




































**Relative toxicity of the main active ingredients  
contained in pesticides for domestic use  
used for green spaces**




















August 2011














## LAWNS AND PAVED SURFACES

Relative toxicity of the main active ingredients contained in pesticides for domestic use<sup>1</sup>

Active ingredient	Mammals toxicity including human <sup>2</sup>		Non targeted species toxicity <sup>2</sup>			Persistence in soil <sup>2</sup>	Leaching potential <sup>2</sup>	Main pests controlled	Some examples of end-use products containing the active ingredient (registration number)
	Acute toxicity	Long term effect							
<b>Insecticides</b>									
<b>Borax</b>				-	-	High	High	Ants	ORTHO HOME DEFENSE MAX ANT TRAPS (23372) SAFER'S ATTACK ANT TRAP (24355)
<b>Imidacloprid</b>						High	High	European chafer beetle, japanese beetle, black turfgrass Ataenius, leatherjackets	INSECTICIDE MERIT 0,25% G (29738)
<b>Insecticide soap</b>					-	Low	Low	Ants, earwigs et chinch bugs	SAFER'S TROUNCE HOSE-END LAWN & TURF INSECTICIDE (28680) SAFER'S TROUNCE LAWN & TURF INSECTICIDE (28681)
<b>Pyrethrins</b>						Low	Low	Ants, earwigs et chinch bugs	SAFER'S TROUNCE HOSE-END LAWN & TURF INSECTICIDE (28680) SAFER'S TROUNCE LAWN & TURF INSECTICIDE (28681)

Active ingredient	Mammals toxicity including human <sup>2</sup>		Non targeted species toxicity <sup>2</sup>			Persistence in soil <sup>2</sup>	Leaching potential <sup>2</sup>	Main pests controlled	Some examples of end-use products containing the active ingredient (registration number)
	Acute toxicity	Long term effect							
Spinosad						Moderate	Low	Sod webworms	CONSERVE 120 SC DOMESTIC NATURALYTE INSECT CONTROL PRODUCT (27285) SPINOSAD 0.5% SC NATURALYTE INSECT CONTROL PRODUCT (28602)
<b>Herbicides</b>									
Acetic acid <sup>3</sup>		-		-	-	-	-	Dandelion and plantain in lawns, undesirable vegetation growing in paved surfaces	ECO-CLEAR FOR FAST ACTING WEED CONTROL (26522) SCOTTS ECOSENSE FAST ACTING WEED CONTROL SPRAY (28300) GROTEK ELIMAWEED READY TO USE NON SELECTIVE HERBICIDE (28807)
Amitrole						Low	High	Undesirable vegetation growing in paved surfaces	LATER'S CALCIDE LIQUID VEGETATION KILLER (16645)
Corn gluten meal	-	-	-	-	-	-	-	Dandelion and crabgrass seeds	TURFMAIZE PRE-EMERGENT WEED SEED GERMINATION INHIBITOR (27491) NUTRITE PRE-EMERGENT CRABGRASS WEED SEED GERMINATION INHIBITOR (27727) BIOPROTEC <sup>INHIB</sup> (29144)

Active ingredient	Mammals toxicity including human <sup>2</sup>		Non targeted species toxicity <sup>2</sup>			Persistence in soil <sup>2</sup>	Leaching potential <sup>2</sup>	Main pests controlled	Some examples of end-use products containing the active ingredient (registration number)
	Acute toxicity	Long term effect							
Diquat						High	Low	Undesirable vegetation growing in paved surfaces	TOUCHDOWN DIQUAT QUICK-KILL READY-TO-USE HERBICIDE (29310)
Ferrous sulphate <sup>3</sup>		-	-	-	-	-	-	Moss	MOSS OUT MOSS CONTROL PRODUCT (24868) GREENLEAF MOSS CONTROL (25250) NURSERYLAND MOSS CONTROL (25251)
Iron (present as FeHEDTA)	-	-	-	-	-	-	-	Several species of broadleaf weeds, moss and algae	NEU1173H LARGE SIZE (29538) SCOTTS® ECOSENSE WEED B GON® READY-TO-SPRAY WEED CONTROL (30145)
Glufosinate-ammonium						Low	Low	Undesirable vegetation growing in paved surfaces	WILSON WIPE OUT TOTAL WEED & GRASS KILLER FAST CONTROL CONCENTRATE (23825) WILSON TOTAL WIPEOUT READY-TO-USE (25300)
Glyphosate						Moderate	Low	Undesirable vegetation growing in paved surfaces	ROUNDUP QUIK STIK NON-SELECTIVE HERBICIDE TABLETS (23786) GLYPHOSATE-TRIMESIUM 480 LG SUPER CONCENTRATE (26576)

Active ingredient	Mammals toxicity including human <sup>2</sup>		Non targeted species toxicity <sup>2</sup>			Persistence in soil <sup>2</sup>	Leaching potential <sup>2</sup>	Main pests controlled	Some examples of end-use products containing the active ingredient (registration number)
	Acute toxicity	Long term effect							
Herbicide soap					-	Low	Low	Moss and lichen	SAFER'S DE-MOSS MOSS KILLER (FOR STRUCTURAL SURFACES) (18141) FINALSAN CONCENTRATE (29017) SCOTT'S® ECOSENSE MOSS-B-GON HERBICIDAL SOAP CONCENTRATE MOSS & ALGAE KILLER (29303)
Mixture of capric and pelargonic acids <sup>3</sup>		-				-	-	Undesirable vegetation growing in paved surfaces	SAFER'S TOPGUN WEED KILLER HERBICIDE FAST ACTING (22244) SAFER'S SUPERFAST PATIO WEED KILLER RTU (23775)
<i>Sclerotinia minor</i> IMI 344141	-	-	-	-	-	-	-	Dandelion	SARRITOR SELECTIVE BIOLOGICAL LAWN WEED KILLER (28546)
Sodium chloride			-	-	-	-	-	Small ragweed	ADIOS AMBROS DOMESTIC WSG (28712)






















<sup>1</sup>Active ingredients mentioned in this table are contained in pesticides for domestic use (federal government) and classes 4 and 5 (provincial government).

































<sup>2</sup> Source : SAgE pesticides. Québec : ministère de l'Agriculture, des Pêcheries et de l'alimentation / ministère du Développement durable, de l'Environnement et des Parcs / Institut national de santé publique du Québec [[www.sagepesticides.qc.ca](http://www.sagepesticides.qc.ca)]
























<sup>3</sup> Source : FOOTPRINT Consortium, 2006. *FOOTPRINT Pesticides Properties Database* [[www.eu-footprint.org/home.html](http://www.eu-footprint.org/home.html)]
























## TREES, SHRUBS AND GARDENS




























### Relative toxicity of the main active ingredients contained in pesticides for domestic use<sup>1</sup>













Active ingredient	Mammals toxicity including human <sup>2</sup>		Non targeted species toxicity <sup>2</sup>			Persistence in soil <sup>2</sup>	Leaching potential <sup>2</sup>	Main pests controlled	Some examples of end-use products containing the active ingredient (registration number)
	Acute toxicity	Long term effect							
<b>Insecticides</b>									
Acetamiprid						Low	Low	Aphids, leafhoppers, leaf miners and whiteflies	ACETAMIPRID RTU INSECTICIDE (27126)
Allethrin						Moderate	Low	Aphids, caterpillars, mites and thrips	K-G HOUSE & GARDEN INSECT KILLER II (17952) WILSON HOUSE & GARDEN INSECT KILLER (24276)
<i>Bacillus thuringiensis kurstaki</i>						-	-	Caterpillars	SAFER'S BTK BIOLOGICAL INSECTICIDE (24536) BIOPROTEC ECO (27251)
Calcium sulphide or calcium polysulphide	-	-				-	-	Mealybugs, mites, scale insects	GREEN EARTH LIME SULPHUR CONCENTRATE (7386) LIME SULPHUR (27978)

Active ingredient	Mammals toxicity including human <sup>2</sup>		Non targeted species toxicity <sup>2</sup>			Persistence in soil <sup>2</sup>	Leaching potential <sup>2</sup>	Main pests controlled	Some examples of end-use products containing the active ingredient (registration number)
	Acute toxicity	Long term effect							
Carbaryl						Low	Low	A number of insects	WILSON ROSE DOCTOR INSECTICIDE-FUNGICIDE (10565) KING PTV POTATO, TOMATO & VEGETABLE DUST FOR BUGS AND BLIGHTS (29619)
Endosulfan						Moderate	Low	Borers and weevils	WILSON BORER & WEEVIL KILLER LIQUID INSECTICIDE (14009)
Insecticide soap					-	Low	Low	A number of insects	SAFER'S INSECTICIDAL SOAP (14668) SCOTT'S ECOSENSE BUG-B-GON INSECTICIDAL SOAP READY-TO-SPRAY CONCENTRATE (29272)
Malathion						Low	Low	Aphids, leafhoppers, leaf miners, loopers and mealybugs	WILSON 50% MALATHION LIQUID INSECTICIDE-MITICIDE (9802) C-I-L MALATHION ORNAMENTAL INSECT KILLER (17816)
Mineral oil						-	-	Mealybugs, mites, scales and spider mites	GREEN EARTH HORTICULTURAL OIL INSECT SPRAY (21348) LIQUID DORMANT OIL SPRAY (25307)
Natural gum resins	-	-	-	-	-	-	-	Ants, caterpillars and loopers	TREE TANGLEFOOT PASTE (13106)
Permethrin						Moderate	Low	Aphids and caterpillars	BIO-ENVIRONMENTAL PERMETHRIN WATER-BASED INSECTICIDE (22804)

Active ingredient	Mammals toxicity including human <sup>2</sup>		Non targeted species toxicity <sup>2</sup>			Persistence in soil <sup>2</sup>	Leaching potential <sup>2</sup>	Main pests controlled	Some examples of end-use products containing the active ingredient (registration number)
	Acute toxicity	Long term effect							
Phosalone						Low	Low	Aphids, apple maggots, codling moths and tarnished plant bugs	WILSON FRUIT PLUS (15416) WILSON FRUIT PLUS 1 (24092)
Pyrethrins						Low	Low	A number of insects	PYRENONE AQUEOUS PLANT SPRAY INSECTICIDE (15181) K-G HOUSE & GARDEN INSECT KILLER I (17953) SAFER'S TROUNCE YARD & GARDEN INSECTICIDE (20564)
Rotenon						Low	Low	A number of insects	CO-OP GARDEN INSECT DUST (5140) GREEN EARTH ROTENONE INSECT DUST (21350) KING BUG KILLER ROTENONE DUST (27817)
Silicon dioxide, present as diatomaceous earth	-	-	-	-	-	-	-	Ants and earwigs	WILSON ANTOUT ANT KILLER DUST (21936)
Spinosad						Moderate	Low	Caterpillars, gypsy moths and thrips	CONSERVE 120 SC DOMESTIC NATURALYTE INSECT CONTROL PRODUCT (27285) SPINOSAD 0.5% SC NATURALYTE INSECT CONTROL PRODUCT (28602)

Active ingredient	Mammals toxicity including human <sup>2</sup>		Non targeted species toxicity <sup>2</sup>			Persistence in soil <sup>2</sup>	Leaching potential <sup>2</sup>	Main pests controlled	Some examples of end-use products containing the active ingredient (registration number)
	Acute toxicity	Long term effect							
<b>Fungicides</b>									
<i>Bacillus subtilis</i> QST 713	-	-	-	-	-	-	-	Botrytis blight, leaf spot and powdery mildew	SERENADE GARDEN CONCENTRATE (28628) SERENADE GARDEN RTU (28629)
Calcium sulphide or calcium polysulphide						-	-	Apple scab and black spot	GREEN EARTH LIME SULPHUR CONCENTRATE (7386) LIME SULPHUR (27978)
Captan						Low	Low	Black spot, bulb rot, damping off and powdery mildew	GARDAL ROSE, FLOWER, & EVERGREEN DUST (14851) WILSON BULB & SOIL DUST (14852) KING FRUIT TREE & GARDEN SPRAY (9986)
Copper present as tribasic copper sulphate						High	Low	Anthraco-nose and black spot	WILSON GARDEN DOCTOR INSECTICIDE-FUNGICIDE (17424) GREEN EARTH BORDO COPPER SPRAY (17482)
Folpet						Low	Low	Anthraco-nose, black spot and powdery mildew	LATER'S FOLPET ROSE & GARDEN FUNGICIDE (15798) WILSON ROSE DOCTOR INSECTICIDE-FUNGICIDE (10565)

Active ingredient	Mammals toxicity including human <sup>2</sup>		Non targeted species toxicity <sup>2</sup>			Persistence in soil <sup>2</sup>	Leaching potential <sup>2</sup>	Main pests controlled	Some examples of end-use products containing the active ingredient (registration number)
	Acute toxicity	Long term effect							
Sulphur						High	High	Leaf spot, powdery mildew and rust	SAFER'S DEFENDER GARDEN FUNGICIDE READY TO USE (19061) GREEN EARTH GARDEN FUNGICIDE READY TO USE (21880)
<b>Herbicides</b>									
Dichlobenil						High	High	Undesirable vegetation	CASORON GRANULAR HERBICIDE (20233)
Mixture of capric and pelargonic acids <sup>3</sup>		-				-	-	Undesirable vegetation	SAFER'S TOPGUN WEED KILLER HERBICIDE (FAST ACTING) (22244) SAFER'S TOPGUN WEEDKILLER (23254)
Napropamide						High	High	Undesirable vegetation	GRANULAR WEED PREVENTER (28731) WILSON WEEDSTOP GRANULAR HERBICIDE (29049)
Trifluralin						High	Low	Undesirable vegetation	BIOBARRIER ROOT CONTROL SYSTEM (DOMESTIC) (28780)





Active ingredient	Mammals toxicity including human <sup>2</sup>		Non targeted species toxicity <sup>2</sup>			Persistence in soil <sup>2</sup>	Leaching potential <sup>2</sup>	Main pests controlled	Some examples of end-use products containing the active ingredient (registration number)
	Acute toxicity	Long term effect							
<b>Molluscicides</b>									
Ferric phosphate	-	-	-	-	-	-	-	Slugs and snails	SLUGGO SLUG & SNAIL BAIT FOR GARDENS (26102) SAFER'S SLUG & SNAIL BAIT (26240) SCOTTS ECOSENSE SLUG & SNAIL BAIT (28375)
Ferric sodium EDTA					-	-	-	Slugs and snails	SAFER'S SLUG & SNAIL KILLER (28775)
Metaldehyde						Moderate	High	Slugs and snails	KING SLUG & SNAIL PELLETS (28287) WILSON SLUGOUT FARINE (25908)
Silicon dioxyde, present as diatomaceous earth	-	-	-	-	-	-	-	Slugs	WILSON ANTOUT ANT KILLER DUST (21936) PROGREEN S.D. INSECT DUST (28746)

<sup>1</sup>Active ingredients mentioned in this table are contained in pesticides for domestic use (federal government) and classes 4 and 5 (provincial government).

<sup>2</sup> Source : SAgE pesticides. Québec : ministère de l'Agriculture, des Pêcheries et de l'alimentation / ministère du Développement durable, de l'Environnement et des Parcs / Institut national de santé publique du Québec. [[www.sagepesticides.qc.ca](http://www.sagepesticides.qc.ca)]

<sup>3</sup> Source : FOOTPRINT Consortium, 2006. *FOOTPRINT Pesticides Properties Database*, [[www.eu-footprint.org/home.html](http://www.eu-footprint.org/home.html)]






## Legend

	<p>This symbol is used to describe pesticides with <b>very high risk</b> to human health or the environment.</p> <p>These pesticides should be used in last resort and all necessary prevention measures must be taken to avoid all form of exposure and minimized risk for the environment.</p>
	<p>This symbol is used to describe pesticides with <b>high risk</b> to human health or the environment.</p> <p>These pesticides should be used in last resort and all necessary prevention measures must be taken to avoid all form of exposure and minimized risk for the environment.</p>
	<p>This symbol is used to describe pesticides with <b>moderate risk</b> to human health or the environment.</p> <p>Users should take all necessary prevention measures to avoid all form of exposure and minimized risk for the environment.</p>
	<p>This symbol is used to describe pesticides with <b>slight risk</b> to human health or the environment.</p> <p>Although these pesticides can normally be used without adverse effects, users should take all necessary prevention measures to avoid all form of exposure and minimized risk for the environment.</p>
	<p>This symbol is used to describe pesticides with <b>low risk</b> to human health or the environment.</p> <p>These pesticides should be used in first place. Although these pesticides can normally be used without adverse effects, users should take all necessary prevention measures to avoid all form of exposure and minimized risk for the environment.</p>





Source : SAgE pesticides. Québec : ministère de l'Agriculture, des Pêcheries et de l'alimentation / ministère du Développement durable, de l'Environnement et des Parcs / Institut national de santé publique du Québec. [[www.sagepesticides.qc.ca](http://www.sagepesticides.qc.ca)]

➤ Mammals toxicity including human

*Acute toxicity criteria*






Acute toxicity	Severity of the effects				
					
	Indicator values				
<b>LD<sub>50</sub> oral (mg/kg)</b>	≤ 5	> 5-50	> 50-300	> 300-2000	> 2000
<b>LD<sub>50</sub> dermal (mg/kg)</b>	≤ 50	> 50-200	> 200-1000	> 1000-2000	> 2000
<b>LC<sub>50</sub> inhalation (mg/l)</b>	≤ 0,05	> 0,05- 0,5	> 0,5-1	> 1-5	> 5
<b>Dermal irritation</b>		Severe to extreme irritant	Moderate irritant	Slight irritant	Little or no irritant
<b>Ocular irritation</b>		Severe to extreme irritant	Moderate irritant	Slight irritant	Little or no irritant
<b>Sensitization</b>		Yes	Potential		No

*Long term effects criteria*






Long term effects	Severity of the effects					
						
	Indicator values					
<b>Carcinogenicity</b>	Human carcinogen	Probable human carcinogen	Possible human carcinogen	Data inadequate for assessment of human carcinogenic potential		Not likely to be carcinogen to humans
<b>Genotoxicity</b>		Genotoxic for humans	Potential genotoxic for humans		No or inadequate data	No evidence of human genotoxicity
<b>Endocrine disruption</b>		Evidence of endocrine disruption	Potential of endocrine disruption		No or inadequate data	No evidence of endocrine disruption
<b>Reproductive effects</b>	Confirmed human effects	Suspected human effects	Confirmed animal effects	Suspected animal effects	No or inadequate data	No effect
<b>Development</b>	Confirmed human effects	Suspected human effects	Confirmed animal effects	Suspected animal effects	No or inadequate data	No effect

➤ **Non-target species toxicity**




***Bird toxicity criteria***

LD <sub>50</sub> (mg/kg)	Symbol
< 10	
10 – 50	
50- 500	
500- 2000	
> 20000	

***Freshwater fish and aquatic invertebrate toxicity criteria***

LC <sub>50</sub> (µg/L)	Symbol
< 100	
100 - 1000	
1000 -10 000	
10 000 -100 000	
> 100 000	

***Honey bee toxicity criteria***

LD <sub>50</sub> (µg/bee)	Symbol
< 2	
2 - 11	
> 11	

➤ **Persistence in soil**

*Environmental persistence potential criteria*

<b>DT<sub>50</sub> (jours)</b>	<b>Persistence potential</b>
< 30	Low
30 - 90	Moderate
≥ 90	High

➤ **Leaching potential**

*Leaching potential criteria*

<b>GUS* Index</b>	<b>Leaching potential</b>
< 1,8	Low
1,8 - 2,8	Moderate
≥ 2,8	High

\*Groundwater Ubiquity Score