



# Understanding Pesticide Leaching Potential and Protecting Groundwater

This fact sheet gives pesticide applicators a reference to help protect groundwater. The table lists 32 pesticides with potential to leach into groundwater. Each pesticide listing includes uses, leaching potential ratings, and groundwater label advisories or restrictions. Pesticides in **bolded blue** are state restricted use pesticides for the protection of groundwater (WAC Chapter 16-228-1231(3)).

## What is leaching potential and how were the ratings determined?

- Leaching potential is an estimate of how likely pesticides may move through soil and into groundwater. Movement through soil and into groundwater can be affected by pesticide properties (solubility and half-life), soil characteristics (texture and pH), site conditions (precipitation and depth to groundwater), and management practices (method and rate of application).
- Leaching potential ratings were determined by using the Windows Pesticide Screening Tool, developed by the U.S. Department of Agriculture's Natural Resources Conservation Service.
- Default factors used in the tool include:
  - » Specific chemical properties for each active ingredient, including solubility and half-life.
  - » Fine sandy loam soil texture with a medium soil leaching potential.
  - » Broadcast application to more than one-half the field at a rate greater than one-quarter pound active ingredient per acre.

## What are the warnings and limitations for using this table?

- Pesticide applicators must always carefully read and follow the label. The list of pesticides presented here is not exhaustive; other pesticides may also leach into groundwater.
- The list is not intended to discriminate or endorse any brand names. The brand names listed are commonly used active ingredient formulations in Washington State.
- The list of uses is not all-inclusive. The uses listed represent the crops grown in Washington State likely to be treated with the active ingredient formulations.
- Breakdown products may have different leaching potentials. Some products contain more than one active ingredient. Leaching potential ratings use the pesticide properties of only the main active ingredient (present in the greatest quantity).
- Pesticide applicators must be aware of site conditions and management practices that affect pesticide leaching potential. For example, applying pesticides to soils saturated from precipitation or irrigation will increase leaching potential.

ACTIVE INGREDIENT	BRAND NAME EXAMPLES	USES	LEACHING POTENTIAL RATING	GROUNDWATER LABEL ADVISORIES OR RESTRICTIONS
2,4-D	2,4-D LV, Crossbow, Shredder	cereal grain, fallow land, forest, potato, soybean, strawberry, tree fruit, turf	High	Advisory
Acetochlor	Arrest, Surpass	corn, sorghum, soybean, sugar beet	Medium	Advisory
Aminocyclopyrachlor	Method	fencerow, industrial site, right-of-way, turf	High	Advisory
<b>Atrazine<sup>1</sup></b>	Aatrex, Atrazine	corn, conifer, fallow land, industrial site, right-of-way, sorghum, turf	High	Restriction
Azoxystrobin	Abound, Heritage, Quadris	asparagus, berry, brassica, cereal grain, cucurbit, grape, industrial site, legume, onion, ornamental, potato, stone fruit, tree nut, turf	Medium	Advisory
Bentazon, sodium salt	Basagran	bean, corn, mint, ornamental, pea, right-of-way, sorghum, soybean, turf	Medium	Advisory

ACTIVE INGREDIENT	BRAND NAME EXAMPLES	USES	LEACHING POTENTIAL RATING	GROUNDWATER LABEL ADVISORIES OR RESTRICTIONS
Boscalid	Emerald, Endura, Pristine	alfalfa, berry, bean, brassica, carrot, cucurbit, grape, hop, pome fruit, potato, stone fruit, tree nut, turf	Medium	Advisory
<b>Bromacil</b>	Hyvar, Krovar	fencerow, industrial site, right-of-way	High	Advisory
Chlorantraniliprole	Acelepryn, Altacor, Coragen	asparagus, berry, brassica, cereal grain, cucurbit, legume, mint, ornamental, potato, tree fruit, tree nut, turf	High	Advisory
<b>DCPA<sup>2</sup></b>	Dacthal	brassica, conifer, melon, ornamental, onion, strawberry, turf	Low	Advisory
Dicamba	Banvel, Vanquish	asparagus, cereal grain, fallow land, pasture, soybean, turf	High	Restriction
Dichlobenil	Barrier, Casoron	apple, berry, cherry, conifer, fencerow, grape, ornamental, pear, right-of-way	Medium	Advisory
Dimethoate	Dimethoate, Dimate	alfalfa, asparagus, brassica, cherry, conifer, lentil, melon, ornamental, potato, wheat	Medium	Advisory
<b>Diuron</b>	Direx, Karmex	apple, asparagus, berry, cereal grain, grape, industrial site, mint, pea, peach, pear, right-of-way	Medium	None
Fludioxonil	Cannonball, Medallion	bush berry, brassica, carrot, cereal grain, cucurbit, forest, legume, nursery, onion, ornamental, potato, turf	Medium	Advisory
<b>Hexazinone</b>	Velpar, Westar	alfalfa, blueberry, Christmas tree, forest, industrial site, pasture, right-of-way, turf	High	Advisory
Imazethapyr	Pursuit	alfalfa, clover, corn, legume	High	Restriction
Imidacloprid	Admire, Macho, Merit	berry, brassica, forest, grape, greenhouse, legume, melon, nursery, ornamental, potato, tree fruit, tree nut, soybean, turf	High	Advisory
Metalaxyl	Allegiance, MetaStar	brassica, cereal grain, cucurbit, forest, hop, legume, onion, ornamental, potato, tree fruit, tree nut, turf	High	Advisory
Methomyl	Lannate, Nudrin	apple, asparagus, blueberry, brassica, cereal grain, corn, cucurbit, grape, legume, mint, onion, potato, turf, wheat	High	Advisory
<b>Metolachlor</b>	Parallel, Stalwart	bean, chickpea, corn, lentil, pea, potato, sorghum	High	Advisory
<b>Metribuzin</b>	Dimetric, Metrixx	alfalfa, asparagus, barley, chickpea, carrot, corn, fallow land, grass seed, lentil, pea, potato, soybean, wheat	High	Advisory
Norflurazon	Solicam, Evital	alfalfa, asparagus, caneberry, cranberry, blueberry, grape, fencerow, hop, tree fruit, tree nut	Medium	Advisory
<b>Picloram</b>	OutPost, Tordon	barley, fallow land, forest, industrial site, oat, pasture, right-of-way, wheat	High	Advisory
<b>Prometon</b>	Pramitol	fencerow, industrial site, right-of-way	High	Advisory
Pyroxasulfone	Zidua	corn, fallow land, legume, mint, potato, wheat	Medium	Restriction
<b>Simazine</b>	Princep, Sim-Trol	apple, berry, cherry, conifer, corn, grape, ornamental, pear, turf	High	Restriction
Sulfentrazone	Spartan, Zeus	asparagus, berry, brassica, conifer, corn, fencerow, grape, industrial site, legume, mint, turf	High	Advisory
<b>Tebuthiuron</b>	Spike, Sprakil	industrial site, pasture, right-of-way	High	Restriction
Terbacil	Sinbar	alfalfa, apple, asparagus, berry, grass seed, mint, peach	High	Advisory
Thiamethoxam	Actara, Cruiser, Platinum	berry, brassica, cucurbit, Christmas tree, nursery, ornamental, potato, tree fruit	High	Advisory

<sup>1</sup> Atrazine is designated as both a state and federally restricted use pesticide for groundwater protection.

<sup>2</sup> Although DCPA has a low leaching potential rating, it quickly degrades in the environment and these breakdown products (TPA and MTP) have high leaching potentials.

**For more information on groundwater protection, please visit [agr.wa.gov/AgScience](http://agr.wa.gov/AgScience).**