50 Ways to Treat Your Pesticide

Pest Management Professional Edition

For commercial, licensed or certified applicators and technicians under their supervision

Always read and follow label directions before buying or using a pesticide.
Follow all appropriate federal, state, and local regulations.
Fumigants are not addressed in this brochure.

Pest management professionals (PMPs) provide a valuable service to homeowners, business owners, schools, and others. Pests (insects, weeds, and pathogens) cause a wide range of problems in and/or around structures. Your role is critical, not only to manage pest problems, but to use all appropriate pesticide stewardship practices and to provide valuable information on how to prevent or minimize future pest infestations.

Whether insecticide, fungicide, or herbicide, make sure you know the basics.

ASSESS THE PEST PROBLEM AND CHOOSE THE RIGHT PESTICIDE

1) Identify the target pest(s). A complex of pests is often more difficult to control, and may require more than one active ingredient, timing, or placement.

2) Effective pest management means choosing the correct pesticide. The applicator is responsible for controlling the target pest(s), even if advice is sought from the company or land grant university. In most cases, it is legal to use a pesticide against a pest not listed on the label (as long as the site is labeled), but it is the responsibility of the applicator if the pesticide does not work on that pest. If previous attempts to control one or more of the pests have failed, determine the reason before re-applying any pesticide.

3) The label is the law. Read the label before you use the product – you are legally obligated to read and follow the entire label except the use directions about target sites that you are not planning to treat. Make sure that the product is labeled for application to the intended target site. Some products may only be applied outdoors even if they contain the same active ingredient as another "indoor" product. If you don't understand any portion of the label, do not apply the product until it has been explained. Contact the distributor or the pesticide manufacturer for help in understanding the label.

MAKE AN INFORMED PURCHASE

4) The "Directions for Use" and the rest of the label information are equally important. Carefully review the signal word, precautionary statements, emergency first aid measures, etc. For example, restrictions may exist for applying a pesticide while an area is occupied or around people in certain environments (such as in hospitals or nursing homes). The product may not be labeled for use in or around food preparation areas, or it may require certain precautions to prevent contamination of food and/or food preparation equipment. Supplies needed for emergency first aid (for example, water to rinse eyes) must be readily available.

5) Consider what formulation is best suited for the situation. Liquids, aerosols, dusts, foams, baits, etc., have pros and cons depending on the situation, usually have different directions for use, and often have different precautionary statements. Be sure to choose a formulation that will not damage treated surfaces, and is best suited to control the pests. The label will not tell you which formulation is best suited for a situation – you must determine this based on reading the label and understanding the treatment site. For example, while some sites may prohibit pesticide residues, other pest situations require a surface residual in order to effectively control the pest. Use all appropriate pesticide stewardship practices, whether it is a spray, dust, foam, bait, or other formulation.

6) Only use pesticides that are currently registered, and never use a product whose identity and label information have become illegible.

TRANSPORT, STORE AND DISPOSE OF PESTICIDES PROPERLY

7) Never transport pesticides in the same compartment with passengers or food items. Always transport pesticides in the back of the service vehicle and secure the containers to prevent spills or damage due to sudden starts, stops and turns. Never leave the pesticides (concentrates or diluted) unattended if the back of the service vehicle cannot be locked.

8) Store pesticides and application equipment securely so that children and pets cannot reach them. Read the label to determine any ventilation and/or temperature requirements for the product. For example, baits contain food attractants and should not be stored at temperatures that can cause the food attractant to go rancid. Liquid pesticides may freeze or separate during the winter in an unheated storage building or the service vehicle. Do not store larger quantities than necessary. Keep the storage cabinet or area locked whenever it is unattended. Always maintain updated inventory records.

9) Never transfer pesticides from the original container to food, drink, or any other container, other than a properly labeled container which is only for use by the applicator. If the original container is damaged and the pesticide must be transferred, label the new container with the common or chemical name, percentage of active ingredients, EPA registration number, signal word, and use classification (in the absence of more specific state requirements). If the label from the original container has been damaged and is no longer completely legible, a replacement label must be obtained before using the product.

10) When the product container is empty, never reuse it for any other purpose. Discard it according to label directions and state and local disposal laws.

APPLY THE PRODUCT PROPERLY AND RESPONSIBLY

11) Use the required personal protective equipment (PPE), such as gloves, a filter mask, goggles, etc., when handling the pesticide. "Handling" includes mixing, loading, application, and clean-up. Minimum required PPE will be specified on the product label.

12) Use the lowest rate on the pesticide label that is recommended against the target pest(s) and level of infestation, using the recommended timing and placement.

13) Never increase the application rate beyond the maximum allowed on the label. Applying higher than label rates is illegal. In addition, it increases your costs, increases pesticide load in the environment, may increase the chance of human exposure, and in some cases can promote the development of resistance. Lower than labeled rates can result in inadequate control and can also promote the development of resistance.

EPA DEFINITIONS OF LIQUID SPRAYS

Note that application method can be further defined based on the class of chemicals.

General Spray – Application to broad surfaces, such as walls, floors and ceilings.

Space Spray – Dispersal of the product into the air by foggers, misters, aerosol devices or vapor dispensers for control of flying pests and exposed crawling pests.

Spot Spray – Application to small areas on which pests are likely to occur. These areas may be on floors, walls, bases or undersides of equipment. To limit potential exposure in a commercial food area, a "spot" should not exceed two square feet.

Crack and Crevice – Application of small amounts of pesticide into cracks and/or crevices in which pests hide or through which they may enter a building. Such openings commonly occur at expansion joints, between elements of construction and between equipment and floors.

14) Use directed applications if they will not reduce the effectiveness of your treatment. Directed applications require less pesticide, reduce the risk of pesticide exposure to people and non-target animals, and increase the likelihood that the pest and product will come in contact. Wherever possible, replace general sprays and space sprays with spot treatments, crack and crevice treatments, and barrier treatments. This is especially important when applying pesticides indoors.

15) Never spray areas where baits are present or apply baits to areas that have been recently sprayed with an insecticide. Pests will not usually feed on baits that are contaminated with other insecticides, rendering them useless.

16) Make sure the pesticide stays in or on the intended site. For example, when applying granular formulations outdoors, make sure any granules that reach walkways, driveways or other unintended sites, are swept back onto the intended site.

17) Never apply pesticides outdoors when wind can cause problems. Pesticides can drift as spray, vapor, or dust. Almost all sprays contain some small droplets subject to drift, and aerosol, mist, and fogging applications are particularly prone to drift. Pesticides can drift and contaminate (or even damage) objects such as toys, swimming pools, grills, fish ponds, and bird baths, particularly when treating surfaces aboveground. Cover or remove objects that should not be contacted before you apply the pesticide. Make sure pets (and their food) are removed from areas to be treated. When treating indoors, drift is still an issue – make sure you turn off any air handling system so that the pesticide does not move into other rooms or contaminate the ductwork; and cover or remove objects and pets as appropriate.

18) Observe all precautions regarding human exposure. The length of time that humans and pets must avoid a treated area will depend on the product and may be specified on the label. If no reentry information is on the label, keep humans and pets out of the treated area until all surfaces are dry. Make sure that the customer understands all contact restrictions and re-entry requirements.

19) Flexibility is a key component in minimizing drift, since there are various factors that influence drift and can be modified by the applicator, depending on the particular circumstances.

For example, there is more flexibility in maximum wind speed if the distance to sensitive areas is large, or a pesticide-tolerant row of trees or bushes on the customer's property prevents downwind movement. One of the effective ways to avoid drift is by changing the formulation – granules and bait formulations eliminate the potential for pesticide drift.

20) If there are sensitive areas downwind, and no permanent physical buffer exists, remember that a buffer may be flexible – a purposely untreated portion of the landscape large enough to minimize the chance of drift, water runoff, and/or soil erosion taking pesticides off-target. Flexible buffers are critical when permanent buffers are not available. The size and location of flexible buffers must be determined on an application-by-application basis.

21) Avoid drift into sensitive areas, which include anything that is not the target of the application – it may be nearby edible plants (such as gardens, herbs and/or fruit trees), ornamental trees and shrubs, pollinator habitat, or other wildlife areas.

22) Some labels will specifically indicate maximum wind speeds and minimum distances to non-target sites for outdoor spray applications, but others will not. Ultimately, drift management at the time of application is the responsibility of the pest management professional and his technician.

23) PMPs have the responsibility to determine the proper size of flexible buffers. For example, the flexible buffer may be very small when other drift reduction techniques are sufficient and environmental conditions do not promote runoff. In other instances, the best option may simply be to delay the treatment until conditions are less likely to result in drift or runoff.

24) Observe the condition of the land when pesticides are being applied outside the structure. Some products cannot be applied to areas that are prone to flooding or tidal activity. Particularly where vegetation is sparse or absent and land is sloped, some pesticides can move off-target on eroding soil particles or in water runoff from irrigation or rain. Water runoff moves into storm drains, ditches, and ponds, and may ultimately reach lakes, streams and other water bodies. Also minimize the chance of water runoff by never spraying when the ground is saturated or frozen.

25) Take steps to avoid contaminating ground water. Avoid soil injections of pesticides when ground water is close to the surface. Be careful when treating near wells and cisterns. When filling your spray tank, use a backflow preventer to keep pesticides from back-siphoning into the water source.

26) Keep your pesticide application equipment in good working condition and calibrate as needed to ensure accurate application of the pesticide. Replace worn/damaged parts before a problem occurs. The application equipment manufacturer and/or pesticide distributor can provide standard calculations and guidance on calibrating your equipment.

27) Unless they are an obvious threat to people and pets, protect bees and other pollinators when treating outdoors. Observe all label precautions and directions for use relative to pollinators. When you use a pesticide that has pollinator precautions, make sure you know the proximity of pollinator habitat and blooming plants. If possible, choose a pesticide formulation and application method that is least hazardous to pollinators but will control the target pest(s), for example, a granular, soil-applied product. If the label is not more specific, avoid treating flowering plants whenever possible and apply the pesticide early in the morning, late afternoon, or at night, when pollinators are least likely to be active.

BE DILIGENT ABOUT CLEANUP AND DISPOSAL

28) Wash clothing worn during pesticide application before reuse, and wash it separately from other laundry.

29) Never prepare more spray solution than needed. If excess spray solution exists, apply it to a labeled site, if possible, following label instructions.

30) Do not dispose of excess, unwanted or expired pesticide or spray solution down the drain, onto the soil, into open waterways, gutters, storm drains or sewers, or in the trash. Check the label to determine proper disposal procedures, or call your county cooperative extension office or state pesticide regulatory agency for advice.

31) Triple-rinse empty liquid product containers and completely empty dry product containers before disposing properly. Recycle if possible. Your county cooperative extension office or pesticide distributor can provide recycling options or instructions on where to dispose of empty containers.

KNOW HOW TO MANAGE PESTICIDE SPILLS

32) Do everything possible to prevent spills, but always be prepared. Have a spill kit on the service vehicle at all times. The kit should include enough absorbent material to contain a spill equal to the amount of chemical in all spray tanks on the vehicle. Absorbent material includes items such as cat litter, soil, sand, sawdust, rags, paper towels or newspaper.

33) In the event of a spill, never leave it unattended. If a pesticide container splits or tips over, quickly set it upright to keep more pesticide from spilling out. Keep people and pets away from the spill. Make sure you are wearing the proper protective equipment, such as chemical-resistant gloves (not leather or fabric material gloves) and whatever other personal protective equipment is required on the label.

34) Contain a liquid spill with an absorbent material. Keep the spill from reaching storm drains and sources of water. Spills of granular and other dry products can be swept up. Spilled granules can be spread on a labeled site according to the product label (if they are not contaminated with other chemicals). Liquid formulations, spray solutions, and contaminated absorbent must be placed in a heavy-duty plastic bag and disposed of properly.

35) Do not discard spilled material (with or without absorbent) into the trash can or down an indoor or outdoor drain. The contents of the bag may be considered hazardous waste, so contact the manufacturer for advice concerning small spills and follow state or local guidelines for disposing of the pesticide and any absorbent or contaminated material.

PREVENT PESTICIDE RESISTANCE

36) Pesticide resistance is the ability of a pest population to develop a tolerance to a pesticide over time, especially if the same class of chemistry is used repeatedly. Resistant pest populations have inherited traits that reduce their susceptibility to individual pesticides or a class of pesticides. Indoors, insecticide resistance occurs most commonly with pests such as cockroaches, bed bugs, and house flies.

37) How does resistance happen? At first, only a very small proportion of the population of a susceptible pest species may survive exposure to the pesticide. However, each time the pesticide is applied, the susceptible pests are eliminated while the surviving resistant pests pass the gene(s) for pesticide resistance on to the next generation. Repeated use of the same pesticide (or another pesticide with the same mode of action) increases the proportion of the resistant pests in the population.

38) Take steps to reduce the likelihood of a pest developing pesticide resistance. Never rely solely on the use of pesticides for controlling pests. Sanitation, exclusion, and other non-chemical methods reduce the reliance on pesticides and lower the pest infestation when pesticides are needed.

39) Avoid applying pesticides on a routine basis. However, if pesticides must be used routinely, even for only part of the year, rotate products with different "group numbers" (signifying the mode/mechanism of action). Some pesticide labels contain the group number, but all pesticides have an assigned group even if it is not on the label. The group number for every pesticide is available on the Insecticide (IRAC), Herbicide (HRAC), or Fungicide (FRAC) Resistance Action Committee websites.

40) Consider premixes of pesticides containing more than one mode/mechanism of action where available and appropriate for the various pests you are targeting.

USE INTEGRATED PEST MANAGEMENT (IPM)

41) Integrated Pest Management (IPM) is an approach to pest control that focuses on the prevention, suppression, and control of pests by using a combination of methods. The habitat is made unfavorable or less favorable for the target pests (insects, pathogens, or weeds), the pest is excluded wherever possible, the area is monitored regularly for pests, and all appropriate methods of control are considered.

42) When pesticides are needed, they must be used in a manner that minimizes the risk of harm to the environment, including people, pets and wildlife. Customers have a key role in successful IPM, so make sure they understand what modifications can reduce the potential for a pest problem, and what precautions are necessary when a pesticide is applied.

43) Proper sanitation is essential to reducing pest problems. Make sure the customer is keeping areas clean and clear of any spilled or open food and drink. Recommend that they store all foods, such as cereals, bread, and sugar, in pest-proof containers. Dispose of garbage promptly, tie garbage bags shut, and place them in dumpsters or in trash cans with tight-fitting lids. Rinse beverage containers before placing them in recycle containers.

44) Vacuuming carpets, upholstery, and mattresses regularly can significantly reduce the numbers of some pests such as spiders, fleas, bed bugs, and cockroaches.

45) "Exclusion" means taking steps to keep pests out of structures. Repair any torn screens. Keep unscreened windows closed, if possible. Seal any gaps, cracks, or holes around windows, doors, and foundations. Install weather stripping around doors and windows. Also seal cracks, crevices, and other openings or hiding places within the structure.

46) Habitat modification involves landscaping and other activities that can reduce the likelihood of pests infesting areas around the structure. For example, mulch provides shelter, warmth, and moisture for insects, and prevents pesticides from reaching their intended target beneath it. Recommend to customers that they keep mulch, leaf litter and other vegetation 10-12 inches away from the foundation. Inorganic ground cover, such as gravel, can be used in place of mulch in these areas. Remove old mulch before applying new mulch.

47) Keep trees and shrubs pruned so that they are at least 10-12 inches from the structure. Eliminate clutter that can harbor pests. Stack lumber, firewood, bricks, and stones away from structures and off the ground. Keep basements, crawl spaces and foundations dry and reduce moisture in areas prone to high humidity. Make repairs that eliminate standing water, deteriorating wood, and other insect and pathogen attractants.

48) Timely and proper mowing, fertilization, and irrigation will help maintain a healthy, competitive lawn, which will help avoid many pest problems. Mulching under plants will prevent or minimize weed emergence.

49) Help customers avoid future pest problems by directing them to online and other resources that will help them learn to identify pests and the signs of their presence.

50) Successful IPM always includes a record-keeping component – what is done by the pest management professional and the customer, and when. In addition, make sure you know your state's record-keeping requirements, because states differ in the time required to keep service records and what information to retain.

FIRST AND FOREMOST, BE A GOOD STEWARD

Many factors affect the impact of pesticides on people and the environment. Although the government, industry, and extension provide regulations, labels, and educational outreach to promote judicious use and good stewardship, success ultimately depends on the personal knowledge and diligence of pest management professionals and others who handle pesticides.

There are excellent pesticide stewardship resources available through your Extension Service and the Pesticide Safety Education Program in your state.

In addition, a new web-based resource is available to assist you with general pesticide stewardship. The Center for Integrated Pest Management's (CIPM) Pesticide Environmental Stewardship website (PES) covers a wide variety of pesticide stewardship topics for everyone who applies, sells, stores, or disposes of pesticides, provides advice or training concerning pesticide use, or regulates, stewards, or has questions about pesticides.

Your role as a Pest Management Professional is critical in controlling pests that destroy property, contaminate food, transmit disease, and cause allergic or asthmatic reactions – with the utmost attention to proper and safe pesticide use. Thank you for being a good steward.

NC State University
A&T State University
COOPERATIVE EXTENSION
Empowering People · Providing Solutions

syngenta®

This publication can be downloaded from the following websites:

North Carolina State University: **ipm.ncsu.edu/pesticidesafety/**

Syngenta Environmental Stewardship: **syngentacropprotection.com/Env_Stewardship/**

Pesticide Environmental Stewardship (PES): **pesticidestewardship.org**