. We are currently treating campus-wide for both pests.

Level 1 infestations include Clover, plantain, certain weed grasses, oxalis, and spurge. Areas with more than a 5% weed to turf ratio warrant chemical treatment. Spot treatment will be the preferred approach however more extensive infestations will require broadcast applications. It is the responsibility of the zone gardener to communicate these needs with the spray tech as they arise.
Level 2 infestations include crabgrass, foxtail, and annual bluegrass. These are equally undesirable pests however due to the cost of treatment will only be chemically

treated in certain high priority areas (such as sports fields). Currently, proper mowing, trimming, fertilization and irrigation practices are the best methods of control at our disposal.

V. Current and Potential Pest Inventory and Control Methods

Turf Pests

Puncture Vine is a noxious and invasive plant weed that is highly undesirable, and the seeds (shown below) are known to puncture bike tires. Very difficult to control. Seeds can remain viable for up to 7 years. Also referred to as “goat head”. One plant can generate over 300 seeds.

Chemical control: Applications of Roundup, 2,4-D with Dicamba are the major control measures after plants emerge.
Physical /Mechanical hand pulling if numbers are small or in a small area

Dandelion is the most prominent turf weed, and annual applications are necessary to eradicate this weed.
Chemical Control: Fall applications to Trimec (2-,4-D, MCPP, Dicamba) or related compounds are the most effective and minimize exposure.
Cultural Control**:** Proper cultural practices that promote healthy turf can reduce dandelion populations but will not totally eradicate. Proper mowing, irrigation, and fertilization will help reduce the amount of chemicals applied.

IV. Current Major and Potential Pest Inventory and Control Methods

Turf Pests

White Clover is a weed that is an indicator of poor soil fertility, namely Nitrogen deficiency. Once established it can be difficult to eliminate,
Chemical control: Requires several applications of 24-d type herbicides to eradicate.
Cultural control: The best control measure is to provide proper fertilization and respective irrigation to turf to prevent this weed from getting established.


Plantain is an annual or biannual weed that grows where turf is weak, due to over-watering and low fertility. It is an edible weed with a deep taproot. Again, like clover, it is difficult to control.

Chemical Control: Requires applications of Trimec-type herbicides.
Cultural Control: Proper fertilization, mowing and irrigation is the best method of control.

V. Current Major and Potential Pest Inventory and Control Methods

Annual Bluegrass (Poa annua) is a winter annual grass that is a difficult-to-control weed in turf. Seeds germinate in late summer, early autumn, and spring. Annual bluegrass is found throughout the United States, particularly in highly compacted, excessively wet soils. Despite having a bunch-type/clumping growth habit (some biotypes have short stolon), it can withstand extremely close mowing heights; thus, allowing the weed to successfully establish in home lawns and other high maintenance turf, such as golf courses or sports fields.

Cultural control: The use of cultural practices to increase the competitive growth and development of the desired turf over annual bluegrass is one of the limited options for cultural control. However, annual bluegrass' ability to tolerate extremely low mowing heights and prolific production of viable seed severely limits a professional turf manager's ability to control the weed using cultural methods.

Biological control: No consistently effective biological control for annual bluegrass although previous research has examined some options.

Chemical control: There are options for controlling bluegrass through the use of herbicides; however, those options are generally specific to the species of the desired turf and the use of the area which is being treated (i.e. home lawns, golf course, sports turf, etc.). One could literally write a book on how to control this species. Herbicides: ProGrass EC Herbicide 2.5. Unfortunately, the economic threshold in relation to efficacy of the chemicals available does not support a large-scale treatment option.

To keep annual bluegrass out of your home lawn.

1. Do not over-water your lawns as annual bluegrass likes moist areas.

VI. Current Major and Potential Pest Inventory and Control Methods

Turf Pests

2. Do not compact your soil through traffic where possible and aerate your lawn to reduce soil compaction as annual bluegrass grows well in thin, compacted areas.
3. Maintain dense turf through fertilization, overseeding, and weed control (crabgrass and broadleaf weeds).
4. Mow your lawn at higher heights of cut (>2.5 inches) as annual bluegrass is less competitive at a higher cutting height.

White Grub are the larvae of the June or May beetle and are always present in turf. Only when present in enough numbers will be the grubs cause extensive damage to turf. They typically are attracted to lush, healthy turf where lights are present at night. Keeping turf healthy is the key for control. Turf damage only is seen when irrigation and fertility is not maintained. Under good turf conditions, the turf will *"outgrow"* most grub damage.
Chemical control in severe situations is normally a granular insecticide that is watered in (drenched) in the infested area only.
Biological control: or the application of Nematodes that are natural parasites of grubs.
Cultural control: Consistent Irrigation and fertility practices to maintain good turf health will help turf "outgrow" any grub damage.

VII. Current Major and Potential Pest Inventory and Control Methods

Ornamental Pests
Are typically found in turf as well but require different control measures. Most ornamentals are broadleaved plants, as are most turf weeds. Different chemical compounds are used to control these weeds, which would typically kill turf grasses.

Bindweed is an invasive and aggressive weed most prevalent in juniper plantings on campus and is the most difficult to control. This plant has an extensive root system and the plant can regenerate from fragments and rhizomes when pulled by hand. Chemical

Control: Chemical applications of various herbicides have a limited degree of suppression, but not eradication of established plants. Repeated applications of Round-up or Glyphosate seem to provide the best means of control at present.
Mechanical control: Hand pulling of the weeds are only temporary and only provides a short-term aesthetic benefit.

Yellow Nutsedge Looks like yellow-colored grass but is not grass. It is another difficult-to-control weed once it is established. It typically thrives in wet areas, where over-watering conditions exist or where there are irrigation breaks or leaks.
Chemical control: There is no bonafide control by herbicides that will control established sedge in ornamental plantings.
Mechanical control: Manual removal would require excavating to depths of over a foot to successfully remove and eradicate this weed. The best control is not to allow it to get established.

VIII. Current Major and Potential Pest Inventory and control Methods

Ornamental Pests

Ips Engraver Beetles normally attack pine and spruce trees that are stressed due to lack of irrigation (drought Stress) or root damage.
Cultural control: The best control is to promote a good turf Irrigation and fertilization program. If you have good healthy turf, you should have good healthy trees.
Chemical Control: Preventative sprays *(Astro Insecticide)* are normally performed in the spring (Spring Break/March)) by a private Certified Applicator Contractor. Astro is a more environmentally safe Pyrethroid-based product.

Mechanical/Physical control: Sanitation pruning of infected trees can prevent further spread of the beetle infestation.

Rocky Mountain Pine Beetle is similar to Ips Engraver Beetle but it attacks mostly Pine trees, such as Pondersoa, Jack Lodgepole, and Pinyon pines. Again trees that are drought-stressed or suffering root damage are more susceptible to infestation. The spread of this insect and respective fungus is complicated by even-aged stands of trees, which is so typical in the Mountain forests.
Cultural controls: Avoiding monoculture plantings of pines and spruce in the landscape will reduce infestation rates as well as providing good irrigation and fertilization that promote good tree health.
Chemical control: Preventative sprays of Pyrethroid -based insecticides are applied every March during the spring break period.
Mechanical/Physical Control. Sanitation pruning does not prove to be a successful form of control. Expedient removal of infested trees is recommended.

IX. Current Major and Potential Pest Inventory and Control Methods

Rocky Mountain Pine Beetle

X. Current Major and Potential Pest Inventory and Control Methods

Ornamental Pests

Ash Borer or Lilac Borer are the larvae of a wasp-looking flying insect that lays eggs on the bark of ash trees. On the campus, White ash cultivars seem to be more susceptible than Green ash, but it is present in both species. The larvae bore into the bark and phloem tissue, cutting off nutrient uptake into the tree's canopy and eventually killing the tree. These borers make circular, round holes that are easily seen. There are no feasible control methods once the larvae are inside the tree.

Chemical control**:** Only Preventative applications of insecticides are effective, but timing of application is crucial to be effective. Knowledge of the life cycle of this insect is necessary to determine when to spray. Ash trees are the most prominent tree on the campus, and there is no current program to control this pest due to the extensive cost of application that does not guarantee a high success rate.
Cultural control: Currently, Ash trees are no longer a suggested tree in Weld County, CO, and are no longer planted on the campus. 75 % of all ash trees have Ash borer infestations.

XI. Current Major and Potential Pest Inventory and Control Methods

Ornamental Pests

Emerald Ash Borer has finally reached Colorado and has arrived due to transporting infested firewood from out east. Currently, there are quarantines in place in Boulder County to help contain this devastating pest. It similarly kills all ash trees as other ash borers. The insect can infect a tree for up to 4 years without there being visible signs of the tree's decline. Because adult Emerald Ash Borers munch on the leaves, signs of an infected tree include sparse branches or leaves, D-shaped exit holes about 1/8-inch wide.
Chemical control: Preventative application of Imidacloprid is the only method of control. It is a soil-drenched product that is applied at the base of the trees and is a systemic insecticide to be applied in late May-early

June. For large trees, an annual application for 3 years is recommended. Recommend treatments before infestation. Tree injections of mectinite has proven viable and will commence in 2021.
Physical Control: Expedient removal of infested trees.

Other Pests

Mosquitoes: In feeding on blood, some of them transmit extremely harmful human and livestock diseases, such as malaria, yellow fever, filariasis, and West Nile Disease

Cultural control: Eliminating areas of standing, stagnant water, such as clogged gutters, Expedient repair of leaking irrigation breaks; clogged culverts/water drain ways, long-standing puddles. Removal of materials that can hold water, wading pools, tires, trash can lids, etc. and other items
Reducing conditions that harbor mosquito populations such as mowing areas of tall grass and weeds

Biological Control: *Bacillus thuringiensis* (or Bt) is a Gram-positive, soil-dwelling bacterium, commonly used as a biological pesticide. We apply these donuts to areas of standing water and ponds that are on campus.

Chemical: Personal application to exposed skin with repellents that contain 25% active ingredient of DEET, such as *Johnson Deep Woods Off* Insect Repellent.

APPENDIX A

UNIVERSITY OF
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ENVIRONMENTAL HEALTH AND SAFETY

Pesticide Safety and Application Guidelines

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Pesticide Safety and Application Guidelines

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Pesticide Application and Safety Guidelines

I. General

The Pesticide Application Guidelines have been developed for the University of Northern Colorado. It is the purpose of this plan to provide a practical safe working area relative to the hazards that arise from using pesticides on and around campus.

This guideline does not cover all regulatory requirements regarding pesticide safety in the workplace but should be considered as minimum requirements to provide a safe working environment. Anyone using this plan should rely on his or her judgment and seek additional advice of a competent professional in determining a course of action for a given circumstance.

II. Responsibilities

Applicators:

It is the responsibility of the applicators to take extreme caution while applying said pesticides to prevent any cross-contamination to plants that do not need treatment as well as placing pedestrians in unneeded harm's way.

Your job as an applicator is to ensure the safety of yourself and those around you.

- Ensure while on the University campus; before applying pesticides near buildings, open windows, and air handlers you contact the HVAC Manager to get these units shut down in order to safely apply your treatment.

- Try your best to divert students/staff around your area of application if it is impeding movement along thorough fares.

- While working with the summer interns, ensure they do not mix pesticides and are under supervision while applying the basic applications.

After applications are complete for the workday:

1. Turn in the Daily Fertilizer / Pesticide Application Record form, (appendices A) to the Facilities Management Grounds Manager with a map attached with the approximate applications areas highlighted.

2. Ensure the equipment is cleaned thoroughly and placed back in its appropriate storage area for the night.

Management/Supervisors

It is the responsibility of the Facilities Management Grounds department to ensure that their employees (applicators) receive the required training. Training can be provided by the Environmental Health and Safety department, or through CDA licensure program. Training records will be retained by the Environmental Health and Safety office for three years.

III. Personal Protective Equipment

All pesticide applicators and handlers shall wear the appropriate personal protective equipment (PPE) when handling, mixing, and applying any pesticide.

PPE includes the following items as dictated by label:

- Rubber or chemical resistant gloves (also required while mixing)
- Eye Protection
- Long-Sleeved Shirt
- Long Pants
- Closed Toe Shows
- Tyvek Chemical Resistant Suit or Apron
- Respirator/Dust Mask (If Required by Label)

Applicators must comply with the PPE requirements that are specified on the label of the pesticide. Read the label in order to determine PPE requirements. Labels will be updated and reviewed periodically. Check for new restrictions that pertain to re-entry, exposure, and more specific PPE as new labels come out.

All applicators are to comply with the label directions for PPE according to the attached chart on the label. The chart will be superseded by any new product labels that are received. Read the labels first to check for any possible changes to PPE requirements.

Required equipment varies according to your application site, your choice of pesticide, and your willingness to work with more complicated application devices.

*Check your PPE Daily to ensure it is in proper working condition

IV. Equipment

The equipment is as important as personal safety during pesticide application. Faulty equipment can create spills and cause the applicators to be put in a dangerous situation. Types of equipment used here at UNC may include

- Hand Sprayers
- Backpack Sprayers
- 25- & 50-Gallon Electric Pump Sprayers
- 50-gallon Wylie Trailer sprayer
- Toro Workman with Electric Mounted 200 Gallon Pump Sprayer

It is the responsibility of the applicator and/or mixer to ensure the equipment is in proper working conditions. Before every use, ensure the equipment works and there are no leaks. Conduct a water test beforehand to test for leaks.

Consult the pesticide label to ensure the proper equipment is being used.

After an application is complete, rinse out the equipment thoroughly.

V. Mixing and Dilution of Pesticide

Most injuries and exposure occur during the mixing and dilution of pesticides. Most pesticides come in concentrated doses. Follow the PPE requirements and safety practices of the labels while mixing pesticides. To reduce waste, remember only to mix the amount needed to do the job correctly.

- Mixing shall only occur at the Parsons Grounds Garage, Central Campus Garage, Patton Garage, or where water is available with a cross-connection control.
- Only full-time, trained employees shall mix pesticides.

Additional precautions:

1. Fully understand the label before mixing or handling the pesticide.
2. Know the First Aid measures for exposure to the pesticide.
3. Make special note of the toxicity, i.e. “warning”, “caution”, “danger” and “danger poison”
4. Never work alone or at the very least, inform either the Grounds Manager or the Turf Supervisor that you will be mixing a pesticide in case an emergency arises.
5. Knowing the signs and symptoms of exposure poisoning.
6. Have clean-up materials on hand in case of any spills at the mixing locations.
7. Check your spray equipment and ensure it’s in working order prior to filling.
   A. Check the hoses, fittings, valves, and tanks. Use water when verifying for discrepancies.
8. While mixing dry pesticides wear an appropriate respirator to prevent the inhalation of harmful dust or vapors.
9. Ensuring proper clothing for liquid pesticides to ensure absorption into skin is mitigated.
10. To prevent spills, place pesticide containers in a secure position when you are opening and handling them.
11. Work only in well-ventilated, well-lighted areas.
12. Never stir pesticides with your arms or hands, use proper stir sticks.
13. Never pour pesticides at eye level.
14. Protect your body with proper PPE. (See Section II)
15. Stand with your back to the wind; allow fumes to dissipate away from you.
16. Mix the pesticides before pouring them into a spray tank.
17. Pour pesticide into water, never water into pesticide.
18. Do not leave a pesticide tank you are filling unattended.

19. After the mixing procedure is complete:
    A. Clean any spills that may have occurred.

    B. Place all pesticides away in their proper storage location and ensure they are securely locked away.

    C. Clean and put away all equipment used to mix or dilute the pesticide. Pour any cleaning water into the tank to minimize environmental exposures. Dispose of rinsate in designated area according to label.

Spills:

Spills should be cleaned up immediately after they occur. For smaller spills such as droplets and small puddles, use dry sweep on the area for larger spills, following these guidelines.

1. Place a diking material around the spill to mitigate the possibility of it spreading further away from the point of origin.

2. Contact Environmental Health & Safety if a large release is large occurs.

3. Soak up the liquid with dry sweep and once absorbed can be swept into a dustpan and place in a container for proper disposal.

4. Contact the EH&S Department for further disposal information.

VI. Pesticide Application and Safety Protocol

The application of any pesticides is a dangerous job that requires training prior to its use. Safety is the top priority for any staff that mixes and applies pesticides on campus. The following are some general guidelines on Pesticide Application and Safety while applying.

While applying any pesticide, compliance with the product label is a must.

1. Choose the proper pesticide for the task.

2. If a pesticide is needed, select one that is effective against your pest and also poses the least risks to human health and the environment.

3. Do not apply pesticides to blooming plants, especially if honey bees or other pollinating insects are visiting them. If you must treat blooming plants, do so in early evening and use a non-dust formulation. Do not spray birds' nests.

4. While applying on campus grounds, keep a legible copy of the label on hand or carry the most up-to-date copy of the pesticides SDS (Safety Data Sheet) in case an emergency arises.

Always Read the Pesticide Label……

Important information regarding the pesticide can be found on the product's label. The label is required for every pesticide registered in the United States. Always keep the product in the original package.

Safety On Campus Is Priority……

Applicators can follow these general principles to ensure safe handling of pesticides:

1. Only qualified employees may handle, mix or apply pesticides.
2. All applicators are required to read the label in its entirety prior to using the pesticide.
3. The label is the LAW. It is a violation of Federal and State law to mix or apply materials inconsistent to the label instructions.
4. Maintain a copy of the pesticides MSDS in their possession during the application process.
5. Pesticide applications are not to be performed in close proximity to heavy pedestrian traffic on campus. Be aware of potential drift and exposure to others.
6. Pesticide applications are not to be performed in the vicinity of air vents or operating window air conditioner units. If you are not familiar of the locations of vents and A/C units contact the HVAC Supervisor for further consultation. HVAC foreman must be contacted in order to schedule “shut-downs” prior to spraying in these areas.
7. Any questions regarding the use of pesticides or complaints shall be directed towards the Facilities Management Grounds Manager.

VII. Storage and Disposal

A. Storage:

Improper pesticide storage and disposal can be hazardous to human health and the environment. Follow these recommendations:

1. Don't stockpile.

2. Keep pesticides stored in cool, dry areas to avoid temperature extremes. The cabinets in the Grounds Garage are labeled and will be locked at all times.

3. Keep pesticides in a locked cabinet in a well-ventilated utility area or garden shed.

4. Never store pesticides in cabinets with or near food, animal feed, or medical supplies.

5. Store dry pesticides above liquid pesticides.

6. Always store pesticides in their original containers, which include the label listing ingredients, directions for use, and first aid steps in case of accidental poisoning.

7. *Never* transfer pesticides to other containers.

8. Close the containers tightly sealed after using the product.

9. Do not store pesticides in places where flooding is possible or in places where they might spill or leak into wells, drains, groundwater, or surface water.

B. Disposal

Contact Environmental Health & Safety for assistance in disposing of pesticide products.

VIII. Record Keeping

Application records demonstrate applicator professionalism by documenting legal use, and the safety, care, and concern taken when making the application. Records serve to refresh applicators' memories of procedures, timing, and implemented precautions. They are also extremely important business tools that are useful in tracking inventories, informing the workforce of pesticide applications, and when used in conjunction with pest monitoring records. They allow the applicator to evaluate the effectiveness of the applications.

Records shall include:

1. Location of Application
2. Area (zone)
3. Target Pest

4. Specific Pesticide Applied
5. Dilution Rate
6. Application Rate

*Refer to Appendix A (Daily Fertilizer / Pesticide Application Record)

- These will be turned in daily to the Grounds Manager.

IX. Emergency Information

The University is committed to the management of pesticides so as to minimize the possibility of a release into the environment. As part of this commitment, UNC maintains equipment on-site to facilitate spill cleanup.

The University has a Hazardous Materials Incidents Emergency Response Plan that is maintained by the EHS department. These plans support the spill response and emergencies related to the Pesticide Safety And Application Guidelines (or) application of pesticides on campus.

In case of a spill or release contact UNC Police Department at 351-2245 immediately. The Hazardous Materials Incident Emergency Response Plan will be followed during a release, spill, or incident.

X. Training

All training records must include the dates of training sessions, contents or a summary of the training session, names and qualifications of persons conducting the training, and names of persons attending the training session. Training that is conducted by departments must send a copy of the training roster to EHS.

Only employees, who have received training regarding the application, mixing, disposal, safe handling, and the avoidance of the hazards associated with their use.

XII Training Guidelines

IPM Training to include the following criteria

Pest Education to include identification, life cycles, host plants, and diagnosis of each of the 13 major pest problems on campus. Questions that pertain to where and when to find these pest problems will be answered. Knowing when a particular pest is in the most susceptible phase will determine the most effective means of control

Target vs Non-Target This includes target/weed plants as well as plants that are victims of a particular pest. One must be able to distinguish pests either as a Target or Non-target.
For example, bluegrass turf could be a target weed when it is growing in a flowerbed, and the same turf could be the victim of weed infestation or the non-target plant. It is ultimately a matter of determining management objectives. In general, a weed can be defined as a "*plant-out-of-place" or* not desired.

Plant and Weed Identification

In turf
In ornamental Plantings

Herbicide Education

Non-Selective Vs Selective
Pre-Emergent vs Post Emergent
Growth Regulators

Insecticide Education

Chemical
Bio-Rational
Organo-Phosphates
Cholineasterase Inhibitors
Systemic vs Non-Systemic (contact)
Mosquitoes and West Nile Disease

Non-Chemical Controls

Biological
Physical/Mechanical
Cultural

XIII. Responsible Parties

Manager of Landscaping & Grounds (Sarah Boyd)
Facilities Management
Parsons Hall, 501 20th Street
Greeley, Co 80639
970-351-1263

Grounds Nursery I* Spray Technician (Nathaniel Michno)
Facilities Management
Parsons Hall, 501 20th Street
Greeley, CO 80639
907-351-1275

**This position #999 serves as the Primary Pesticide Applicator*

APPENDIX B

UNIVERSITY OF
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Safety Data Sheets (SDS)

Can be found on MSDS Online
Contact EHS for Assistance