



IFAS EXTENSION

Restricted Use Pesticides¹

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Restricted use pesticides (RUP) are only for retail sale to, and use by, certified applicators or persons under their direct supervision, and only for those purposes covered by the applicator's certification. When a pesticide is classified as restricted, the label will state "Restricted Use Pesticide" at the top of the front panel. Below this heading may be a statement describing the reason for the restricted classification. There are various reasons which are determined by the U.S. Environmental Protection Agency (EPA) why a particular pesticide is classified as restricted. These criteria involve the EPA's determination that the pesticide may be hazardous to human health or to the environment even when used according to the label.

Some states, including Florida, adhere to the EPA's federal listing for determining those pesticide active ingredients that are classified as "restricted." Other states may require that certain other active ingredients not listed on the federal list be classified as "restricted" in their states due to local conditions, generally related to environmental concerns.

Reasons for RUP classification that are given in this guide may include terminology such as:

- Fetotoxicity – adverse effects on the fetus;
- Mutagenicity – causes genetic changes in the organism which may or may not be passed on to its next generation;
- Oncogenicity – causes tumors, but not necessarily malignant and
- Teratogenicity – causes birth defects.

The pesticide's label is the last word on use, regardless of its classification as a general use or a restricted use pesticide.

Table 1 provides a listing of common names of pesticides determined to be classified as restricted use by the EPA. With each entry, formulations that are regarded as restricted, their uses and the reason(s), if given, for their restricted classification are cited. This listing does not contain common names of pesticides that have had their registrations cancelled or those whose restricted status is no longer in effect, nor is there a listing of trade names. Be aware that the listing is slightly modified, generally on an annual basis. For updated listings of federal restricted use pesticides, see: <http://www.epa.gov/opprd001/rup>.

1. This document is PI-36, one of a series of the Pesticide Information Office, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. Published March 2005. Visit the EDIS Web Site at <http://edis.ifas.ufl.edu>.

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Table 1. Restricted use pesticides.

Pesticide common name	Specific formulations	Specific uses	Criteria for RUP
Acetochlor	Emulsifiable concentrate	Field corn, popcorn, forage/feeder corn	Ground and surface water concerns
Acrolein	As sole active ingredient	All uses	Human inhalation hazard, adverse effects on avian and aquatic organisms
Alachlor	All formulations	All uses	Oncogenic potential
Aldicarb	As sole active ingredient and in combination with other actives; all granular formulations	All uses	Accident history
Aluminum phosphide	As sole active ingredient	All uses	Human inhalation hazard
Amitraz	All formulations	Pears	Oncogenic potential
Amitrole	All formulations	All uses except homeowner	Oncogenic potential
Arsenic acide	All formulations except brush-on	All dessicant uses; all wood preservative uses	Oncogenicity, mutagenicity and repro/fetotoxicity
Arsenic pentoxide	All formulations	Wood preservative uses	Potential oncogenicity, mutagenicity, repro/fetotoxicity
Atrazine	All manufacturing and end use	Agricultural and industrial uses	Ground water contamination potential; worker exposure concerns
Avermectin	Emulsifiable concentrate	Cotton and citrus	Toxic to fish, mammals and aquatic organisms
Avitrol	All formulations	All uses	Hazard to fish and non-target birds
Azinphos-methyl	All liquids with greater than 13.5% concentration; others on a case-by-case basis	All uses	Human inhalation hazard, acute toxicity, hazard to avian, aquatic and mammalian species
Bendiocarb	Granular and wettable powder	Turf	Toxicity to aquatic and avian species
Biphenthrin	Emulsifiable concentrate	Cotton	Toxic to fish and aquatic organisms
Bis(tributyltin)oxide	Solution – ready to use	Antifouling paint	Toxic to aquatic organisms including shellfish
Carbofuran	All formulations except pellets and tablets	All uses	Acute inhalation toxicity; avian toxicity (granular)
Chlorethoxyfos	Granular	Corn: field, forage, pop, sweet	Acute human, avian and aquatic invertebrate toxicity
Chlorophacinone	Tracking powder, dust and ready to use 0.2% (EPA Reg. Nos. 7173-113 and 7173-172)	Inside buildings	Human hazard, potential for food contamination, possible inhalation hazard
Chloropicrin	All formulations greater than 2% and all formulations (rodent control)	All uses (greater than 2% including rodent control)	Acute inhalation toxicity, hazard to non-target organisms

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Chlorpyrifos	Emulsifiable concentrate	Wheat	Avian and aquatic toxicity
Chromic acid	All formulations except brush-on	All wood preservative	Oncogenicity, mutagenicity, teratogenicity and fetotoxic effects
Clofentezine	All formulations	All uses	Additional data required to remove the restriction
Coal tar	Solution – ready to use	Wood preservative	Oncogenicity and mutagenicity
Coal tar creosote	All formulations	Wood preservative	Possible oncogenic and mutagenic effects
Coumaphos	Flowable concentrate	Indoor food and indoor nonfood	Acute oral toxicity hazards
Creosote oil	All formulations	Wood preservative	Possible oncogenic and mutagenic effects
Cube resins other than Rote PM	Emulsifiable concentrate	Small fruits, currants, certain berries	Chronic eye and inhalation effects
Cuprous oxide	Ready to use	Certain berries	Not specified
Cyfluthrin	25% Emulsifiable concentrate	Agricultural	Acute toxicity to applicators, fish and other aquatic organisms
Cyhalothrin	Emulsifiable concentrate	Cotton	Environmental data requirements
Cypermethrin	All formulations	All agricultural crops	Oncogenicity, hazard to non-target organisms
Deltamethrin	Emulsifiable concentrate	Cotton	High toxicity to aquatic organisms
Diazinon	Granular, emulsifiable concentrate and wettable powders	Small fruits and certain berries	Avian and aquatic toxicity
Dichlobenil	2,6-dichlorobenzonitrile	Terrestrial	Conditional
Dichloropropene	All formulations (94% liquid concentrate is the only formulation)	All uses	Probable human carcinogen, oncogenic, acutely toxic by oral and inhalation routes
Diclofop methyl	All formulations	All uses	Oncogenicity
Dicrotophos	All liquid formulations 8% and greater	All uses	Acute dermal toxicity, residue effects on avian species
Diflubenzuron	Wettable powders	All uses	Hazard to wildlife
Dioxathion	All concentrate solutions or emulsifiable concentrates greater than 30%; all solutions 3% and greater for domestic uses	All uses	Acute dermal toxicity

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Disulfoton	All ECs 65% and greater, all ECs and concentrate solutions 21% and greater with fensulfothion 43% and greater, all ECs 32% and greater in combination with 32% fensulfothion and greater	All uses, commercial seed treatment (non-aqueous solution 95% and greater).	Acute dermal toxicity, inhalation hazard
Emamectin benzoate	4-epimethylamino-4-deoxykavermectin BLA and B1b benzoates	Insecticide, miticide	Toxicity to fish
Endrin	9.4% liquid (all others cancelled)	Bird perch use	Acute dermal toxicity, hazard to non-target organisms
Ethion	Only two products	All uses	Acute toxicity
Ethoprop	Emulsifiable concentrates 40% and greater (aquatic uses); all uses (granular and fertilizer formulations)	Aquatic uses (ECs 40% or greater); all uses (granular and fertilizer formulations)	Acute dermal toxicity
Ethyl parathion	All formulations	All uses	Inhalation hazard to humans, acute dermal toxicity, residue effects on mammalian, aquatic and avian species, accident history
Fenamiphos	Emulsifiable concentrates 35% and greater	All uses	Acute dermal toxicity, avian acute oral toxicity, acute inhalation toxicity
Fenbutatin-oxide	Wettable powder	Grapes	Very high toxicity to aquatic organisms
Fenitrothion	Emulsifiable concentrate, 93% soluble concentrate/liquid	Only forestry uses	Potential adverse effects on aquatic and avian species
Fenpropathrin	2.4 emulsifiable concentrate spray	Cotton	Environmental concerns: toxic to fish and aquatic organisms
Fenthion	Emulsifiable concentrate	Mosquitocide	Very high acute toxicity to birds, fish and aquatic invertebrates
Fenvalerate	Emulsifiable concentrates (30%)	Outdoor uses	Possible adverse effects on aquatic organisms
Fipronil	All formulations	Insecticide/miticide	Conditional amended
Hydrogen cyanamide	50% active ingredient	Desert grown grapes	Corrosive effects to skin and eyes
Lambda-cyhalothrin	All formulations	All uses	Toxicity to fish and aquatic invertebrates

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Pesticide common name	Specific formulations	Specific uses	Criteria for RUP
Lindane	All formulations for various uses	Commercial ornamentals, pecans, avocados, livestock, forestry, Christmas trees, dog dusts/shampoos and structural treatment	Possibly oncogenic
Magnesium phosphide	All formulations	All uses	Inhalation hazard
Methamidophos	Liquid formulations 40% and greater, dust formulations 2.5% and greater	All uses	Acute dermal toxicity, residue effects on avian species
Methidathion	All formulations	All uses except nursery stock, safflower and sunflower	Residue effects on avian species
Methiocarb	All formulations	Outdoor commercial and agricultural uses	Possible hazard to avian, fish and other aquatic organisms
Methomyl	As sole active ingredient in 1 to 2.5% baits (except 1% fly bait), all concentrate solution formulations and 90% wettable powder formulations (not in water soluble bags)	Nondomestic outdoor and all other registered uses (agricultural crops, ornamentals and turf)	Residue effects on mammalian species, other hazards – accident history
Methyl bromide	All formulations	All uses	Acute toxicity and accident history
Methyl isothiocyanate	Solution – ready to use	Fungicide for wood, wood preservative	Exceeds classification criteria of 40 CFR 152.170
Methyl parathion	All formulations	All uses	Residue effects on mammalian and avian species, hazard to bees, acute dermal toxicity
Mevinphos	All emulsifiable concentrates and liquid concentrates – psycodid filter fly liquid formulations – 2% dust	All uses	Acute dermal toxicity, residue effects on mammalian and avian species
Nicosamide	All wettable powders 70% and greater	All uses	Acute inhalation toxicity, effects on aquatic organisms
Nicotine	Liquid and dry formulations 14% and greater (greenhouse); all formulations (cranberries)	Greenhouse applications, all applications to cranberries	Acute inhalation toxicity, effects on aquatic organisms
Nitrogen, liquid	Solution – ready to use	Termiticide	Highly corrosive upon contact with skin or eyes

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Pesticide common name	Specific formulations	Specific uses	Criteria for RUP
Oxamyl	Liquid formulations, granular on a case-by-case basis	All uses	Acute oral toxicity, acute inhalation toxicity, avian oral toxicity
Oxydemeton methyl	All products	All uses	Reproductive effects
Paraquat	All formulations and concentrations except certain mixtures – see label	All uses	Human toxicological data, other hazards – use and accident history
Pentachlorophenol	All formulations	Wood preservative uses	Possible oncogenic, teratogenic and fetotoxic effects
Pentachlorophenol, Sodium S	All formulations	Wood preservative uses	Possible oncogenic, mutagenic and/or fetotoxic effects
Permethrin	All formulations	Agricultural crop uses	Highly toxic to aquatic organisms, oncogenicity
Phorate	Liquid formulations 65% and greater (all uses); all granular formulations (rice)	All uses (65% and greater); granular formulations (rice)	Acute oral and dermal toxicity for granulars, residue effects on avian and mammalian species (foliar application of liquid formulation only), effects on aquatic organisms
Phostebupirim	Granular	Corn: field, forage, pop, sweet	Toxicity to aquatic invertebrates
Picloram	All formulations and concentrations except Tordon 101R	All uses	Hazard to non-target organisms (non-target plants, both crop and non-crop)
Piperonyl butoxide	Emulsifiable concentrate	Small fruits, certain berries, currants	Not specified
Profenophos	Emulsifiable concentrate 59.4%, EPA Reg. Nos. 100-599 and 100-669	Cotton	Corrosive to eyes
Pronamide	All 50% wettable	All uses	Oncogenicity
Propanoic acid	Emulsifiable concentrate	Wheat, rice, edible chrysanthemum, cotton, clover, alfalfa, wheat-grass, sideoats grama, little bluestem	Not specified
Propetamphos	Emulsifiable concentrate 50%	Indoor domestic use	Not specified
Pyrethrins	Emulsifiable concentrate	No uses listed	Chronic eye effects
Resmethrin	All formulations	Mosquito abatement and pest control treatments at nonagricultural sites	Acute fish toxicity
Rotenone	2.5/5.0 EC, 5.0% +20.0% wettable powder	Fish toxicant	Chronic eye and inhalation effects

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S-fenvalerate	Emulsifiable concentrates (30%)	Outdoor uses	Possible adverse effects on aquatic organisms
Simazine	Emulsifiable concentrate	Grapes and certain berries	Not specified
Sodium cyanide	All capsules and ball formulations	All uses	Human inhalation hazard, hazard to non-target species
Sodium dichromate	All wood preservative formulations except brush-on	Wood preservative uses	Oncogenicity, mutagenicity, teratogenicity and fetotoxicity
Sodium fluoroacetate	All solutions and dry baits	All uses	Acute oral toxicity, hazard to non-target organisms, use and accident history
Sodium hydroxide	Ready to use solution	Control tree roots in sewage systems	Acute toxicity; eye, inhalation and dermal hazard
Sodium methyldithiocarbamate	32.7% anhydrous	Soil fumigant to control soilborne pests of ornamental, food and fiber crops and for root control in sewage systems	Dermal toxicity and teratogenicity. Acute toxicity of metam sodium and its intended use in controlling sewer root growth
Starlicide	98% concentrates	Bird repellent	Hazard to non-target organisms
Strychnine	Dry baits, pellets and powder formulations – see specific labels	Formulations greater than 0.5%: all uses. All formulations: all uses calling for burrow builders. Formulations less than 0.5%: all uses except below-ground hand application.	Acute oral toxicity hazard to non-target avian species; use and accident history
Sulfotepp	Sprays and smoke generators	All uses	Inhalation hazard to humans
Sulfuric acid	Solution – ready to use	Potato vine desiccant	Extremely corrosive – acute toxicity to humans
Sulfuryl fluoride	All formulations	All uses	Acute inhalation hazard and possible acute toxicity hazard in humans
Sulprofos	All formulations	All uses	Wildlife hazard
Tefluthrin	Granular formulations	Corn grown for seed	Environmental concerns
Terbufos	Granular formulations 15% and greater	All uses	Residue effects on avian species; acute oral and dermal toxicity
TFM	Impregnated material	Aquatic pest control	Complexity in use- requires specialized training, equipment and clothing

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Pesticide common name	Specific formulations	Specific uses	Criteria for RUP
Tralomethrin	All formulations	All agricultural crop uses	Toxicity to aquatic organisms
Tributyltin fluoride	Solution – ready to use	Antifouling paint	Toxicity to aquatic organisms including shellfish
Tributyltin methacrylate	Solution – ready to use	Antifouling paint	Toxicity to aquatic organisms
Triisopropranolamine	Emulsifiable concentrate	All uses	Hazard to non-target organisms, specifically plants both crop and noncrop
Triphenyltin hydroxide	All formulations	All uses	Possible mutagenic effects
Zinc phosphide	All dry formulations 60% and greater; all bait formulations; all dry formulations 10% and greater	All uses – non-domestic outdoor uses (other than 1-2% formulation in/around buildings); domestic uses	Hazard to non-target organisms, acute oral toxicity, acute inhalation toxicity