



earth-wise guide to

# Products

## Toxicity Ratings

### why grow green?

The Grow Green program recommends the least toxic approach to pest management and responsible fertilizer use in order to reduce the amount of landscape chemicals that runoff into our waterways and degrade water quality.

### about the products

In order to provide the most useful product-rating list to customers, several area gardening retail stores were surveyed to determine which products were most frequently available in the stores.

Those products (with a few additions to provide an adequate number of products per problem) are listed here. Texas Cooperative Extension Service and the City of Austin provide this information as a comparative reference only, and do not necessarily agree with the ratings provided. Listing of a specific product trade name does not constitute an endorsement of its use. Many pesticides and pesticide products other than those listed in these tables are available and may be suitable for use.

### about the ratings

Products rated by Grady J. Glenn, Ph.D., B.C.E., of the Pesticide Education Program, Texas Cooperative Extension who can be reached for questions at (979) 862-1035.

The rating system was developed by Philip Dickey of the Washington Toxics Coalition.

### Washington Toxics Coalition Criteria for Evaluating Lawn and Garden Chemicals

Home lawn and garden pest control products are rated for acute toxicity, chronic health effects, aquatic toxicity, off-target toxicity, persistence, and mobility. Factors determining the ratings in each category are:



**Acute Toxicity:** oral acute toxicity, inhalation toxicity, skin irritation and toxicity, potential for eye irritation and damage. Acute hazards are evaluated on the basis of the formulated product. EPA's toxicity categories are used as the basis of the ranking.

**Chronic Toxicity:** presence of ingredients which may cause cancer, reproductive or developmental effects, or other long-term toxicity.



**Aquatic Toxicity:** hazard to fish and other aquatic species as indicated by required warnings on product label.



**Off-Target Toxicity:** hazard to birds, bees and other beneficial insects, and pets, as indicated by required warnings on product label.



**Persistence:** half-life of active ingredient(s) in soil.



**Mobility:** soil mobility as indicated by soil binding and soil half-life.

Within each of these categories, four ratings are possible. The qualitative interpretation of these ratings is as follows:

- Lowest toxicity or environmental impacts.** Follow label precautions for safest possible use of product.
- Low to moderate toxicity or environmental impacts.** Factors should be taken into account in deciding whether and how to use the product.
- Higher toxicity or environmental impacts.** Product presents significant hazards that may be reduced by choosing a different product.
- Highest hazard level.** Product should be avoided or considered only as a last resort, especially if it received several of these ratings.
- N/A **Not enough information available for rating.** (no score)
- ? **Not applicable** (e.g. half-life for minerals)

### **Important Note:**

- Product ratings are based upon product labels, published data, or reference sources. Products may contain ingredients or contaminants unknown to us, whose presence, if known, would change the product's rating.
- Safety of a product depends to a great extent upon how it is used. Since individuals may exercise different safety precautions, a high rating is not a guarantee of a product's safety, just as a low rating does not necessarily imply that use will cause harm or damage.
- These ratings are presented as an informational service. A high rating does not constitute an endorsement of a particular product. Washington Toxics Coalition (WTC) makes no guarantees as to the safety or efficacy of any product rated by these criteria and assumes no responsibility or liability for any injury or damage which may occur as a result of using any such product.
- There is no universal set of criteria for ranking products. WTC has chosen an approach that looks at only the product itself and does not consider any safety protection offered by the package or the label directions. Safe and effective pest control may require a mix of tactics and products. WTC cannot offer hard and fast rules about which products to buy, but suggest giving priority to products with lower hazard ratings.

### **Ratings for Pest Control Products (including pesticide/fertilizer mixtures)**

#### **I. Acute Human Health Hazard**

Based directly on EPA toxicity/hazard categories:

- Slightly toxic or practically non-toxic. Mild or slight eye or skin irritant. Signal word CAUTION may be required on label.
- Moderately toxic or moderate skin or eye irritant. Signal word CAUTION.
- Very toxic or severe but reversible skin or eye irritant. Signal word WARNING.
- Extremely toxic or corrosive (causes skin or eye burns). Signal word DANGER.

#### **II. Other Human Health Hazards**

If product contains unknown or undisclosed "inert ingredients", the rating for chronic effects shall be "?" unless there are established chronic effects from the known ingredients sufficient to classify the product  or .

- All ingredients are known.** Product contains no ingredient listed as a known or suspected human or animal carcinogen, reproductive or developmental toxicant, or other ingredient associated with long-term hazard.
- All ingredients are known.** Product contains no known or suspected human or animal carcinogen as an ingredient.
- Contains possible carcinogen or reproductive or developmental toxicant, or use of similar products has caused long-term toxicity.
- Contains known, suspected, anticipated, or probable human carcinogen as an ingredient.

#### **III. Environmental Characteristics**

##### **A. Toxicity to Aquatic Organisms**

- Product presents no hazard to aquatic organisms.
- Product label warns to keep out of water.
- Product label warns of toxicity to fish or other aquatic life.
- Product label warns of high toxicity to fish or other aquatic life.

##### **B. Toxicity to Other Wildlife (selectivity of active ingredients)**

- Practically non-toxic to birds, bees, and other beneficials.
- Selective in toxicity (e.g. toxic only to caterpillars) but still toxic to important species.
- Product label warns of toxicity to particular species or product is known to be a broad-spectrum insecticide.
- Poses higher-level hazards to beneficial organisms or wildlife as indicated by label warnings such as "highly toxic" or "extremely toxic."

### C. Environmental Persistence

- Half-life of active ingredients = 7 days or less in average soil.
- Half-life of active or toxic ingredients = 8 - 29 days.
- Half-life of active or toxic ingredients = 30 - 180 days.
- Half-life of active or toxic ingredients > 180 days.

Sources: Oregon State University Extension Pesticide Properties Database,<sup>2</sup> Agricultural Research Service/US Department of Agriculture Pesticide Properties Database,<sup>3</sup> or the Hazardous Substances Databank,<sup>4</sup> in that order.

### D. Mobility (active ingredient only)

- Very low to extremely low mobility in soil
- Low mobility
- Moderate mobility
- High to very high mobility

If you have leftover or banned chemicals in your garage, please take them for safe disposal to a household hazardous waste facility.

Visit [www.yardwise.org/](http://www.yardwise.org/)

Source: OSU Extension Pesticide Properties Database.<sup>2</sup>

### E. Breakdown Products

If the breakdown products of any ingredient are known to be of similar or greater toxicity, persistence, or mobility than the original compound, the ratings should be based upon both the ingredient and its metabolites.

- <sup>1</sup> EXTTOXNET, The Extension Toxicology Network, Pesticide Information Profiles, <http://exttoxnet.orst.edu>
- <sup>2</sup> Oregon State University Extension Pesticide Properties Database, <http://npic.orst.edu/ppdmove.htm>
- <sup>3</sup> Agricultural Research Service, US Department of Agriculture Pesticide Properties Database, <http://ars.usda.gov/services/docs.htm?docid=6433>
- <sup>4</sup> Hazardous Substances Databank, Toxnet, National Library of Medicine, <http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HSDB>



Earth-wise designations are assigned to products where all known ratings are  or .

As with all pesticides, unknown hazards may exist and should be treated with extreme caution.

## Active vs. Inert Ingredients

A pesticide product has two main components: the active ingredient(s) and the inert (other) ingredient(s). The EPA requires the manufacturer to list on the label the percent of the active ingredient only – those substances that destroy, prevent or repel a pest.

An inert ingredient is any substance in a pesticide product having no pesticidal action. Inert ingredients are typically added to improve storage, handling, application, effectiveness, or safety. The EPA does not require pesticide manufacturers to divulge inert (“other”) ingredients as they are considered proprietary information.

While people may believe that inert ingredients are harmless – as the term suggests – in fact, they aren’t necessarily chemically or biologically inert and can contribute substantially to the hazards of the product. Some are in fact, more toxic than the active ingredient. Since 1997, 2300 inert ingredients have been used in pesticide products and more than a quarter (26%) of the inerts used, have been identified as hazardous by state, federal or international agencies.

With the exception of the acute toxicity category which analyzes the entire pesticide product, the following toxicity comparisons rate only the active ingredients. While the information is considered extremely useful, it is limited to the available public information.

# product toxicity comparisons






















































































































































Evaluation of active ingredients only; does not include toxicity information on inert or "other" ingredients.

## Toxicity/Threat:

 low 
  moderate 
  high 
  highest 
 NA not applicable  
 ? unknown toxicity 
  banned by EPA 
  earth-wise

## Hazards:



note	Product Name	active ingredient(s) / concentrations	human toxicity		aquatic life	birds, bees, pets	soil mobility	environmental persistence
			acute	chronic				
	Actinovate® SP	Streptomyces lydicus 0.037%						
	Amdro® Fire Ant Bait	Hydramethylnon 0.73%						
	Amdro® Fire Strike™ Fire Ant Bait	Hydramethylnon 0.036% methoprene						
	American Brand® Thuricide Concentrate	B.t. kurstaki						
	Bayer Advanced™ 24 Hour Grub Killer Plus Ready-to-Spread Granules	Trichlorfon 6.24%						
	Bayer Advanced™ All-in-One Lawn Weed & Crabgrass Killer Ready-to-Spray	2,4-D 4.85% Quindorac 1.61%						
	Bayer Advanced™ All-in-One Weed Killer for Lawns Concentrate	Monosodium acidmethanearsonate 2,4-D, MCPP, Dicamba						
	Bayer Advanced™ Complete Insect Dust Ready-to-Use	Permethrin 0.25%						
	Bayer Advanced™ Complete Insect Killer Dust for Gardens Ready-to-Use	Carbaryl 0.126%						
	Bayer Advanced™ Complete Insect Killer for Soil & Turf Ready-to-Spread Granules	Imidacloprid 0.15% Beta-cyfluthrin 0.5%						
	Bayer Advanced™ Disease Control for Roses, Flowers & Shrubs Concentrate	Tebuconazole 2.9%						
	Bayer Advanced™ Fire Ant Killer Ready-to-Use Dust	Beta-cyfluthrin 0.5%						
	Bayer Advanced™ PowerForce® Mosquito Killer Plus Outdoor Fogger	Tetramethrin 0.15%, Permethrin 0.15%, Piperonyl butoxide 0.75%						
	Bayer Advanced™ PowerForce® Multi-Insect Killer Concentrate	Cyfluthrin 0.75%						
	Bayer Advanced™ Season Long Grub Control Granules	Imidacloprid 0.25%						
	Bayer Advanced™ Tree & Shrub Insect Control Concentrate	Imidacloprid 1.47%						
	Black Flag® Backyard Fogger	Permethrin 0.2%, Tetramethrin 0.2%						
	Bonide® All Seasons® Spray Oil	Petroleum oil 98%						
	Bonide® Hot Pepper Wax Ready-to-Use	Capsaicin and related capsaicinoids 0.184%						
	Bonide® Remedy™	Potassium bicarbonate 85%						
	Capstar™	Nitenpyram						
	Concern® Citrus Home Pest Control™	D-limonene 5.8%						
	Concern® Copper Soap Fungicide®	Copper octonate 0.08%						
	Concern® Insect Killing Soap	Fatty acid soap						

If you are considering a product that is not listed on this fact sheet, look for one with the 'same' active ingredient(s) – it should have a similar toxicity rating unless the concentrations are different.

**Hazards:**



note

Product Name

active ingredient(s) / concentrations





human toxicity acute chronic

aquatic life

birds, bees, pets

soil mobility

environmental persistence




	Concern® Multi-Purpose Insect Killer	Pyrethrins 0.02%, Piperonyl Butoxide technical 0.2%	○	●	◐	◐	○	○
	Concern® Weed Prevention Plus™ 8-2-4	Corn gluten	○	○	◐	○	?	?
	Cutter® Advanced Insect Repellent	Picaridin 7%	◐	?	N/A	N/A	N/A	N/A
	Cutter® Bug Free Backyard® Concentrate	Lambda-cyhalothrin 0.5%	●	◐	◐	◐	◐	◐/◑
	Cutter® Skinsations (DEET)	DEET 7%	◐	?	N/A	N/A	N/A	N/A
	Eliminator® Ant Flea & Tick Killer Granules	Permethrin 0.50%	◐	◐	●	◐	○	◐/◑
	Eliminator® Bug & Snail Bait	Metaldehyde 2%, Carbaryl 5%	◐	◐	◐	●	◐	◐
	Eliminator® Fire Ant Killer Dust	Deltamethrin .05%	◐	◐	●	●	○	◐/◑
	Eliminator® Liquid Edger	Sodium cacodylate 0.53%, Cacodylic acid 0.09%	◐	●	◐	◐	○	●/◐
	Eliminator® Weed & Grass Killer	Glyphosate 1.92%	◐	?	◐	○	○	◐
	Eliminator®Sevin® 5% Dust	Carbaryl 5%	◐	◐	●	●	◐	◐
	Fertilome® Borer Bagworm, Leafminer & Tent Caterpillar Spray	Spinosad 0.5%	◐	?	◐	◐	○	◐
	Frontline® Plus	Fipronil Methoprene	◐	◐	N/A	N/A	N/A	N/A
	Garden Safe® Fungicide 3-in-1 Ready-to-Use	Extract of neem oil 0.9%	◐	?	◐	◐	○	○
	Garden Safe® Weed & Grass Killer	Salt of fatty acid 3.6%	◐	?	◐	○	○	○
	Garden Tech® Over'n Out!™ Fire Ant Killer Granules	Fipronil 0.0103%	◐	○	◐	◐	○	◐
	GardenTech® Sevin® Daconil® Ready-to-Use	Chlorothalonil 0.087%	◐	●	◐	○	◐	◐/◑
	GardenTech® Sevin® Lawn Insect Granules	Carbaryl 2%	◐	◐	●	●	◐	◐
	GardenTech® Sevin® Ready-to-Use 5% Dust Bug Killer	Carbaryl 5%	◐	◐	●	●	◐	◐
	Garlic GP® Ornamental Fungicide	Garlic Juice 98.2%, Potassium Sorbate 0.30%, Citric Acid 1.5%	N/A	N/A	N/A	N/A	N/A	N/A
	Green Light® Amaze® Grass & Weed Killer	Benefin, Oryzalin	◐	◐	◐	◐	◐	○
	Green Light® BT Worm Killer	Bacillus thuringiensis	◐	?	◐	◐	○	○
	Green Light® Bug and Snail Bait	Metaldehyde 1%, Carbaryl 5%	◐	◐	◐	●	◐	◐
	Green Light® Fire Ant Control with Conserve®	Spinosad 0.015%	◐	?	◐	◐	○	◐
	Green Light® Fung-Away Fungicide	Triadimefon (bayleton ) 0.5%	◐	◐	◐	○	◐	◐
	Green Light® Fung-Away Systemic Granules	myclobutanil .39%	◐	◐	●	●	◐	◐/◑
	Green Light® Yard Safe CedarCide® Repellent Granules	Cedar oil 2%	?	○	?	?	?	?
	Hi-Yield® Atrazine Weed Killer	Atrazine 40.8%, Related compounds 2.2%	◐	◐	◐	○	●	◐



If you are considering a product that is not listed on this fact sheet, look for one with the 'same' active ingredient(s) -- it should have a similar toxicity rating unless the concentrations are different.

**Hazards:**



note	Product Name	active ingredient(s) / concentrations	human toxicity		aquatic life	birds, bees, pets	soil mobility	environmental persistence
			acute	chronic				
	Precor®	Methoprene 0.085%, Permethrin 0.35%	○	◐	●	◐	○	◐
	Preen® Garden Weed Preventer	Trifluralin 1.47%	○	?	●	◐	○	◐
	Program® Flavor Tabs®	Lufenuron	?	?	N/A	N/A	N/A	N/A
	Repel® Lemon Eucalyptus Insect repellent	P-menthane	◐	?	N/A	N/A	N/A	N/A
	Revolution®	Selamectrin	◐	N/A	N/A	N/A	N/A	N/A
	Roundup® Extended Control Weed & Grass Killer plus Preventer Concentrate	Glyphosate 18%, Diquat 0.73%, Imazapic 0.3%	◐	?	◐	○	○	◐
	Roundup® Extended Control Weed & Grass Killer plus Preventer Ready-to-Use	Glyphosate 1%, Dithiopyr 0.03%, Imazapic 0.017%	◐	?	◐	○	○	◐
	Roundup® Poison Ivy & Tough Brush Killer Plus Ready-to-Use	Glyphosate 1% Triclopyr 0.1%	◐	?	◐	○	○	◐
	Roundup® Weed & Grass Killer Super Concentrate	Glyphosate 50.2%	◐	?	◐	○	○	◐
	Roundup® Weed and Grass Killer Ready-to-Use Plus	Glyphosate 2%, Pelargonic 2%	◐	?	◐	○	○	◐
	Safer® BioNEEM	Azadirachtin 0.09%	◐	?	◐	◐	○	○
	Safer® Caterpillar Killer	Bacillus thuringiensis, var. Kurstald (DIPPEL) 1.76%	◐	○	◐	◐	○	○
	Safer® Garden Fungicide	Sulfur 12%	◐	?	◐	○	○	N/A
	Safer® Insecticidal Soap Multi-purpose Insect Killer w/Seaweed	Fatty acid soap 2%	◐	?	◐	○	○	○
	Safer® Fire Ant Killer	d-limonene 78%	◐	?	◐	◐	○	○
	SC Johnson Off!® Power Pad Lamp	D-CIS/transallethrin 21.97%	◐	?	●	◐	◐	◐
	SC Johnson Off!® Botanicals Insect Repellent	P-menthane 3, 8 diol	◐	?	N/A	N/A	N/A	N/A
	SC Johnson Off!® Mosquito Coil For Outdoor Use	D-CIS transallethrin 0.33%, Sodium benzoate 0.15%	◐	?	●	◐	◐	◐
	Schultz™ Rose & Flower Insect Spray	Pyrethrins 0.02%, Piperonyl Butoxide 0.20%	◐	◐	◐	◐	○	○
	Scotts® Bonus® S Max Southern Weed and Feed & Fire Ant Killer	Bifenthrin 0.110%, Atrazine 1.089%	◐	◐	●	◐	●	◐
	Scotts® Bonus® S Southern Weed and Feed	Atrazine 1.055%	◐	◐	◐	○	●	◐
	Scotts® GrubEx® Season-Long Grub Killer	imidacloprid	◐	?	●	◐	◐	◐
	Scotts® Lawn Fungus Control	Thiophanate-methyl 2.3%	◐	◐	◐	◐	○	○
	Scotts® Turf Builder® Halts® Crabgrass Preventer	Pendimethalin 1.71%	◐	○	◐	◐	○	◐
	Scotts® Turf Builder® WinterGuard™ PLUS 2® Weed Control	2,4-D 1.04% MCPP 0.52%	◐	◐	◐	○	●	◐
	Scotts® Turf Builder® With PLUS 2® Weed Control	2,4-D 1.21%, MCPP 0.61%	◐	◐	◐	○	●	◐
	Scotts® Turf Builder® with SummerGuard™	Bifenthrin 0.86%	◐	?	●	◐	○	◐

# product toxicity comparisons

Evaluation of active ingredients only; does not include toxicity information on inert or "other" ingredients.

## Toxicity/Threat:

○ low    ◐ moderate    ◑ high    ● highest    NA not applicable  
 ? unknown toxicity    ☠ banned by EPA    🌍 earth-wise

## Hazards:



note	Product Name	active ingredient(s) / concentrations	human toxicity		aquatic life	birds, bees, pets	soil mobility	environmental persistence
			acute	chronic				
🌍	Serenade® Disease Control	<i>Bacillus subtilis</i> 1.34%	○	○	○	○	○	○
🌍	Serenade® Lawn Disease Control	<i>Bacillus subtilis</i> 1.34%	○	○	○	○	○	○
🌍	Sluggo®	Iron phosphate 1%	○	?	◐	○	○	N/A
	Spectracide Immunox® Lawn Disease Control Granules	myclobutanil .39%	◐	◑	●	●	◐	◑/○
	Spectracide Immunox® Plus Insect & Disease Control	Myclobutanil 0.78% Permethrin 1.25%	◐	◑	●	●	◐	◑/○
	Spectracide® Fire Ant Killer Granules Mound Destroyer™	Lambda-cyhalothrin 0.04%	◑	◐	◑	◑	◐	◑/○
🌍	Spectracide® Fire Ant Killer Plus Preventer Bait Once & Done!™	Indoxcarb 0.016%	◐	?	◐	◐	?	?
	Spectracide® Fire Ant Killer Ready-to-Use Dust	Permethrin 0.25%	◐	◑	●	●	○	◑/○
	Spectracide® Grub Stop™ Once & Done!™	Halofenozide 1.5%	◐	?	●	◐	○	◐
	Spectracide® Poison Oak & Poison Ivy Brush Killer EZ Spray™	2,4-D 0.493% 2-methy-4-chlorophenoxy	◐	◑	◑	○	●	◐
	Spectracide® Stump Remover	Potassium nitrate	◐	?	○	○	◑	?
	Spectracide® Triazicide® Once and Done!™ Insect Killer Ready-to-Use	Lambda-cyhalothrin 0.002%	◑	◐	◑	◑	◐	◑/○
	Spectracide® Vegetation Killer Concentrate	Prometon 2.2%, Diquat dibromide 0.72%	◐	○	◐	○	◐	◑
	Spectracide® Weed Stop® 2x for Lawns Concentrate	2,4-D 7.57%, Dicamba 0.71%, MCPP 2.73%, Sulfentrazone 0.18%	◐	◑	◑	○	●	◐
🌍	Spectracide® Weed Stop® 2x Weed Killer for Lawns Gel	Diquat dibromide 0.18% fluazifop-p-buytl .06% dicamba.04%	◐	?	◐	○	◐	○
	Sta-Green® St. Augustine Weed & Feed 27-3-8	Atrazine 1.102%, Related Compounds 0.058%	◐	◑	◑	○	●	◑
	Stinger NOsquito® Mosquito Attractant	Octenol	N/A	N/A	N/A	N/A	N/A	N/A
	Summit® Mosquito Dunks	<i>B.t. israeliensis</i> 10.31%	◐	?	○	○	N/A	○
🌍	SureFire® Garden Fungicide	Sulfur	◐	?	◐	○	○	N/A
🌍	SureFire® Weed & Grass Killer	Glyphosate	◐	?	◐	○	○	◑
	Vigoro® Ultra Weed & Feed 28-3-3	2,4-D 0.64%, MCPP 0.16%, Dicamba 0.03%	◐	◑	◐	○	●	◐
	Vigoro® Ultra Turf™ St. Augustine Weed & Feed with Atrazine 29-3-5	Atrazine 1.102%, Related compounds 0.058%	◐	◑	◑	○	●	◑

The City of Austin and the Texas Cooperative Extension provide this information as a comparative reference only. Listing of specific product trade names does not constitute an endorsement of its use. Many other pesticides and pesticide products are available and may be suitable for use other than those listed in these tables.

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