

PESTICIDE EMERGENCIES

POISON CONTROL CENTER (HUMAN OR ANIMAL)

National Poison Control Hotline
(Spanish speakers available)

(800) 222-1222

<https://www.georgiapoisoncenter.org/>

<https://www.poisonhelp.org/help>

SPILLS

Georgia Environmental Protection
Division Emergency Operations Center

(800) 241-4113

<https://epd.georgia.gov/emergency-response>

REPORT PESTICIDE MISUSE

Georgia Department of Agriculture
Pesticide Program

(404) 656-9371

<https://agr.georgia.gov>

AVOID EMERGENCIES/ PREPARE FOR EMERGENCIES

1. Keep children away from pesticides!
2. Do not store pesticides around food or drink, and **NEVER** store pesticides in food or drink containers.
3. Keep gloves and other protective clothing near, but separate, from where pesticides are used or stored.
4. Have clean water available to wash pesticides from skin or eyes.
5. Store pesticides under lock-and-key and handle pesticides in areas where spills will be contained.
6. Assemble and have a spill kit available wherever you handle pesticides.
7. Be familiar with the first aid instructions on the pesticide label.

Symptoms of pesticide poisoning: nausea, vomiting, diarrhea, cramps, headache, dizziness, weakness, confusion, sweating, chills, chest pains, difficulty breathing, and/or unconsciousness. If you have any of these symptoms while you are handling pesticides, suspect pesticide poisoning. If an individual has collapsed, had a seizure, has trouble breathing, or can't be awakened, call 911 immediately.

FIRST AID FOR POISONING

1. Stop the pesticide exposure as quickly as possible. **CALL 911 IF SYMPTOMS ARE SERIOUS! CALL POISON CONTROL (800-222-1222) FOR FIRST AID INFORMATION. YOU WILL NEED THE PESTICIDE LABEL.**
2. If the victim is not breathing, administer artificial respiration (CPR) at once and call 911.
3. Consult the pesticide label if possible. Directions for first aid will be on the front panel.
4. Otherwise, follow these guidelines:

SKIN: Drench skin as quickly as possible with plenty of water. Any moderately clean water can be used if not contaminated with pesticides. Remove contaminated clothing. Wash with soap if available. Dry victim and treat for shock. If skin is burned, cover with clean, loose bandage or cloth. Do not apply ointments to burned skin.

EYE: Wash eye quickly but gently. Rinse eye with clean water or eyewash solution for at least 15 minutes.

INHALED: Move victim to fresh air. Warn other nearby people. Loosen clothing that restricts breathing. Administer artificial respiration (hands-only CPR) if necessary.

SWALLOWED: Rinse mouth with plenty of water. Give large amounts of water or milk (up to one quart) to drink. Consult the label before you induce

■ PESTICIDE EMERGENCIES

vomiting. Do not give liquids or induce vomiting to anyone who is unconscious or convulsive.

5. **Take the pesticide label with you to the doctor or hospital.** DO NOT transport pesticides in the passenger compartment of the vehicle.

HEAT STRESS

Avoid heat stress.

1. Acclimate to hot weather or new strenuous activities slowly.
2. Drink plenty of water or sports drinks.
3. Take frequent breaks from hot weather.
4. Plan strenuous activities for the cooler part of the day.

Symptoms of heat stress: sweating, nausea, headache, confusion, loss of coordination, dry mouth, and/or fainting. Severe heat stress (heat stroke) is VERY dangerous.

The EPA Pesticide Worker Safety website provides detailed information on how to prevent heat stress in gardening and agriculture. You can visit the site here <https://www.epa.gov/pesticide-worker-safety/preventing-heat-stress-agriculture>. Heat forecasts and more information on heat stress are available on <https://heat.gov/>.

FIRST AID FOR HEAT STRESS

1. **CALL 911 IF SYMPTOMS ARE SERIOUS!**
2. Move the victim to a cooler area immediately.
3. Cool the victim as quickly as possible by immersing them in cool water or splashing cool water on them. Do not immerse anyone who is unconscious, convulsive, or confused.
4. Remove all protective equipment or clothing that is keeping the victim too warm.
5. If the victim is conscious, have them drink as much cool water as possible.
6. Keep the victim quiet. Get medical advice.

PESTICIDE SPILLS

Prepare for a potential pesticide spill by assembling a spill kit that includes the following items:

1. Personal protective equipment indicated on pesticide label.
2. Absorbent material to soak up spilled liquids (cat litter, vermiculite, sand, sawdust, or dirt).
3. Shovel, broom, or dustpan to pick up contaminated absorbent material.
4. Container for contaminated absorbent material (e.g., heavy-duty plastic bag or sealable drum).

IF SPILL OCCURS

1. **DO NOT HOSE DOWN SPILLS!**
2. First, protect yourself and others.
3. Stop the spill sources.
4. Confine the spill with a dike of earth or other materials. Protect water sources.
5. Absorb liquids with cat litter, vermiculite, sand, earth, etc.
6. Scoop up contaminated materials. Store securely.
7. Neutralize contaminated site with bleach, activated charcoal, hydrated lime, or by removing contaminated soil.
8. Absorb any liquids used during neutralizing.
9. Place contaminated absorbent materials in a heavy-duty plastic bag or plastic drum, and store securely away from living areas. Consult the pesticide label for disposal instructions. In many cases, contaminated absorbent materials or soil may be land-applied according to the pesticide label. Call your local landfill; home-use pesticides can be disposed of at landfills, but each landfill has its own protocols.

For additional information on spills, leaks, or pesticide fires: Call Georgia Department of Natural Resources Emergency Protection Division's Emergency Operations Center at (800) 241-4113.

For spills on public roads or other public areas call: Local sheriff or police. Georgia State Patrol *GSP (*477) on mobile phone.

For information on how to file a complaint of possible pesticide misuse call or visit: 404-656-9371; <https://gdaforms.wufoo.com/forms/pesticide-incident-form/>

IMPORTANT CONTACTS

DIAL 911 to get help with pesticide poisoning emergencies. Be prompt in calling if the person is unconscious, has trouble breathing, or has convulsions. Try to have the pesticide label with you when you call.

POISON CONTROL CENTER (HUMAN OR ANIMAL)

National Poison Control Hotline
(Spanish speakers available) (800) 222-1222

Physician _____

Ambulance _____

FIRES, SPILLS, LEAKS, ETC.

Georgia DNR Environmental Protection
Division Emergency Operations Center
(pesticide fires, spills, leaks) (800) 241-4113

County Police or Sheriff _____

City Police _____

Georgia Highway Patrol Post
(*GSP (*477) for mobile phones) _____

Fire Department _____

ENDANGERMENT OF GAME OR FISH

Georgia Department of Natural Resources
Wildlife Resources Division (770) 918-6408

U.S. Fish and Wildlife Service (844) 397-8477

CONTACTS FOR PESTICIDE INFORMATION (NON-EMERGENCY)

University of Georgia Cooperative Extension
psep@uga.edu; <https://psep.uga.edu>

CropLife America—General information about the
pesticide industry (M–F, 9:00 a.m.–5:00 p.m. EST)
(202) 296-1585

PESTICIDE INFORMATION

National Pesticide Information Center (NPIC), Oregon
State University—General information on toxicology,
environmental hazard, etc. (M–F,
10:30 a.m.–6:30 p.m. EST), npic@ace.orst.edu,
(800) 858-7378

National Response Center—Refers callers to proper
government agency for hazardous materials
(800) 424-8802 (Voice/TTY)

Pesticide Manufacturer—The telephone number should
be listed on the pesticide label.

PESTICIDE DISPOSAL

Georgia Department of Agriculture—Agricultural
Inputs Division (404) 656-4958; [https://agr.georgia.gov/
pesticide-waste-disposal-container-recycling](https://agr.georgia.gov/pesticide-waste-disposal-container-recycling)

■ **IMPORTANT CONTACTS**

EPA SAFE DRINKING WATER HOTLINE

Interprets residue data and provides EPA drinking water regulations—(800) 426-4791

Or call your local Health Department or Sanitarian.

County_____

City_____

ENFORCEMENT OF PESTICIDE LAWS

Georgia Department of Agriculture—(404) 656-4958

EPA Region IV—(800) 241-1754

Safety and Training Information—UGA Pesticide Safety Education Program, <https://psep.uga.edu>

WEBSITES WITH PESTICIDE INFORMATION

Georgia Integrated Pest Management (IPM)	ipm.uga.edu
UGA Pesticide Safety Education Program	psep.uga.edu
University of Georgia Cooperative Extension	extension.uga.edu
Georgia Department of Agriculture—Pesticides	agr.georgia.gov/pesticides.aspx agr.georgia.gov/agricultural-pest-control
Extension Toxicology Network—Pesticide Risks	extoxnet.orst.edu
U.S. Fish & Wildlife Service: Endangered Species	fws.gov/endangered
National Pesticide Information Center—Pesticide Questions	npic.orst.edu
USDA National Organic Program	www.ams.usda.gov/about-ams/programsoffices/national-organic-program
Georgia Organics	georgiaorganics.org
EPA Pesticides website	epa.gov/pesticides/

FREQUENTLY ASKED QUESTIONS

HOW CAN I FIND MY LOCAL COOPERATIVE EXTENSION OFFICE?

Call 1-800-ASK-UGA1 or visit extension.uga.edu/about/county/.

HOW ARE MY CHILDREN MOST LIKELY TO BE INJURED BY PESTICIDES?

Pesticide exposure risks for children are most often encountered around the home. An EPA survey concludes that 50% of households with a child under 5 years of age store pesticides within the reach of children.

Many household disinfectants are considered pesticides and can injure young children. Always store pesticides and other hazardous materials in areas that are not accessible to children, preferably in locked storage areas or containers that children cannot access. NEVER store pesticides in food or drink containers that could be mistaken by children or adults.

WILL PESTICIDES HURT MY PETS?

Some pesticides are dangerous to pets, but the degree of risk depends on the particular pesticide and the type of animal. Fish, small animals (e.g., lizards), and arthropods (e.g., tarantulas) are very sensitive to many pesticides. Remove these types of pets or securely cover their cage/tank whenever pesticides are applied. Pets may be attracted to pesticides formulated as baits. Small mammals and dogs may eat mouse, rat, or slug baits.

The pesticide label will provide more information about the pesticide risks in the section titled, “Hazards to Humans and Domestic Animals.” Follow these precautions carefully. Remove any pet bowls or toys before a pesticide application and be sure to keep pets away from treated areas until liquid sprays are dry, dusts have settled, or as specifically directed by the label.

HOW CAN I GET MORE INFORMATION ABOUT THE HEALTH AND ENVIRONMENTAL RISKS OF PESTICIDES?

Oregon State University’s Extension Toxicology Network website ace.orst.edu/info/extoxnet/ is an excellent source of information about pesticide risk written in language that is easily understood. The EPA also provides reliable information and regular updates on pesticide issues at epa.gov/pesticides.

WHICH PESTICIDES ARE THE MOST DANGEROUS?

Pesticides must carry signal words that indicate the acute toxicity of the product. The most dangerous pesticides carry the word “DANGER.” “DANGER-POISON” indicates a pesticide can kill in extremely small amounts. “DANGER” pesticides can cause irreversible eye damage or severe injury to the skin, although they can kill in very small amounts if ingested or inhaled. Pesticides approved, or labeled, for use around the home are less dangerous; they will carry the signal words “WARNING” or “CAUTION.”

Never bring “DANGER” or “DANGER-POISON” pesticides to anyone’s home.

Even pesticides with the signal words “WARNING” or “CAUTION” are moderately to slightly toxic and should be handled with respect and care. Minimize your exposure to all pesticides.

I HAVE HEARD THAT ALMOST ALL PESTICIDES CAUSE CANCER. IS THAT TRUE?

No, but all pesticides are toxins. The U.S. Environmental Protection Agency (EPA) regulates pesticide use, reviews, and approves all pesticide labels. The EPA requires rigorous testing before products are labeled or, periodically, relabeled. Dosage strongly influences risks of all sorts (environmental, human health, non-target organisms, etc.). Labeled pesticide rates fall far below levels shown to be of meaningful risk. By using pesticides sparingly and ALWAYS following label directions, scientific evidence suggests risks are so low as to not constitute a public health concern. You can find more information about pesticide safety at our website: psep.uga.edu.

WHAT ARE RESTRICTED-USE PESTICIDES?

Pesticides fall into two broad categories: general use (or unclassified) and restricted use. Any adult may purchase general-use pesticides in big box stores, garden centers, supermarkets, and farm supply stores. Restricted-use pesticides (RUP) are more hazardous to humans or the Environment and most often carry the signal words “DANGER” or “DANGER-POISON.” Only licensed applicators who have received special training may purchase or use restricted-use pesticides. Homeowners cannot legally purchase or use any restricted-use pesticide unless they are a licensed applicator and the RUP is labeled for use on that site. Beware of online websites

FREQUENTLY ASKED QUESTIONS

that sell restricted-use pesticides to customers without requiring license information. These sites will often advertise pesticides as ‘professional’ or ‘industrial’ grade. If you want to purchase a specific pesticide product but are unsure if it is a restricted-use pesticide, please contact your local extension agent or the UGA Pesticide Safety Education Program.

I WANT TO CONTROL PESTS AROUND MY HOME WITH FEWER PESTICIDES. WHERE CAN I GO FOR INFORMATION?

IPM or ‘Integrated Pest Management’ plans combine multiple tactics to control pests, while relying on pesticides as the last control option. Visit UGA’s IPM webpage at ipm.uga.edu for more information about managing pests with minimal use of chemical pesticides.

If you have roaches in the kitchen, for example, a periodic application of insecticide could control the roaches. However, your family could be exposed to the pesticide. Using an IPM approach, you could reduce the roaches’ food sources and habitat by cleaning up all food crumbs, cleaning counters daily, removing water sources (leaky pipes in sinks or dishwashers), and sealing cracks and areas where roaches like to hide (most commonly around dishwashers and under cabinets). With this broad approach you may still have to use a pesticide sparingly, but the first tactics should reduce the need for frequent pesticide applications.

Check with your local county Cooperative Extension office. They can provide a wealth of information on IPM plans specific to your problem pest. Also, you may be interested in the Master Gardener program available through your local Extension office.

The University of Georgia has information on several plant and pest problems in and around the home. You can find them by either searching the plant name or pest and "UGA" in a web browser, or searching on UGA Extension’s publication website, fieldreport.caes.uga.edu/publications/. For example, to find information about azalea, use the search terms ‘azalea UGA.’ You can find

them by using the plant name and “UGA” in a search engine. For example, to find information about azalea, use the search terms “azalea UGA.”

HOW CAN I DISPOSE OF UNWANTED PESTICIDES?

Only buy the amount of pesticide that you will need to use within a few weeks or months to avoid having leftover pesticides. Measure pesticides carefully to avoid mixing more than you need. If you have leftover pesticide mix, apply it to a site listed on the pesticide label. **NEVER pour pesticides down the drain.**

Rinse empty pesticide containers three times and pour the rinse water into your sprayer for application to a site listed on the pesticide label. Discard the properly rinsed container with your household trash after making it unusable for any alternate purpose by cutting or puncturing the container.

If you have pesticide that you do not want, ask your local Extension office staff for advice. They can tell you how to dispose of the pesticide safely and legally.

WHAT DOES “ORGANIC” MEAN ON A FOOD LABEL?

If it includes the USDA seal, it means the product was produced with at least 95% organic ingredients.

HOW CAN I USE PESTICIDES SAFELY?

Use IPM practices to reduce the amounts of pesticides you use. IPM information is available at ipm.uga.edu. ALWAYS follow the label directions, even if this handbook or someone else gives you different information. UGA’s Pesticide Safety Education Program offers an educational program for how to safely use pesticides called the Georgia Competent Applicators of Pesticides Program or GCAPP. You can learn more about the program at psep.uga.edu or order access to the training program, which provides you with a 5-year certificate upon successful completion, at the UGA Marketplace storefront: https://estore.uga.edu/C27063_ustores/web/store_cat.jsp?STOREID=284&CATID=1036.

 **ATTENTION: PESTICIDE PRECAUTIONS** 

1. Observe all directions, restrictions and precautions on pesticide labels. It is dangerous, wasteful and illegal to do otherwise.
2. Store all pesticides in original containers with labels intact and behind locked doors. **KEEP PESTICIDES OUT OF THE REACH OF CHILDREN.**
3. Use pesticides' correct label dosages and intervals to avoid illegal residues or injury to plants and animals.
4. Apply pesticides carefully to avoid drift or contamination of non-target areas.
5. Surplus pesticides and containers should be disposed of in accordance with label instructions so that contamination of water and other hazards will not result.
6. Follow directions on the pesticide label regarding restrictions as required by state and federal laws and regulations.
7. Avoid any action that may threaten an endangered species or its habitat. Your county Extension agent can inform you of endangered species in your area, help you identify them, and through the U.S. Fish and Wildlife Service field office identify actions that may threaten endangered species or their habitat.

ABBREVIATIONS AND EQUIVALENTS

FORMULATIONS¹

ai = active ingredient	EC = emulsifiable concentrate	S = sprayable powder
AC = aqueous concentrate	EL = emulsifiable liquid	SC = spray concentrate
AS = aqueous suspension	F = flowable	SP = soluble powder
DF = dry flowable	FC = flowable concentrate	W = wettable powder
DG = dispersible granules	G = granules	WDG = water dispersible granular
B = bait	L = liquid	WDL = water dispersible liquid
D = dust	LC = liquid concentrate	WM = water miscible
E = emulsifiable	M = microencapsulated	WP = wettable powder

1. Numbers preceding abbreviations for liquid formulations equal pounds of active ingredient per gallon (e.g., 4EC = 4 lb/gal emulsifiable concentrate); numbers preceding abbreviations for solid formulations equal percent active ingredient by weight (e.g., 50WP = 50 percent wettable powder).

METHOD OR TIME OF APPLICATION

CR = cracking stage	PEI = pre-emergence incorporated	PRE = pre-emergence
LV = low volume	PO = post-emergence	PT = post-transplant
NS = nonselective	POT = post-emergence over-the-top	RCS = recirculating sprayer
PDS = post-emergence directed spray	PP = pre-plant	ULV = ultra low volume ²
PE = pre-emergence on surface	PPI = pre-plant soil incorporated	WICK = rope wick applicator

2. Ultra low volume usually refers to aerial application of a total spray volume of 1 gallon or less per acre.

MEASURES AND EQUIVALENTS

tsp	=	teaspoon			1 teaspoon	=	4.9 milliliters
Tbsp	=	tablespoon	1 Tbsp	=	3 teaspoons	=	14.8 milliliters
fl oz	=	fluid ounce	1 fl oz	=	2 tablespoons	=	29.6 milliliters
c	=	cup	1 c	=	8 fluid ounces	=	236.6 milliliters
pt	=	pint(s) (1.04 lb of water)	1 pt	=	2 cups	=	473.2 milliliters
pt/100	=	pint(s) per 100 gallons	1 pt/100	=	1 teaspoon per gallon		
qt	=	quart(s) (2.09 lbs. of water)	1 qt	=	2 pints	=	946.4 milliliters
gal	=	gallon(s) (8.35 lbs. of water)	1 gal	=	4 quarts	=	3.7854 liters
oz	=	ounce			1 ounce	=	28.35 grams
lb	=	pound	1 lb	=	16 ounces	=	453.59 grams
in	=	inch	1 in	=	1000 mils	=	2.54 centimeters (25,400 microns)
ft	=	feet	1 ft	=	12 inches	=	30.48 centimeters
yd	=	yard	1 yd	=	3 feet	=	91.44 centimeters
mi	=	mile	1 mi	=	5280 feet	=	1609 meters (16.09 kilometers)
sq in	=	square inch			1 square inch	=	6.45 square centimeters
sq ft	=	square feet	1 sq ft	=	144 square inches	=	929.03 square centimeters
A	=	acre	1 A	=	43560 square feet	=	0.4047 hectare
cu in	=	cubic inch			1 cubic inch	=	16.387 cubic centimeters
cu ft	=	cubic feet	1 cu ft	=	1728 cubic inches	=	0.0283 cubic meter
cu yd	=	cubic yard	1 cu yd	=	27 cubic feet	=	0.7646 cubic meter
ppm	=	parts per million	1 ppm	=	1000 pp billion	=	1 milligram/kilogram ³
psi	=	pounds per square inch			1 psi	=	70.3 gram-force per square centimeter

3. 1 milligram/kilogram or 1 ppm is equal to 1 milligram/liter of water.

SUBMITTING SPECIMENS FOR IDENTIFICATION: COLLECTION, PREPARATION, AND SHIPMENT

INSECTS, PLANT DISEASES, VIRUS DIAGNOSIS, NEMATODES, WEEDS, FISH, VERTEBRATES

Proper identification of pest problems is the foundation of any control program. UGA Cooperative Extension will help you identify pest problems at little or no cost to you. Contact your local Extension office. In most cases, your local agent can diagnose the problem and advise you about proper control. If the local office staff cannot identify the pest, they will contact the appropriate specialist at the University of Georgia. The telephone number of your local Extension office is listed below. You may also check the Web for updated or changed phone numbers: <http://extension.uga.edu/about/county/>.

Appling County, 912-367-8130	Chattahoochee County, 706-653-4200	Effingham County, 912-754-8040
Atkinson County, 912-422-3277	Chattooga County, 706-857-0744	Elbert County, 706-283-2037
Bacon County, 912-632-5601	Cherokee County, 770-721-7803	Emanuel County, 478-237-1226
Baker County, 229-734-3015	Clarke County, 706-613-3640	Evans County, 912-739-1292
Baldwin County, 478-445-4394	Clay County, 229-768-2247	Fannin County, 706-632-3061
Banks County, 706-677-6230	Clayton County, 770-473-3945	Fayette County, 770-305-5412
Barrow County, 770-307-3029	Clinch County, 912-487-2169	Floyd County, 706-295-6210
Bartow County, 770-387-5142	Cobb County, 770-528-4070	Forsyth County, 770-887-2418
Ben Hill County, 229-922-0277	Coffee County, 912-384-1402	Franklin County, 706-384-2843
Berrien County, 229-686-5431	Colquitt County, 229-616-7455	Fulton County North Office, 404-613-7670
Bibb County, 478-751-6338	Columbia County, 706-541-4011	Fulton County South Office, 404-762-4077
Bleckley County, 478-934-3220	Cook County, 229-896-7456	Gilmer County, 706-635-4426
Brantley County, 912-462-5724	Coweta County, 770-254-2620	Glascock County, 706-598-2811
Brooks County, 229-263-4103	Crawford County, 478-836-3121	Glynn County, 912-554-7577
Bryan County, 912-653-2231	Crisp County, 229-276-2612	Gordon County, 706-629-8685
Bulloch County, 912-871-6130	Dade County, 706-657-4116	Grady County, 229-377-1312
Burke County, 706-554-2119	Dawson County, 706-265-2442	Greene County, 706-453-2083
Butts County, 770-775-8209	Decatur County, 229-248-3033	Gwinnett County, 678-377-4010
Calhoun County, 229-849-2685	DeKalb County, 404-298-4080	Habersham County, 706-754-2318
Camden County, 912-576-3219	Dodge County, 478-374-8137	Hall County, 770-535-8293
Candler County, 912-685-2408	Dooly County, 229-268-4171	Hancock County, 706-444-7573
Carroll County, 770-836-8546	Dougherty County, 229-436-7216	Haralson County, 770-646-2026
Catoosa County, 706-935-4211	Douglas County, 770-920-7224	Harris County, 706-628-4824
Charlton County, 912-496-2040	Early County, 229-723-3072	
Chatham County, 912-652-7981	Echols County, 229-559-5562	

Hart County, 706-376-3134	Monroe County, 478-994-7014	Tattnall County, 912-557-6724
Heard County, 706-675-3513	Montgomery County, 912-583-2240	Taylor County, 478-862-5496
Henry County, 770-288-8421	Morgan County, 706-342-2214	Telfair County, 229-868-6489
Houston County, 478-987-2028	Murray County, 706-695-3031	Terrell County, 229-995-2165
Irwin County, 229-468-7409	Muscogee County, 706-653-4200	Thomas County, 229-225-4130
Jackson County, 706-367-6344	Newton County, 770-784-2010	Tift County, 229-391-7980
Jasper County, 706-468-6479	Oconee County, 706-542-7078	Toombs County, 912-526-3101
Jeff Davis County, 912-375-6648	Oglethorpe County, 706-743-8341	Towns County, 706-896-2024
Jefferson County, 478-625-3046	Paulding County, 770-443-7616	Treutlen County, 912-529-3766
Jenkins County, 478-982-4408	Peach County, 478-825-6466	Troup County, 706-883-1675
Johnson County, 478-864-3373	Pickens County, 706-253-8840	Turner County, 229-567-3448
Jones County, 478-986-3958	Pierce County, 912-449-2034	Twiggs County, 478-945-3391
Lamar County, 770-358-5163	Pike County, 770-567-2010	Union County, 706-439-6030
Lanier County, 229-482-3895	Polk County, 770-749-2142	Upson County, 706-647-8989
Laurens County, 478-272-2277	Pulaski County, 478-783-1171	Walker County, 706-638-2548
Lee County, 229-759-6025	Putnam County, 706-485-4151	Walton County, 770-267-1324
Liberty County, 912-876-2133	Quitman County, 229-334-4303	Ware County, 912-287-2456
Lincoln County, 706-359-3233	Rabun County, 706-782-3113	Warren County, 706-465-2136
Long County, 912-545-9549	Randolph County, 229-732-2311	Washington County, 478-552-2011
Lowndes County, 229-333-5185	Richmond County, 706-821-2350	Wayne County, 912-427-5965
Lumpkin County, 706-864-2275	Rockdale County, 770-278-7373	Webster County, 229-828-2325
Macon County, 478-472-7588	Schley County, 229-937-1180	Wheeler County, 912-568-7138
Madison County, 706-795-2281	Screven County, 912-564-2064	White County, 706-865-2832
Marion County, 229-649-2625	Seminole County, 229-524-2326	Whitfield County, 706-278-8207
McDuffie County, 706-595-1815	Spalding County, 770-467-4225	Wilcox County, 229-365-2323
McIntosh County, 912-437-6651	Stephens County, 706-779-5501	Wilkes County, 706-678-2332
Meriwether County, 706-672-4235	Stewart County, 229-838-4908	Wilkinson County, 478-946-2367
Miller County, 229-758-4106	Sumter County, 229-924-4476	Worth County, 229-776-8216
Mitchell County, 229-336-2066	Talbot County, 706-665-3230	

PESTICIDE SAFETY AND OTHER PESTICIDE INFORMATION

USE PESTICIDES SAFELY

Allison Johnson, UGA Pesticide Safety Education Program Coordinator

Pesticides can be any material meant to kill, disable, or repel target pests. If not handled properly, many are also potentially toxic, or even lethal, to non-target plants and animals, including humans. Pesticide labels must be carefully followed. Following the label is both the law and enables YOU, the applicator, to use these materials safely and responsibly!

1. **Apply pesticides only when they are needed.** Properly identify the pest and evaluate whether it will cause enough damage to justify a pesticide application. Your local Cooperative Extension agent can help you identify and evaluate your pest problems.
2. **FOLLOW THE LABEL DIRECTIONS!** Most pesticide accidents are the result of not following the directions, restrictions, and precautions on the label. Avoid the temptation to use greater than the labeled rates; you increase your risk and you may injure or damage the site of application. Additionally, it is illegal to use any pesticide in a manner that is inconsistent with the label.
3. **Store pesticides safely.** Unfortunately, too many households have a pesticide stored within easy, unrestricted reach of children. Always keep pesticides in the original packaging with the label securely affixed. The storage area should be clearly marked and locked if possible. ALWAYS keep pesticides beyond the reach of children and animals. Never store pesticides with food, feed, medicines or clothing. NEVER store pesticides in any food or drink container!
4. **Prevent pesticide drift and runoff.** Never apply pesticides when there is no wind or when the wind is blowing more than 10 mph or when rain is imminent. Sites that receive regular pesticide applications should not be located near bodies of water or near sensitive areas, such as schools or wildlife habitats.
5. **Wear the proper protective clothing.** If you wear the label-prescribed protective equipment, your risk from applying pesticides is reduced. ALWAYS wear water-proof gloves that do not absorb pesticides, like rubber or nitrile, instead of leather or cotton. Wear a hat that does not absorb moisture

and eye protection when spraying overhead. Wear waterproof shoes or shoe coverings and if applying pesticides as a spray, carefully walk backward to avoid wetting legs and feet.

6. **Measure pesticides carefully.** Do not mix more pesticide than you need. It is much easier and cheaper to use diluted pesticides than to properly and safely dispose of them.
7. **When you use pesticides, wash your hands** before you eat, drink, use tobacco, or use the restroom. Shower as soon as you can, taking care to thoroughly clean your hair and fingernails. Wash the clothes you wore while applying pesticides before wearing them again. Separate your pesticide application garments from regular household laundry, washing them in a separate load.
8. **If you or someone else is exposed to a pesticide, take immediate action.** Remove any contaminated clothing. If pesticide is on the skin, wash it off immediately. If pesticide is in your eye(s), gently rinse with clean water for at least 15 minutes. If a pesticide is swallowed, get medical help immediately. DO NOT induce vomiting unless the label directs you to do so. Never give liquids or induce vomiting if a person is unconscious or convulsive. If pesticide is inhaled, move the individual to fresh air. **Promptly seek medical attention for all of these exposure events, and take the pesticide label or a copy with you to the medical professional.**

STORING THE PESTICIDE

1. Store pesticides in a locked and posted place that is accessible only to qualified individuals. Keep pesticides out of reach of children, unqualified people, or animals.
2. Store pesticides in their original containers with intact labels. NEVER place a pesticide in a food or beverage container.
3. Do not store pesticides with food, feed, veterinary supplies, or seed.

PROTECT HONEY BEES FROM PESTICIDES

Keith S. Delaplane, Extension Entomologist

Many pesticides are hazardous to honey bees and other floral visitors. Some are acutely toxic to bees, that is, exposed individuals very often die. Lower doses or exposures may be sub-lethal, but toxic enough to disable the exposed bees. Damage can be minimized if the pesticide user and the beekeeper cooperate and take proper precautions.

THE PESTICIDE USER'S ROLE

1. Use pesticides only as needed.
2. Select the least hazardous pesticides that will control the target pest.

3. Use the least hazardous method of application. Granular pesticide formulations are usually harmless to honey bees. Sprays drift less than dusts and are less likely to kill bees in nearby areas.
4. Do not apply pesticides when honey bees are active. Applications in late evening or night are least likely to kill bees. Do not apply pesticides when plants are in flower unless it is absolutely necessary.

DETERMINING PESTICIDE AMOUNT FOR BACKPACK SPRAYERS (per 1,000 Square Feet)

Gary L. Hawkins, Extension Engineer
Glen C. Rains, Extension Engineer

Backpack sprayers are often used to treat ornamental plants or small areas of turf. Pesticide recommendations are often based on amount per acre or other defined areas, such as amount per 1000 square feet. Regardless of the type of sprayer used to apply pesticides, the speed, pressure and nozzle height should be kept constant for accurate application. The backpack sprayer may require some modification so that it is better suited for application. A pressure gauge mounted on the tank side of the shutoff valve will allow continuous monitoring of the tank pressure, which must remain uniform. Optimum pressure control can be achieved by insert-

ing a pressure regulator between the pressure gauge and nozzle. To prevent dripping after the shutoff valve is closed, use a quick, positive-pressure shutoff valve or a strainer with a check valve. Nozzle clogging, a problem associated with the use of wettable powders, dry flowable (DF) and water dispersible granules (WDG) formulations can be reduced by inserting a 50 mesh in-line strainer and keeping the solution constantly agitated. The following is a procedure for determining the amount of pesticide for use on a given target site using rates expressed in amount per 1000 square feet.

Step 1. Measure the length and width of the test area to be sprayed. Then calculate the area to be covered.

Test Area is: length _____ ft x width _____ ft = _____ sq ft

Step 2. Fill sprayer with water and spray the test area. Record the amount of water needed to refill the sprayer.

Volume (ounces) per test area _____

Step 3. Find the label rate of material to be applied per 1000 square feet.

Rate _____ per 1000 sq ft

Step 4.
$$\frac{1000 \text{ sq ft} \times \text{Volume (ounces) per test area}}{\text{Test Area}} = \text{Volume (ounces) per 1000 sq ft}$$

■ **CALIBRATING BACKPACK SPRAYERS**

Step 5. Calculate the area covered per tank as follows:

$$\frac{\text{Tank volume (ounces)} \times 1000 \text{ sq ft}}{\text{Volume per 1000 sq ft}} = \text{Area covered per tank (sq ft)}$$

Step 6. Calculate amount of material to add to tank.

$$\frac{\text{Area per tank (sq ft)} \times \text{Label rate per 1000}}{1000 \text{ sq ft}} = \text{Amount to add (rate units)}$$

Solutions derived from above may need to be converted to a smaller unit in order to accurately measure the pesticide. The following conversions will help simplify this process.

CONVERSIONS:

VOLUME	WEIGHT
gallon x 128 = fluid ounces (fl oz)	weight ounces (wt oz) = pounds x 16 wt oz / pound grams (g) = wt ounces x 28.35 g / wt oz milligrams (mg) = grams x 1000 mg / gram
pints x 16 = fluid ounces (fl oz)	
fl oz x 29.57 = milliliters (ml)	
gallon x 4 = quarts (qts)	
quarts x 2 = pints (pts)	
fl oz x 2 = Tablespoons (Tbsp)	
tsp x 3 = Tablespoons (Tbsp)	
tsp x 5 = milliliters (ml)	

An example of using this conversion chart. If the rate calls for 0.25 gallons of material then converting to ounces would be done as follows:

1 gallon has 128 ounces, so multiply 0.25 gallons by 128 to get 32 ounces. So, you would need to measure out 32 ounces for your application. The same thing for a weight. If you need 0.25 pounds, then multiply 0.25 by 16. This is calculated as 0.25 pounds times 16 to get 4 weight ounces of material.

CALIBRATING TURFGRASS SPRAYERS (Gallons per 1,000 Square Feet)

Gary L. Hawkins, Extension Engineer
Glen C. Rains, Extension Engineer

Low-pressure boom sprayers are used frequently for applying chemicals on large areas such as golf courses and recreational areas. Application rates for turf are normally given in gallons per 1000 square feet. Calibrating a boom sprayer is not as difficult as it sounds. Calibrate your sprayer often to compensate for nozzle wear, pump wear and speed changes.

Calibrate with clean water. Check uniformity of nozzle output across the boom. Collect from each nozzle for a known time period. Each nozzle should be within 10

percent of the average output. Replace with new nozzles if necessary. When applying materials that are appreciably different from water in weight or flow characteristics, such as fertilizer solutions, etc., calibrate with the material to be applied. Exercise extreme care and use protective equipment when an active ingredient is involved.

Step 1. Determine the Effective Swath Width (W) per Nozzle

For boom spraying, the effective spray width of each nozzle (W) is equal to the distance in inches between two nozzles.

Step 2: Determine Travel Speed (MPH)

To determine the travel speed, measure a known distance. Use fence posts or flags to identify this distance. A distance over 200 feet and a tank at least half full are recommended. Travel the distance determined at your normal spraying speed and record the elapsed time in seconds. Repeat this step and take the average of the two measurements. Use the following equation to determine the travel speed in miles per hour:

$$\text{Travel Speed (MPH)} = \frac{\text{Distance (feet)} \times 0.68}{\text{Time (seconds)}}$$

(0.68 is a constant to convert feet/second to miles/hour)

Step 3. Determine Nozzle Flow Rate (GPM)

With the sprayer parked, operate the sprayer at the same pressure and catch the output from each nozzle in a measuring jar for one minute (or collect output for half a minute and then double the ounces collected) to determine the nozzle flow rate in ounces per minute (OPM) Then, convert the final average output in OPM to gallons per minute (GPM) using the following equation:

$$\text{GPM} = \frac{\text{OPM}}{128}$$

(conversion from gallons to ounces: 1 Gallon = 128 ounces)

■ **CALIBRATING TURFGRASS SPRAYERS**

Step 4. Determine the Actual Application Rate in Gallons per 1000 sq ft

Use the following equation to determine the gallons per 1000 sq ft application rate:

$$\text{Gallons per 1000 sq ft} = \frac{136 \times \text{gpm (per nozzle)}}{\text{MPH} \times W}$$

GPM: average nozzle flow rate in gallons per minute

MPH: travel speed in miles per hour

W: distance between two nozzles in inches

136 is a constant to convert units to gallons per 1000 sq ft

Step 5. Calculate the area covered per tank as follows:

$$\frac{\text{Tank Volume (gallons)} \times 1000}{\text{Application Rate (gallons per 1000 sq ft)}} = \text{Area covered per tank (sq ft)}$$

Step 6. Calculate amount of material to add to tank.

$$\frac{\text{Area covered per tank (sq ft)} \times \text{Material rate per 1000 sq ft}}{1000} = \text{Amount to add (rate units)}$$

HAND SPRAYER CALIBRATION FOR ORNAMENTALS AND TURF

Gary L. Hawkins, Extension Engineer

Glen C. Rains, Extension Engineer

Hand sprayers are often used to treat ornamental plants or small areas of turf. The directions on many ornamental pesticide product labels say to “spray until foliage is wet” or perhaps “spray until runoff.” Unfortunately, these directions are subject to each applicator’s interpretation of what “wet” or “runoff” is.

Recommendations are based on amount per 100 gallons. This is the dilution ratio for the chemical applied. Use the following to convert the 100 gallon rate to bed area rate.

1. Measure the length and width of the area to be sprayed. Then calculate the area to be covered.

Bed Area is: length _____ ft x width _____ ft = _____ sq ft

2. Fill sprayer with water and spray the area. Record the amount of water to refill the sprayer.

Gallons per bed area _____

3. Obtain the rate of material to be applied per 100 gallons.

Rate _____

4.
$$\frac{\text{Rate} \times \text{Gallons per bed area}}{100} = \text{Amount per bed area}$$

5. Calculate the total amount of material to be used for the application (total bed area) as follows:

$$\frac{\text{Amount per bed area} \times \text{Area to be sprayed}}{\text{Bed area in square feet}} = \text{Amount of material}$$

6. Total solution to prepare is:

$$\frac{\text{Gallons per bed area} \times \text{Area to be sprayed (sq ft)}}{\text{Bed area in square feet (sq ft)}} = \text{Total Solution}$$

Solutions derived from above may need to be converted to a smaller unit in order to accurately measure the pesticide. The following conversions will help simplify this process.

CONVERSIONS:

VOLUME	WEIGHT
gallon x 128 = fluid ounces (fl oz)	weight ounces (wt oz) = pounds x 16 wt oz / pound grams (g) = wt ounces x 28.35 g / wt oz milligrams (mg) = grams x 1000 mg / gram
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An example of using this conversion chart. If the rate calls for 0.25 gallons of material then converting to ounces would be done as follows:

1 gallon has 128 ounces, so multiply 0.25 gallons by 128 to get 32 ounces. So, you would need to measure out 32 ounces for your application. The same thing for a weight. If you need 0.25 pounds, then multiply 0.25 by 16. This is calculated as 0.25 pounds times 16 to get 4 weight ounces of material.