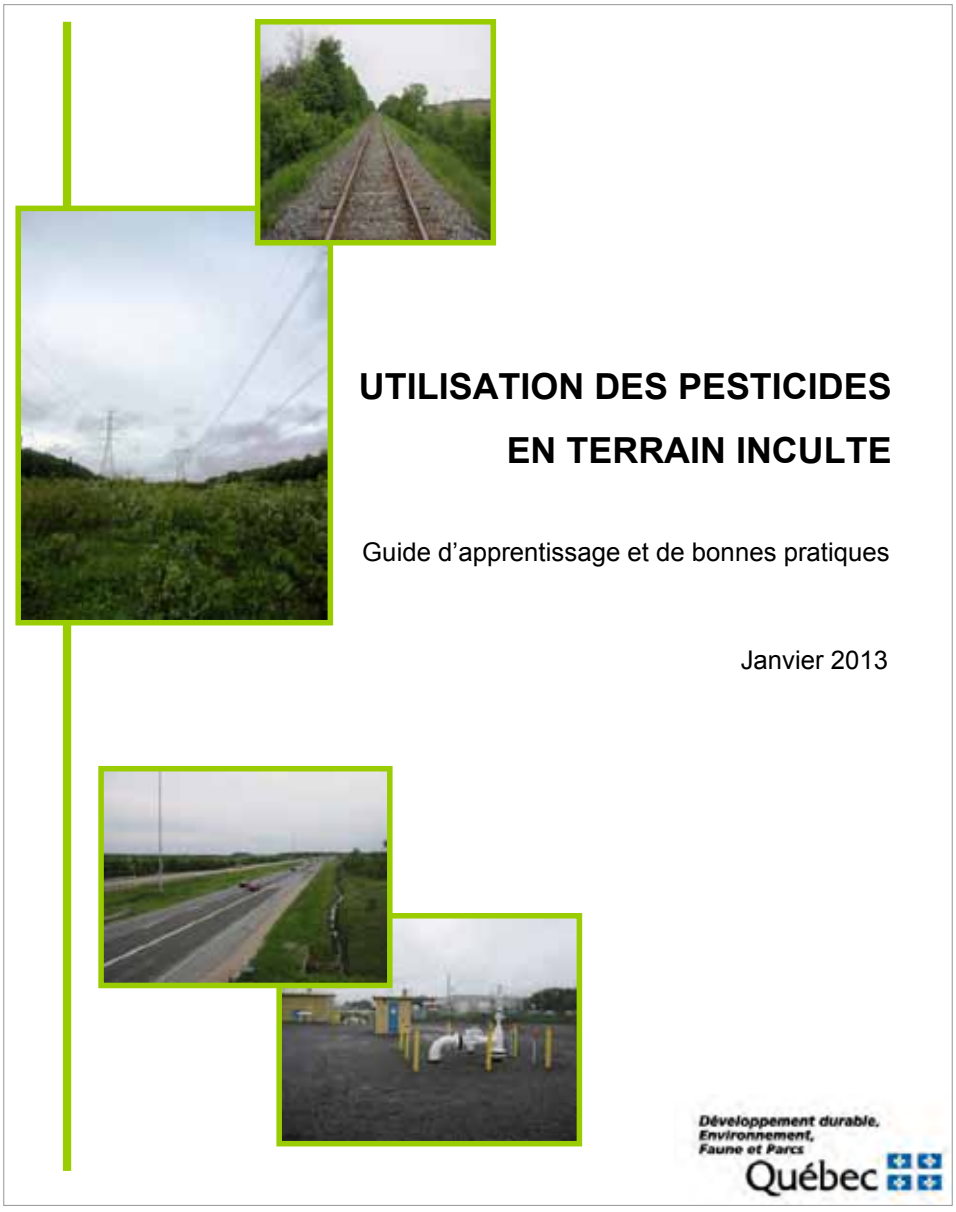
Use of pesticides
on Raw land

Pre-evaluation Appendix ◀
in addition to learning materials:



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PESTSTIA-02

Contents

Garlon® XRT

Garlon® XRT Label

(Booklet)

Dow AgroSciences™

Garlon™ XRT

Herbicide

GROUP	4	HERBICIDE

For the control of undesirable woody plants and annual and perennial broadleaved weeds on pas and rangelands, in non-crop areas such as rights-of-way, military bases and industrial sites, and i and woodland management areas.

COMMERCIAL

READ THE LABEL AND BOOKLET BEFORE USING
KEEP OUT OF REACH OF CHILDREN

GUARANTEE: triclopyr, present as butoxyethyl ester..... 755 g/L
Emulsifiable Concentrate

REGISTRATION NO.: 28945 PEST CONTROL PRODUCTS ACT

PRECAUTIONS
WARNING – SKIN AND EYE IRRITANT
POTENTIAL SKIN SENSITIZER

NET CONTENTS: 10 L - bulk

Dow AgroSciences Canada Inc.
Suite 2100, 450 - 1 Street S.W.
Calgary, Alberta
T2P 5H1
1-800-667-3852

PRECAUTIONS
WARNING – SKIN AND EYE IRRITANT
KEEP OUT OF REACH OF CHILDREN
Causes eye irritation. DO NOT get in eyes. May irritate the skin. Avoid contact with skin. Potential ski sensitizer. Wash thoroughly after handling. Avoid breathing vapour or spray mist. Where frequent inhalation of spray mist cannot be avoided, occupational exposure to pesticides can be reduced by us an air-purifying respirator equipped with an organic vapour-removing cartridge with a prefilter approve for pesticides (MSHA/NIOSH approval number prefix TC-23C), or a cannister approved for pesticides (MSHA/NIOSH approval number prefix TC-14G), or a NIOSH approved respirator with an organic vap (OV) cartridge or cannister with any N, R, P or HE prefilter. Avoid contact with treated foliage and oth contaminated surfaces while wet. When spraying, follow a “walk in, spray out” pattern to avoid contac with treated brush. Take precautions to avoid spray drift. Direct spray outward and away from self. Av overhead spraying. Select spray nozzle types and pressures to minimize drift potential.

Practice good personal hygiene. At all times when handling herbicide concentrate or applying the dilu mixture, plan events in such a way as to minimize personal exposure. Locate wash stations with an adequate supply of fresh water on work vehicles. Wash thoroughly with soap and water after handling and before eating or smoking. Bathe or take a hot shower after work using plenty of soap.

To minimize exposure when handling and applying Garlon XRT Herbicide:
- Read and follow directions in the Protective Equipment Requirements and Precautions sections on t label.
- Applicators should receive training on how to minimize personal exposure while applying high volum stem-foliage applied herbicides, including the “walk in, spray out” technique and on how to minimize contact with treated foliage.
- Applicators should be supervised to ensure that all label directions and proper application techniques followed.
- **For agricultural uses:** Do not enter or allow worker entry into treated areas during the restricted-e interval (REI) of 12 hours.
- **For non-crop uses:** Do not enter or allow entry into treated areas during the restricted-entry interv
- (REI) of 12 hours or until sprays have dried.
- Do not apply this product in a way that will contact workers or other persons, either directly or throug drift. Only protected handlers may be in the area during application.
- Users should wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.

PROTECTIVE EQUIPMENT REQUIREMENTS
Handling Concentrate
When handling concentrate, wear goggles or faceshield, chemical resistant gloves (nitrile or neopren clean coveralls over long-sleeved shirt and long pants, impermeable head covering and chemical resistant boots (rubber) during all mixing/loading activities. Remove clothing contaminated with concentrate promptly and wash before reuse. Exercise care in removal of contaminated clothing to av secondary skin contact. Segregate contaminated articles and launder separately from other clothing u a double rinse. Leather articles such as boots, belts or watchbands should be destroyed if contamina by concentrate.

Applying Dilute Spray Solution
When applying dilute solution and during equipment maintenance and repair, wear goggles, face shie safety glasses, clean coveralls over a long sleeved shirt and long pants, impermeable head covering, chemical resistant gloves (nitrile or neoprene) and chemical resistant foot wear such as rubber boots.

FIRST AID
Take container, label or product name and Pest Control Product Registration Number with you when seeking medical attention.
If swallowed: Call a poison control centre or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control centre or doctor. Do not give anything by mouth to an unconscious person.
If on skin or clothing: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control centre or doctor for treatment advice.
If inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. Call a poison control centre or doctor for further treatment advice.
If in eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control centre or doctor for treatment advice.

TOXICOLOGICAL INFORMATION
The decision of whether to induce vomiting or not should be made by an attending physician. If lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. No specific antidote. Employ supportive care. Treatment should be based on judgment of the physician in response to reactions of the patient.

Do not ship or store with food, feeds, drugs or clothing.

ENVIRONMENTAL HAZARDS
This product is highly toxic to fish, aquatic plants and aquatic invertebrates and is not labelled for application to water surfaces. Keep out of wetlands, lakes, ponds, streams, rivers and wildlife habitats at the edge of bodies of water. Do not contaminate water by cleaning of equipment or disposal of wastes. The use of this chemical may result in contamination of groundwater particularly in areas where soils are permeable (e.g., sandy soil) and/or where the depth to the water table is shallow.

Sensitive terrestrial and aquatic habitat must be protected. A buffer zone should be maintained to avoid overspray and drift into these habitats (refer to Ground Application and/or Aerial Application sections for the buffer zone requirements and spray drift control recommendations). Examples of habitat which may border treated areas are shelterbelts, wetlands (e.g., potholes), sloughs, dry slough borders, non-target wooded areas and vegetated areas adjacent to water.

STORAGE
Do not contaminate water, food or feed by storage or disposal. Store above -2°C or agitate container before use.

DISPOSAL
Recyclable Containers:
Do not reuse this container for any purpose. This is a recyclable container, and is to be disposed of at a container collection site. Contact your local distributor/dealer or municipality for the location of the nearest collection site. Before taking the container to the collection site:

1. Triple- or pressure-rinse the empty container. Add the rinsings to the spray mixture in the tank.
2. Make the empty, rinsed container unsuitable for further use.

If there is no container collection site in your area, dispose of the container in accordance with provincial requirements.

Returnable Containers:
Do not reuse this container for any purpose. For disposal, this empty container may be returned to the point of purchase (distributor/dealer).

For information on disposal of unused, unwanted product, contact the manufacturer or the provincial regulatory agency. Contact the manufacturer and the provincial regulatory agency in case of a spill, and for clean-up of spills.

GENERAL INFORMATION

Garlon XRT Herbicide is recommended for the control of undesirable woody plants and annual and perennial broadleaved weeds in pastures and rangelands; in non-crop areas, including: rights-of-way, electrical power lines, communication lines, pipelines, roadsides and railroads, fencerows and around farm buildings, military bases, industrial, manufacturing and storage sites; and in forest and woodland management areas (refer to "RESTRICTED USE AERIAL APPLICATION FOR FOREST MANAGEMENT AREAS (GREATER THAN 500 HECTARES) AND WOODLAND MANAGEMENT AREAS (500 HECTARES OR LESS)").

Among the woody plants controlled at the lower rate are:

alder	elderberry	pines♦
ash	elm♦	poplar
aspen	hawthorn	red maple♦
basswood	hickory	raspberry♦
beech	hop-hornbeam	sassafras
birch	honey locust♦	sumac
blackberry	locust	sycamore
buckthorn	maples	tamarack
cherry♦	mulberry	wild rose
chokecherry♦	oaks♦	willow
cottonwood	poison oak	witchhazel
dogwood		

♦These species may require treatment at the higher rate and may need to be retreated the following year, particularly if the original treatment was made at the lower rate.

Among the annual and perennial broadleaved weeds controlled are:

burdock	field bindweed	smooth bedstraw
chicory	lamb's-quarters	vetch
curled dock	ragweed	wild lettuce
dandelion	smartweed	

GENERAL USE PRECAUTIONS

- Do not apply this product in a manner inconsistent with the label.
- Do not apply Garlon XRT Herbicide directly to, or otherwise permit it to come into direct contact with desirable crops or other desirable broadleaved plants or non-target species and do not permit spray mists containing Garlon XRT Herbicide to drift onto them.

Avoid Spray Drift

Apply only when there is little or no hazard from spray drift. Small quantities of the spray, which may not be visible, may seriously injure susceptible crops and damage sensitive non-target habitat. A method must be used to detect air movement, lapse conditions or temperature inversions (stable air) such as the use of balloons or a continuous smoke column at or near the spray site or a smoke generator on the spray equipment. If the smoke develops into layers or indicates a potential for hazardous spray drift, DO NOT SPRAY.

PREHARVEST/GRAZING INTERVALS

Treated areas may be grazed by livestock or harvested for livestock feed provided that the following intervals are adhered to:

Grazing or harvesting green forage

I. Lactating dairy animals

A. Up to 3 L/ha: withhold lactating dairy animals from consuming treated green forage for 14 days following treatment.

B. 3 to 5 L/ha: withhold lactating dairy animals from consuming treated forage for 60 days following treatment.

II. Other livestock

A. Up to 3 L/ha: no grazing restriction.

B. 3 to 5 L/ha: do not graze or harvest green forage from treated area for 14 days following treatment.

III. **NOTE:** If less than 25% of a grazed area is treated, there is no grazing restriction (for other livestock only).

Haying (harvesting of dried forage)

I. Lactating dairy animals

A. For treatments up to 5 L/ha do not feed lactating dairy animals hay which had been harvested within 60 days of treatment.

II. Other livestock

A. Up to 3 L/ha: do not harvest for 7 days following treatment.

B. 3 to 5 L/ha: do not harvest hay for 14 days following treatment.

Slaughter Withhold
Withdraw livestock from grazing treated grass or consumption of treated hay at least 3 days prior to slaughter.

DIRECTIONS FOR USE
General
For best results, applications of Garlon XRT Herbicide should be made when woody plants and weeds are actively growing. Use higher rates when hard-to-control species such as ash, chokecherry, elm, maple (other than vine or big leaf), oaks or pine are present. If lower rates are used on hard-to-control species, resprouting may occur and retreatment may be necessary the following year.

When using a drift control agent, follow the manufacturer's directions for the correct mixing sequence.

Ground Application
Consult with the appropriate provincial authorities about use permits and the establishment of buffer zones.

Use Precautions
Garlon XRT Herbicide is not registered for application to water surfaces including lakes, ponds and streams and is highly toxic to fish, aquatic plants and aquatic invertebrates. Do not overspray such areas. In order to reduce the hazard of drift to non-target plants, aquatic species or sensitive habitat, ensure that appropriate buffer zones are maintained and refer to the section Spray Drift Control.

Apply only when the potential for drift to areas of human habitation or areas of human activity such as houses, cottages, schools and parks is minimal.

Do not use this product as a broadcast foliar spray in residential areas. Residential areas are defined as sites where bystanders including children may be potentially exposed during or after spraying. This includes around homes, schools, parks, playgrounds, playing fields, public buildings or any other areas where the general public including children could be exposed.

Spray Drift Control
The potential for spray drift with ground broadcast applications can be reduced by:

- Apply a coarse spray using large droplet producing nozzle tips. Do not apply with cone-type insecticide or other nozzles that produce a fine droplet spray.
- Use of Radiarc or Nalco-Trol or an equivalent drift control system or additive.
- Keep the spray boom as low as possible.
- Use a spray pressure no greater than is required to obtain a proper spray pattern for adequate plant coverage.
- For ground application, do not apply Garlon XRT Herbicide when wind velocity and direction pose a risk of spray drift. Apply when wind speed is low. For aerial application, please refer to "Use Precautions" for appropriate buffer zones under "Restricted Use."
- If a spray thickening agent is used, follow all use directions and precautions on the product label. When using a power sprayer and handgun, direct sprays no higher than the tops of the target plants.

GROUND EQUIPMENT APPLICATIONS
Single Stem Foliar
For control of woody plants up to 2.5 m in height, use Garlon XRT Herbicide at rates of 2.5 to 5 L in enough water to make 1000 L of spray solution. Use the higher rate for late summer application when growth rates are reduced or when hard-to-control species are present. Spray brush to the point of runoff. Coverage should be thorough to wet all foliage. To minimize spray drift do not use pressures exceeding 1400 kPa at the spray nozzle. Direct the spray away from crops or desired non-target vegetation. Use of a drift control system is suggested to minimize spray drift. For woody plants exceeding 2.5 m in height cut and spray regrowth or use one of the basal application methods.

Low Volume Foliar
For control of woody plants up to 2.5 m in height use this technique with knapsack or backpack sprayers equipped with flat fan or solid cone nozzles. Power sprayers and handguns may also be used. For control of woody plants, mix 0.6 to 3 L of Garlon XRT Herbicide in enough water to make 100 L of spray solution. Use of a rate in the upper end of the recommended range is suggested for control of basal sprouting and root suckering species and for tall, dense brush. Direct the spray solution to thoroughly wet the foliage of the target plants but not to the point of runoff. Apply after full leafout, but before autumn colouration. For woody plants exceeding 2.5 m in height cut and spray regrowth or use one of the basal application methods.

Broadcast Foliar
For woody plant control and broadleaved weed control, make applications with equipment that will assure uniform coverage of the low spray volume applied. Do not use pressure exceeding 275 kPa at the spray nozzle. Apply any time during the growing season. Use the higher rates for late summer applications when growth rates are reduced or when hard-to-control species are present.

Woody Plant Control
Mix 2.5 to 5 L of Garlon XRT Herbicide in a minimum of 200 L of water per hectare to ensure uniform coverage.

Broadleaved Weed Control
Mix 0.6 to 2.5 L of Garlon XRT Herbicide in a minimum of 200 L of water per hectare to ensure uniform coverage.

BASAL BARK APPLICATIONS

General Information and Mixing Instructions

For control of woody plants in rights-of-way, military bases, industrial sites and non-crop areas, use Garlon XRT Herbicide in oil mixtures prepared and applied as described below. Use a diluent such as mineral oil or vegetable oil. Add Garlon XRT Herbicide to the required amount of oil in the mixing tank and mix thoroughly. When mixing with oils commercially formulated for basal bark herbicide applications, read and follow the use directions and precautions on the product label prepared by the oil's manufacturer.

Use the higher spray mixture concentration of Garlon XRT Herbicide when treating basal sprouting and root suckering species or when applying during the dormant season. Use low nozzle pressure to minimize spattering of spray solution off the target stem.

One-Sided Low Volume

To control woody plants with stems less than 15 cm in basal diameter, mix 13 to 19 L of Garlon XRT Herbicide in enough oil diluent to make 100 L of spray mixture. Apply with a knapsack or backpack sprayer using a flat fan or solid cone nozzle, or wick attachement. Low pump pressures of 70 to 210 kPa are recommended. Spray the basal parts of at least one side of each stem to thoroughly wet the lower 30 cm, including the root collar area, but not to the point of runoff. Apply at any time, including the winter months, except when snow or water prevents spraying at the ground line.

Streamline

To control woody plants, mix 13 to 19 L of Garlon XRT Herbicide in enough oil to make 100 L of spray mixture. Apply using a knapsack or backpack sprayer with a flat fan or solid cone nozzle, or wick attachment. Low pump pressures of 70 to 210 kPa are recommended. Apply sufficient spray to one side of stems less than 8 cm in basal diameter to form a band 5 cm in width. When the optimum amount of spray mixture is applied, the treated zone should widen to encircle the stem within approximately 30 minutes. Treat both sides of stems which are 8 to 15 cm in basal diameter. Direct the spray at a point on the stem that is approximately 30 to 50 cm above ground level. Optimal results are achieved when applications are made to young vigorously growing stems which have not developed the thicker bark characteristics of slower growing, understory trees in older stands. Apply at any time, including the winter months, except when snow or water prevents spraying at the desired height above ground level.

Cut Stump Treatment

To control resprouting of cut stumps of woody species, mix 13 to 19 L of Garlon XRT Herbicide in enough oil to make 100 L of spray mixture. Apply with a backpack or knapsack sprayer using a flat fan or a solid cone nozzle. Low pump pressures of 70 to 210 kPa are recommended. Thoroughly wet the outer portion of the cut surface adjacent to the cambium and the sides of the stumps, including the root collar area, but not to the point of runoff. Apply at any time, including the winter months, except when snow or water prevents spraying to the ground line. Care must be given to ensure treatment of all cut stems in a clump.

NOTE TO USER: READ THE FOLLOWING BEFORE USING THIS PRODUCT FOR THE INDICATED SPECIAL USE APPLICATIONS: The DIRECTIONS FOR USE for this product for the use(s) described below were developed by persons other than Dow AgroSciences Canada Inc. and accepted for registration by Health Canada under the User Requested Minor Use Label Expansion program. Dow AgroSciences Canada Inc. itself makes no representation or warranty with respect to performance (efficacy) and/or crop tolerance (phytotoxicity) claims for this product when used on the crop(s) listed below.

Accordingly, the User assumes all risks related to performance and crop tolerance arising, and agree to hold Dow AgroSciences Canada Inc. harmless from any claims based on efficacy and/or phytotoxicity in connection with the use(s) described below.

DIRECTIONS FOR USE

LOWBUSH BLUEBERRY SITE PREPARATION: Make one application per year. Apply as a directed ground spray. Direct contact of the spray with the blueberry plant will cause severe damage.

Woody plants controlled: alder, ash, birch, chokecherry†, maples (red maple†), and poplar.
†may require higher rates and a repeat application the following year for control.

Application rate: Refer to the **Basal Bark Application** section of the main Garlon XRT Herbicide label for the application rate to use.

CHRISTMAS TREE PLANTATIONS
For the control of labelled weeds, including smooth bedstraw, in Christmas tree plantations, apply Garlon XRT at the rate of 635 millilitre per hectare in 250 to 300 litres of water as a directed spray below the branches. The spray should not contact the branches of the Christmas trees as injury will occur. The use of shields will help prevent direct contact with the tree branches. Ensure complete coverage of the leaves of the target weeds. Apply to trees at least 1.2 metres tall.

Apply Garlon XRT Herbicide after the buds of the Christmas trees have hardened off and no lammas growth is present.

Do not apply in the year of planting. Apply only once per year.

Refer to the main Garlon XRT label for additional details and instructions.

RESTRICTED USE
Garlon XRT Herbicide may be applied by air for control of susceptible woody plants growing on rights-of-way, industrial sites and military bases.

NOTICE TO USER: This pest control product is to be used only in accordance with the directions on the label. It is an offence under the *Pest Control Products Act* to use this product in a way that is inconsistent with the directions on the label. The user assumes the risk to persons or property that arises from any such use of this product.

NATURE OF RESTRICTION: This product is to be used only in the manner authorized; consult provincial pesticide regulatory authorities about use permits.

DIRECTIONS FOR USE
Aerial Application
Apply only by fixed-wing or rotary aircraft equipment which has been functionally and operationally calibrated for the atmospheric conditions of the area and the application rates and conditions of this label.

Label rates, conditions and precautions are product specific. Read and understand the entire label before opening this product. Apply only at the rate recommended for aerial application on this label. **Where no rate for aerial application appears for the specific use, this product cannot be applied by any type of aerial equipment.**

Ensure uniform application. To avoid streaked, uneven or overlapped application, use appropriate marking devices

Use Precautions

▶ Use of pesticides on Raw Land

Apply only when meteorological conditions at the treatment site allow for complete and even crop coverage. Apply only under conditions of good practice specific to aerial application as outlined in the *National Aerial Pesticide Application Manual,* developed by the Federal/Provincial/Territorial Committee on Pesticide Management and Pesticides.

Do not apply to any body of water. Avoid drifting of spray onto any body of water or other non-target areas. Specified buffer zones should be observed.

Coarse sprays are less likely to drift, therefore, avoid combinations of pressure and nozzle type that will result in fine particles (mist). Do not apply during periods of dead calm or when wind velocity and direction pose a risk of spray drift. Do not spray when the wind is blowing towards a nearby sensitive crop, garden, terrestrial habitat (such as shelter-belt) or aquatic habitat.

Operator Precautions
Do not allow the pilot to mix chemicals to be loaded onto the aircraft. Loading of premixed chemicals with a closed system is permitted.

It is desirable that the pilot have communication capabilities at each treatment site at the time of application.

The field crew and the mixer/loaders must wear chemical resistant gloves, coveralls and goggles or face shield during mixing/loading, cleanup and repair. Follow the more stringent label precautions in cases where the operator precautions exceed the generic label recommendations on the existing ground boom label.

All personnel on the job site must wash hands and face thoroughly before eating and drinking. Protective clothing, aircraft cockpit and vehicle cabs must be decontaminated regularly.

Product Specific Precautions
Read and understand the entire label before opening this product. If you have questions, call the manufacturer at 1-800-667-3852 or obtain technical advice from the distributor or your provincial agricultural representative. Application of this specific product must meet and/or conform to the precautions and application rates set out below.

ENVIRONMENTAL HAZARDS
This product is highly toxic to fish, aquatic plants and aquatic invertebrates and is not labelled for application to water surfaces. Keep out of wetlands, lakes, ponds, streams, rivers and wildlife habitats at the edge of bodies of water. Do not contaminate water by cleaning of equipment or disposal of wastes. The use of this chemical may result in contamination of groundwater particularly in areas where soils are permeable (e.g., sandy soil) and/or where the depth to the water table is shallow.

Aerial application must only be done on the basis of provincial use permit. Buffer zones are specified to protect the sensitive areas as identified in the Environmental Hazards section of the product label.

Among the species controlled are:

alder	elderberry	pines♦
ash	elm♦	poplar
aspen	hawthorn	red maple♦
basswood	hickory	raspberry♦
beech	hop-hornbeam	sassafras
birch	honey locust♦	sumac
blackberry	locust	sycamore
buckthorn	maples	tamarack
cherry♦	mulberry	wild rose
chokecherry♦	oaks♦	willow
cottonwood	poison oak	witchhazel
dogwood		

♦These species may require treatment at the higher rate and may need to be retreated the following year, particularly if the original treatment was made at the lower rate.

DIRECTIONS FOR USE:
AERIAL APPLICATION
Garlon XRT Herbicide may be applied by either fixed or rotary wing aircraft for the control of susceptible woody plants growing on rights-of-way, industrial sites and military bases. Use 2.5 to 5 L of Garlon XRT Herbicide in a minimum spray volume of 30 L per hectare. Delivery systems suggested for use in applying Garlon XRT Herbicide by air include: booms equipped with coarse droplet producing conventional disc and core nozzles (such as D8-46 or D10-46), the Microfoil boom or the Thru-Valve boom. Ensure uniform and adequate coverage is achieved and that equipment has been accurately calibrated. Use higher application rates and volumes when plants are dense or under drought conditions.

USE PRECAUTIONS
Garlon XRT Herbicide is not registered for application to water surfaces including lakes, ponds and streams and is highly toxic to fish, aquatic plants and aquatic invertebrates. Do not overspray such areas. In order to reduce the hazard of drift to sensitive areas as identified in the Environmental Hazards section of the label, ensure that appropriate buffer zones are maintained as outlined below.
Use only closed mixing/loading systems for aerial application.

BUFFER ZONE TABLES FOR GARLON XRT HERBICIDE

A. BUFFER ZONES FROM AQUATIC HABITATS

A buffer zone should be maintained to avoid overspray and drift into wetlands, lakes, ponds, streams, rivers, and wildlife habitats at the edge of bodies of water. Appropriate buffer zones, based on aircraft type, boom height, droplet spectrum, and rate of application, are as follows.

For application to rights-of-way, buffer zones for protection of sensitive terrestrial habitats are not required. However, the best available application strategies which minimize off-site drift, including meteorological conditions (e.g., wind directions, low wind speed) and spray equipment (e.g., coarse droplet sizes, minimizing height above canopy), should be used. Applicators must, however, observe the specified buffer zones for protection of sensitive aquatic habitats.

APPLICATION BY FIXED WING AIRCRAFT

1) DROPLET SPECTRUM: COARSE (VMD 351 µm; range 163 to 595 µm)

Rate of Application (L Garlon XRT/ha)	Buffer Zones (m) from Aquatic Habitats (by Boom Height) †			
	≤ 5 m	> 5-10 m	>10-20 m	>20-30 m
2.5 L/ha	10	31	71	112
>2.5 to 3.8 L/ha	18	43	94	150
>3.8 to 5 L/ha	26	56	122	205

2) DROPLET SPECTRUM: VERY COARSE (VMD 461 µm; range 224 to 787 µm)

Rate of Application (L Garlon XRT/ha)	Buffer Zones (m) from Aquatic Habitats (by Boom Height)			
	≤ 5 m	> 5-10 m	>10-20 m	>20-30 m
2.5 L/ha	5	19	54	91
>2.5 to 3.8 L/ha	10	28	69	116
>3.8 to 5 L/ha	14	35	82	142

† Boom height is the distance between the target vegetation (e.g. canopy) and the boom of the aircraft. The buffer zone is the distance between the sensitive habitat and the downwind edge of the spray boom. For example, these charts are read as follows: at an application rate of 3.8 L/ha, a boom height of 10 m, and a coarse droplet spectrum (VMD 351 µm), maintain a 17 m buffer zone between aquatic habitats (e.g., wetlands, lakes, ponds, streams, rivers, and wildlife habitats at the edge of bodies of water) and the downwind edge of the spray boom.

APPLICATION BY ROTARY AIRCRAFT

1) DROPLET SPECTRUM: COARSE (VMD 351 µm; range 163 to 595 µm)

Rate of Application (L Garlon XRT/ha)	Buffer Zones (m) from Aquatic Habitats (by Boom Height)			
	≤ 5 m	> 5-10 m	>10-20 m	>20-30 m
2.5 L/ha	5	13	47	86
>2.5 to 3.8 L/ha	8	17	59	108
>3.8 to 5 L/ha	12	20	72	144

2) DROPLET SPECTRUM: VERY COARSE (VMD 461 µm; range 224 to 787 µm)

Rate of Application (L Garlon XRT/ha)	Buffer Zones (m) from Aquatic Habitats (by Boom Height)			
	≤ 5 m	> 5-10 m	>10-20 m	>20-30 m
2.5 L/ha	3	10	37	71
>2.5 to 3.8 L/ha	6	12	46	87
>3.8 to 5 L/ha	7	14	53	103

B. BUFFER ZONES FROM TERRESTRIAL HABITATS

A buffer zone should be maintained to avoid overspray and drift into sensitive terrestrial wildlife habitats. Consult the Provincial Pesticide Authority regarding the determination of these areas. Appropriate buffer zones, based on aircraft type, boom height, droplet spectrum, and rate of application, are as follows.

For application to rights-of-way, buffer zones for protection of sensitive terrestrial habitats are not required. However, the best available application strategies which minimize off-site drift, including meteorological conditions (e.g., wind directions, low wind speed) and spray equipment (e.g., coarse droplet sizes, minimizing height above canopy), should be used. Applicators must, however, observe the specified buffer zones for protection of sensitive aquatic habitats.

APPLICATION BY FIXED WING AIRCRAFT

1) DROPLET SPECTRUM: COARSE (VMD 351 µm; range 163 to 595 µm)

Rate of Application (L Garlon XRT/ha)	Buffer Zones (m) from Terrestrial Habitats (by Boom Height)			
	≤ 5 m	> 5-10 m	>10-20 m	>20-30 m
2.5 L/ha	18	36	69	99
>2.5 to 3.8 L/ha	26	45	82	116
>3.8 to 5 L/ha	31	53	92	132

2) DROPLET SPECTRUM: VERY COARSE (VMD 461 µm; range 224 to 787 µm)

Rate of Application (L Garlon XRT/ha)	Buffer Zones (m) from Terrestrial Habitats (by Boom Height)			
	≤ 5 m	> 5-10 m	>10-20 m	>20-30 m
2.5 L/ha	14	27	56	82
>2.5 to 3.8 L/ha	18	35	69	98
>3.8 to 5 L/ha	21	40	76	112

APPLICATION BY ROTARY AIRCRAFT

1) DROPLET SPECTRUM: COARSE (VMD 351 µm; range 163 to 595 µm)

Rate of Application (L Garlon XRT/ha)	Buffer Zones (m) from Terrestrial Habitats (by Boom Height)			
	≤ 5 m	> 5-10 m	>10-20 m	>20-30 m
2.5 L/ha	14	22	54	84
>2.5 to 3.8 L/ha	17	26	61	96
>3.8 to 5 L/ha	19	28	68	105

2) DROPLET SPECTRUM: VERY COARSE (VMD 461 µm; range 224 to 787 µm)

Rate of Application (L Garlon XRT/ha)	Buffer Zones (m) from Terrestrial Habitats (by Boom Height)			
	≤ 5 m	> 5-10 m	>10-20 m	>20-30 m
2.5 L/ha	11	18	46	71
>2.5 to 3.8 L/ha	13	21	53	84
>3.8 to 5 L/ha	16	23	59	93

Spray Drift Control
Apply only when there is little or no hazard of spray drift since small quantities of product may injure susceptible crops and damage sensitive non-target habitats.

1. Do not apply Garlon XRT Herbicide when wind velocity and direction pose a risk of spray drift.
2. Do not apply when the wind speed is greater than 16 km/hr.
3. Garlon XRT Herbicide should not be applied at a boom height greater than 30 m above the target vegetation.
4. Aerial application should be made as close to the ground as possible while maintaining adequate coverage.
5. For helicopter application use pressures at the lower end of the range recommended by the nozzle manufacturer. For fixed wing application use pressures at the higher end of the range recommended by the nozzle manufacturer.
6. Use a boom length less than 75% of the wing span or rotor length.
7. Coarse spray droplets are less prone to drift, therefore avoid spray dispersal systems and settings that produce a large proportion of fine droplets in the spray pattern. Delivery systems suggested for use in applying Garlon XRT Herbicide by air include: booms equipped with coarse droplet producing conventional disc and core nozzles (such as D8-46 or D10-46), straight stream coreless nozzles (such as D6 or D8), and the Microfoil or Thru-Valve boom. Conventional disc and core nozzles should be oriented straight back or at an angle of less than 30° down.
8. Do not apply by air when an air temperature inversion exists. Such condition is characterized by little or no wind and an air temperature near the ground that is lower than at higher levels. A method must be used to detect air movement, lapse conditions or temperature inversions such as the use of balloons or a continuous smoke column at or near the site.

RESTRICTED USE
AERIAL APPLICATION FOR FOREST MANAGEMENT AREAS (GREATER THAN 500 HECTARES) AND WOODLAND MANAGEMENT AREAS (500 HECTARES OR LESS): This includes site preparation prior to planting crop trees and release of crop trees following planting or in natural regeneration sites.

NOTICE TO USER: This pest control product is to be used only in accordance with the directions on the label. It is an offence under the *Pest Control Products Act* to use this product in a way that is inconsistent with the directions on the label. The user assumes the risk to persons or property that arises from any such use of this product.

NATURE OF RESTRICTION: This product is to be used only in the manner authorized; consult provincial pesticide regulatory authorities about use permits.

DIRECTIONS FOR USE
Aerial Application
Apply only by fixed-wing or rotary aircraft equipment which has been functionally and operationally calibrated for the atmospheric conditions of the area and the application rates and conditions of this label.

Label rates, conditions and precautions are product specific. Read and understand the entire label before opening this product. Apply only at the rate recommended for aerial application on this label. **Where no rate for aerial application appears for the specific use, this product cannot be applied by any type of aerial equipment.**

Ensure uniform application. To avoid streaked, uneven or overlapped application, use appropriate marking devices

Use Precautions
Apply only when meteorological conditions at the treatment site allow for complete and even crop coverage. Apply only under conditions of good practice specific to aerial application as outlined in the *National Aerial Pesticide Application Manual*, developed by the Federal/Provincial/Territorial Committee on Pest Management and Pesticides.

Do not apply to any body of water. Avoid drifting of spray onto any body of water or other non-target areas. Specified buffer zones should be observed.

Coarse sprays are less likely to drift, therefore, avoid combinations of pressure and nozzle type that will result in fine particles (mist). Do not apply during periods of dead calm or when wind velocity and direction pose a risk of spray drift. Do not spray when the wind is blowing towards a nearby sensitive crop, garden, terrestrial habitat (such as shelter-belt) or aquatic habitat.

Operator Precautions
Do not allow the pilot to mix chemicals to be loaded onto the aircraft. Loading of premixed chemicals with a closed system is permitted.

It is desirable that the pilot have communication capabilities at each treatment site at the time of application.

The field crew and the mixer/loaders must wear chemical resistant gloves, coveralls and goggles or face shield during mixing/loading, cleanup and repair. Follow the more stringent label precautions in cases where the operator precautions exceed the generic label recommendations on the existing ground boom label.

All personnel on the job site must wash hands and face thoroughly before eating and drinking. Protective clothing, aircraft cockpit and vehicle cabs must be decontaminated regularly.

Product Specific Precautions
Read and understand the entire label before opening this product. If you have questions, call the manufacturer at 1-800-667-3852 or obtain technical advice from the distributor or your provincial agricultural representative. Application of this specific product must meet and/or conform to the precautions and application rates set out below.

ENVIRONMENTAL HAZARDS
This product is highly toxic to fish, aquatic plants and aquatic invertebrates and is not labelled for application to water surfaces. Keep out of wetlands, lakes, ponds, streams, rivers, and wildlife habitats at the edge of bodies of water. Do not contaminate water by cleaning of equipment or disposal of wastes. The use of this chemical may result in contamination of groundwater particularly in areas where soils are permeable (e.g., sandy soil) and/or where the depth to the water table is shallow.

Aerial application must only be done on the basis of provincial use permit. Buffer zones are specified to protect the sensitive areas as identified in the Environmental Hazards section of this label.

Among the species controlled are:

red alder	pin cherry	red oak
speckled alder	bigleaf maple$^{\tau}$	balsam poplar
white ash	red maple	raspberry
trembling aspen	sugar maple$^{\tau}$	willow
white birch$^{\blacklozenge}$		

$^{\blacklozenge}$White birch is best controlled through the use of any one of the foliar application methods.
$^{\tau}$Sugar maple and bigleaf maple are best controlled through the use of any one of the basal bark application methods.

DIRECTIONS FOR USE: AERIAL APPLICATION
Garlon XRT Herbicide may be applied by either fixed or rotary wing aircraft. Delivery systems suggested for use in applying Garlon XRT Herbicide by air include: booms equipped with coarse droplet producing conventional disc and core nozzles (such as the D8-46 or D10-46), the Microfoil boom or the Thru-Valve boom. Ensure uniform and adequate coverage is achieved and that equipment has been accurately calibrated. Use higher application rates and volumes when plants are dense or under drought conditions.

Plantation or Natural Stand Release
To release crop trees such as black spruce and white spruce from raspberry and deciduous competition, apply 1.9 to 3.8 L of Garlon XRT Herbicide with water in a minimum of 30 L of total spray solution per hectare. The higher rates are suggested for control of basal sprouting or root suckering species and for tall, dense brush.

Application should be made in late summer after conifers have hardened off (buds firm and sharp to the touch) and when deciduous species are in full leaf prior to autumn colouration.

To release jack pine, use 1.9 to 2.5 L per hectare of Garlon XRT Herbicide. Jack pine injury including needle damage, leader atrophy and scattered mortality may occur at application rates above 2.5 L per hectare or if seedlings are not completely dormant. Do not apply Garlon XRT Herbicide to release jack pine stands unless such injury can be tolerated. The potential for jack pine injury can be reduced by ensuring that trees are not in lammas or secondary growth stage. Healthy, vigorous jack pine seedlings in the ground for at least two years prior to application, are less likely to show symptoms of injury.

Site Preparation
Apply 1.9 to 5 L of Garlon XRT Herbicide with water in a minimum of 30 L of total spray solution per hectare. The higher rates are suggested for control of basal sprouting or root suckering species and for tall, dense brush. Applications should be made after full leaf-out of target species, but prior to autumn colouration. Any coniferous silvicultural species may be planted in the season following treatment.

USE PRECAUTIONS
Garlon XRT Herbicide is not registered for application to water surfaces including lakes, ponds and streams and is highly toxic to fish, aquatic plants and aquatic invertebrates. Do not overspray such areas. In order to reduce the hazard of drift to sensitive areas as identified in the Environmental Hazards section of the label ensure that appropriate buffer zones are maintained as outlined below.

Use only closed mixing/loading systems for aerial application.

BUFFER ZONE TABLES FOR GARLON XRT HERBICIDE

A. BUFFER ZONES FROM AQUATIC HABITATS

A buffer zone should be maintained to avoid overspray and drift into wetlands, lakes, ponds, streams, rivers, and wildlife habitats at the edge of bodies of water. Appropriate buffer zones, based on aircraft type, boom height, droplet spectrum, and rate of application, are as follows.

APPLICATION BY FIXED WING AIRCRAFT

1) DROPLET SPECTRUM: COARSE (VMD 351 µm; range 163 to 595 µm)

Rate of Application (L Garlon XRT/ha)	Buffer Zones (m) from Aquatic Habitats (by Boom Height) †			
	≤ 5 m	> 5-10 m	>10-20 m	>20-30 m
2.5 L/ha	14	46	145	259
>2.5 to 3.8 L/ha	27	79	248	406
>3.8 to 5 L/ha	39	116	305	487

2) DROPLET SPECTRUM: VERY COARSE (VMD 461 µm; range 224 to 787 µm)

Rate of Application (L Garlon XRT/ha)	Buffer Zones (m) from Aquatic Habitats (by Boom Height)			
	≤ 5 m	> 5-10 m	>10-20 m	>20-30 m
2.5 L/ha	6	24	72	144
>2.5 to 3.8 L/ha	12	37	107	214
>3.8 to 5 L/ha	17	50	147	265

† Boom height is the distance between the target vegetation (e.g. canopy) and the boom of the aircraft. The buffer zone is the distance between the sensitive habitat and the downwind edge of the spray boom. For example, these charts are read as follows: For a fixed wing aircraft, at an application rate of 3.8 L/ha, a boom height of 10 m, and a coarse droplet spectrum (VMD 351 µm), maintain a 79 m buffer zone between aquatic habitats (e.g., wetlands, lakes, ponds, streams, rivers, and wildlife habitats at the edge of bodies of water) and the downwind edge of the spray boom.

APPLICATION BY ROTARY AIRCRAFT

1) DROPLET SPECTRUM: COARSE (VMD 351 µm; range 163 to 595 µm)

Rate of Application (L Garlon XRT/ha)	Buffer Zones (m) from Aquatic Habitats (by Boom Height)			
	≤ 5 m	> 5-10 m	>10-20 m	>20-30 m
2.5 L/ha	7	15	77	175
>2.5 to 3.8 L/ha	12	21	147	278
>3.8 to 5 L/ha	18	27	190	368

2) DROPLET SPECTRUM: VERY COARSE (VMD 461 µm; range 224 to 787 µm)

Rate of Application (L Garlon XRT/ha)	Buffer Zones (m) from Aquatic Habitats (by Boom Height)			
	≤ 5 m	> 5-10 m	>10-20 m	>20-30 m
2.5 L/ha	4	10	44	101
>2.5 to 3.8 L/ha	6	14	60	153
>3.8 to 5 L/ha	8	16	81	193

B. BUFFER ZONES FROM TERRESTRIAL HABITATS

A buffer zone should be maintained to avoid overspray and drift into sensitive terrestrial wildlife habitats. Consult the Provincial Pesticide Authority regarding the determination of these areas. Appropriate buffer zones, based on aircraft type, boom height, droplet spectrum, and rate of application, are as follows.

APPLICATION BY FIXED WING AIRCRAFT

1) DROPLET SPECTRUM: COARSE (VMD 351 µm; range 163 to 595 µm)

Rate of Application (L Garlon XRT/ha)	Buffer Zones (m) from Terrestrial Habitats (by Boom Height)			
	≤ 5 m	> 5-10 m	>10-20 m	>20-30 m
2.5 L/ha	19	40	81	124
>2.5 to 3.8 L/ha	29	53	107	174
>3.8 to 5 L/ha	35	64	140	232

2) DROPLET SPECTRUM: VERY COARSE (VMD 461 µm; range 224 to 787 µm)

Rate of Application (L Garlon XRT/ha)	Buffer Zones (m) from Terrestrial Habitats (by Boom Height)			
	≤ 5 m	> 5-10 m	>10-20 m	>20-30 m
2.5 L/ha	14	29	62	96
>2.5 to 3.8 L/ha	19	38	77	124
>3.8 to 5 L/ha	23	44	91	152

APPLICATION BY ROTARY AIRCRAFT

1) DROPLET SPECTRUM: COARSE (VMD 351 µm; range 163 to 595 µm)

Rate of Application (L Garlon XRT/ha)	Buffer Zones (m) from Terrestrial Habitats (by Boom Height)			
	≤ 5 m	> 5-10 m	>10-20 m	>20-30 m
2.5 L/ha	15	23	60	100
>2.5 to 3.8 L/ha	18	27	74	128
>3.8 to 5 L/ha	21	30	90	176

2) DROPLET SPECTRUM: VERY COARSE (VMD 461 µm; range 224 to 787 µm)

Rate of Application (L Garlon XRT/ha)	Buffer Zones (m) from Terrestrial Habitats (by Boom Height)			
	≤ 5 m	> 5-10 m	>10-20 m	>20-30 m
2.5 L/ha	11	19	49	81
>2.5 to 3.8 L/ha	14	22	58	100
>3.8 to 5 L/ha	17	24	65	117

Spray Drift Control
Apply only when there is little or no hazard of spray drift since small quantities of product may injure susceptible crops and damage non-target habitat.

1. Do not apply Garlon XRT Herbicide when wind velocity and direction pose a risk of spray drift.
2. Do not apply when the wind speed is greater than 16 km/hr.
3. Garlon XRT Herbicide should not be applied at a boom height greater than 30 m above the target vegetation.
4. Aerial applications should be made as close to the ground as possible while maintaining adequate coverage.
5. For helicopter application use pressures at the lower end of the range recommended by the nozzle manufacturer. For fixed wing application use pressures at the higher end of the range recommended by the nozzle manufacturer.
6. Use a boom length less than 75% of the wing span or rotor length.
7. Coarse spray droplets are less prone to drift, therefore avoid spray dispersal systems and settings that produce a large proportion of fine droplets in the spray pattern. Delivery systems suggested for use in applying Garlon XRT Herbicide by air include: booms equipped with coarse droplet producing conventional disc and core nozzles (such as the D8-46 or D10-46), straight stream coreless nozzles (such as D6 or D8) and the Microfoil or Thru-Valve boom. Conventional disc and core nozzles should be oriented straight back or at an angle of less than 30° down.
8. Do not apply by air when an air temperature inversion exists. Such condition is characterized by little or no wind and an air temperature near the ground that is lower than at higher levels. A method must be used to detect air movement, lapse conditions or temperature inversions, such as the use of balloons, a spotter plane or a continuous smoke column at or near the site.

RESISTANCE MANAGEMENT RECOMMENDATIONS
For resistance management, Garlon XRT Herbicide is a Group 4 herbicide. Any weed population may contain or develop plants naturally resistant to Garlon XRT Herbicide and other Group 4 herbicides. The resistant biotypes may dominate the weed population if these herbicides are used repeatedly in the same field. Other resistance mechanisms that are not linked to site of action, but specific for individual chemicals, such as enhanced metabolism, may also exist. Appropriate resistance-management strategies should be followed.

To delay herbicide resistance:
- Where possible, rotate the use of Garlon XRT Herbicide or other Group 4 herbicides with different herbicide groups that control the same weeds in a field.
- Use tank mixtures with herbicides from a different group when such use is permitted.
- Herbicide use should be based on an IPM program that includes scouting, historical information related to herbicide use and crop rotation, and considers tillage (or other mechanical), cultural, biological and other chemical control practices.

- Monitor treated weed populations for resistance development.
- Prevent movement of resistant weed seeds to other fields by cleaning harvesting and tillage equipment and planting clean seed.
- Contact your local extension specialist or certified crop advisors for any additional pesticide resistance-management and/or integrated weed-management recommendations for specific crops and weed biotypes.
- For further information or to report suspected resistance, contact Dow AgroSciences Canada Inc. at 1-800-667-3852 or at www.dowagro.ca.

NOTICE TO USER: This pest control product is to be used only in accordance with the directions on the label. It is an offence under the *Pest Control Products Act* to use this product in a way that is inconsistent with the directions on the label. The user assumes the risk to persons or property that arises from any such use of this product.

Garlon® XRT Fact Sheets

Material Safety Data Sheet

Dow AgroSciences Canada Inc.

Product Name: Garlon* XRT Herbicide **Issue Date:** 2010.07.14

Dow AgroSciences Canada Inc. encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

1. Product and Company Identification

Product Name
Garlon* XRT Herbicide

COMPANY IDENTIFICATION
Dow AgroSciences Canada Inc.
A Subsidiary of The Dow Chemical Company
Suite 2100, 450 1st Street SW,
Calgary, AB T2P 5H1
Canada

For MSDS updates and Product Information: 800-667-3852

Prepared By: Prepared for use in Canada by EH&S, Hazard Communications.
Revision 2010.07.14

Customer Information Number: 800-667-3852

EMERGENCY TELEPHONE NUMBER
24-Hour Emergency Contact: 613-996-6666
Local Emergency Contact: 613-996-6666

This product is exempt under WHMIS.

2. Hazards Identification

Emergency Overview
Color: Yellow to orange
Physical State: Liquid.
Odor: Musty
Hazards of product:

WARNING! May cause allergic skin reaction. May cause eye irritation. May cause skin irritation. Isolate area. Toxic fumes may be released in fire situations.

Potential Health Effects
Eye Contact: May cause moderate eye irritation. May cause slight corneal injury.

Skin Contact: Brief contact may cause moderate skin irritation with local redness. May cause peeling of the skin.
Skin Absorption: Prolonged skin contact is unlikely to result in absorption of harmful amounts.
Skin Sensitization: Has demonstrated the potential for contact allergy in mice.
Inhalation: Prolonged excessive exposure to mist may cause adverse effects.
Ingestion: Low toxicity if swallowed. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury.
Effects of Repeated Exposure: For the active ingredient(s): Triclopyr butoxyethyl ester. In animals, effects have been reported on the following organs: Kidney. Liver.
Birth Defects/Developmental Effects: For the active ingredient(s): Triclopyr butoxyethyl ester. Has been toxic to the fetus in laboratory animals at doses toxic to the mother.
Reproductive Effects: For similar active ingredient(s). Triclopyr. In laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals.

3. Composition/information on ingredients

Component	CAS #	Amount W/W
Triclopyr-2-butoxyethyl ester	64700-56-7	83.9 %
Balance		16.1 %

Amounts are presented as percentages by weight.

4. First-aid measures

Eye Contact: Hold eyes open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eyes. Call a poison control center or doctor for treatment advice.
Skin Contact: Take off contaminated clothing. Wash skin with soap and plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice. Wash clothing before reuse. Shoes and other leather items which cannot be decontaminated should be disposed of properly.
Inhalation: Move person to fresh air. If person is not breathing, call an emergency responder or ambulance, then give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask etc). Call a poison control center or doctor for treatment advice.
Ingestion: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Never give anything by mouth to an unconscious person.
Notes to Physician: No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. Have the Safety Data Sheet, and if available, the product container or label with you when calling a poison control center or doctor, or going for treatment.

5. Fire Fighting Measures

Extinguishing Media: Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. Do not use direct water stream. May spread fire. General purpose synthetic foams (including AFFF type) or protein foams are preferred if available. Alcohol resistant foams (ATC type) may function.
Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. Consider feasibility of a controlled burn to minimize environment damage. Foam fire extinguishing system is preferred because uncontrolled water can spread possible contamination. Use water spray to cool fire

exposed containers and fire affected zone until fire is out and danger of reignition has passed. Fight fire from protected location or safe distance. Consider the use of unmanned hose holders or monitor nozzles. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container. Do not use direct water stream. May spread fire. Move container from fire area if this is possible without hazard. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage. Review the "Accidental Release Measures" and the "Ecological Information" sections of this (M)SDS.
Special Protective Equipment for Firefighters: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). Avoid contact with this material during fire fighting operations. If contact is likely, change to full chemical resistant fire fighting clothing with self-contained breathing apparatus. If this is not available, wear full chemical resistant clothing with self-contained breathing apparatus and fight fire from a remote location. For protective equipment in post-fire or non-fire clean-up situations, refer to the relevant sections.
Unusual Fire and Explosion Hazards: Container may rupture from gas generation in a fire situation. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids. Dense smoke is produced when product burns.
Hazardous Combustion Products: During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Nitrogen oxides. Hydrogen chloride. Carbon monoxide. Carbon dioxide. Combustion products may include trace amounts of: Phosgene.

See Section 9 for related Physical Properties

6. Accidental Release Measures

Steps to be Taken if Material is Released or Spilled: Contain spilled material if possible. Small spills: Absorb with materials such as: Clay. Dirt. Sand. Sweep up. Collect in suitable and properly labeled containers. Large spills: Contact Dow AgroSciences for clean-up assistance. See Section 13, Disposal Considerations, for additional information.
Personal Precautions: Isolate area. Keep unnecessary and unprotected personnel from entering the area. Refer to Section 7, Handling, for additional precautionary measures. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.
Environmental Precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

7. Handling and Storage

Handling
General Handling: Keep out of reach of children. Do not swallow. Avoid breathing vapor or mist. Avoid contact with eyes, skin, and clothing. Use with adequate ventilation. Wash thoroughly after handling.

Storage
Store in a dry place. Store in original container. Keep container tightly closed when not in use. Do not store near food, foodstuffs, drugs or potable water supplies.

8. Exposure Controls / Personal Protection

Exposure Limits

Component	List	Type	Value
Triclopyr-2-butoxyethyl ester	Dow IHG	TWA	2 mg/m3 D-SEN

Consult local authorities for recommended exposure limits.
A "skin" notation following the exposure guideline refers to the potential for dermal absorption of the material including mucous membranes and the eyes either by contact with vapors or by direct skin contact.
It is intended to alert the reader that inhalation may not be the only route of exposure and that measures to minimize dermal exposures should be considered.
RECOMMENDATIONS IN THIS SECTION ARE FOR MANUFACTURING, COMMERCIAL BLENDING AND PACKAGING WORKERS. APPLICATORS AND HANDLERS SHOULD SEE THE PRODUCT LABEL FOR PROPER PERSONAL PROTECTIVE EQUIPMENT AND CLOTHING.

Personal Protection

Eye/Face Protection: Use chemical goggles.
Skin Protection: Use chemical protective clothing resistant to this material, when there is any possibility of skin contact. Wear a face-shield which allows use of chemical goggles, or wear a full-face respirator, to protect face and eyes when there is any likelihood of splashes. Safety shower should be located in immediate work area. Remove contaminated clothing immediately, wash skin area with soap and water, and launder clothing before reuse or dispose of properly. Items which cannot be decontaminated, such as shoes, belts and watchbands, should be removed and disposed of properly.

Hand protection: Use gloves, chemically resistant to this material, at all times. Examples of preferred glove barrier materials include: Butyl rubber. Polyethylene. Neoprene. Chlorinated polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Examples of acceptable glove barrier materials include: Viton. Natural rubber ("latex"). Polyvinyl chloride ("PVC" or "vinyl"). Nitrile/butadiene rubber ("nitrile" or "NBR"). NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

Respiratory Protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. In misty atmospheres, use an approved particulate respirator. The following should be effective types of air-purifying respirators: Organic vapor cartridge with a particulate pre-filter.
Ingestion: Use good personal hygiene. Do not consume or store food in the work area. Wash hands before smoking or eating.

Engineering Controls

Ventilation: Use engineering controls to maintain airborne level below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, use only with adequate ventilation. Local exhaust ventilation may be necessary for some operations.

9. Physical and Chemical Properties

Physical State	Liquid.
Color	Yellow to orange
Odor	Musty
Flash Point - Closed Cup	> 100 °C *Closed Cup*
Flammable Limits In Air	**Lower**: No test data available
	Upper: No test data available
Autoignition Temperature	Ramped Temperature
Vapor Pressure	No test data available
Boiling Point (760 mmHg)	No test data available.
Vapor Density (air = 1)	No test data available
Specific Gravity (H2O = 1)	
Liquid Density	1.2572 g/cm3 @ 20 °C *Digital density meter*
Freezing Point	No test data available

Melting Point	Not applicable
Solubility in water (by weight)	emulsifiable
pH	4.49 (@ 1 %) *pH Electrode* (1% aqueous suspension)
Decomposition Temperature	
Evaporation Rate (Butyl Acetate = 1)	No test data available
Dynamic Viscosity	191.4 mPa.s @ 20.4 °C
Kinematic Viscosity	No test data available

10. Stability and Reactivity

Stability/Instability
Thermally stable at typical use temperatures.
Conditions to Avoid: Active ingredient decomposes at elevated temperatures. Generation of gas during decomposition can cause pressure in closed systems.

Incompatible Materials: Avoid contact with: Acids. Bases. Oxidizers.

Hazardous Polymerization
Will not occur.

Thermal Decomposition
Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to: Carbon monoxide. Carbon dioxide. Hydrogen chloride. Nitrogen oxides. Toxic gases are released during decomposition. Decomposition products can include trace amounts of: Phosgene.

11. Toxicological Information

Acute Toxicity
Ingestion
LD50, Rat, female 2,966 mg/kg
Dermal
LD50, Rat, male and female > 5,000 mg/kg
Inhalation
LC50, 4 h, Aerosol, Rat, male and female > 5.90 mg/l
Eye damage/eye irritation
May cause moderate eye irritation. May cause slight corneal injury.
Skin corrosion/irritation
Brief contact may cause moderate skin irritation with local redness. May cause peeling of the skin.
Sensitization
Skin
Has demonstrated the potential for contact allergy in mice.
Repeated Dose Toxicity
For the active ingredient(s): Triclopyr butoxyethyl ester. In animals, effects have been reported on the following organs: Kidney. Liver.
Chronic Toxicity and Carcinogenicity
For similar active ingredient(s). Triclopyr. Did not cause cancer in laboratory animals.
Developmental Toxicity
For the active ingredient(s): Triclopyr butoxyethyl ester. Has been toxic to the fetus in laboratory animals at doses toxic to the mother. For the active ingredient(s): Triclopyr butoxyethyl ester. Did not cause birth defects in laboratory animals.
Reproductive Toxicity

For similar active ingredient(s). Triclopyr. In laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals.

Genetic Toxicology

For the active ingredient(s): Triclopyr butoxyethyl ester. In vitro genetic toxicity studies were negative.
For the active ingredient(s): Animal genetic toxicity studies were negative.

12. Ecological Information

ENVIRONMENTAL FATE

Data for Component: **Triclopyr-2-butoxyethyl ester**

Movement & Partitioning

Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).

Partition coefficient, n-octanol/water (log Pow): 4.09 - 4.49 Measured

Persistence and Degradability

Chemical degradation (hydrolysis) is expected in the environment. Material is expected to biodegrade only very slowly (in the environment). Fails to pass OECD/EEC tests for ready biodegradability.

Stability in Water (1/2-life):
12 h; 25 °C; pH 6.7

OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method
18 %	28 d	OECD 301B Test

Theoretical Oxygen Demand: 1.39 mg/mg

ECOTOXICITY

Data for Component: **Triclopyr-2-butoxyethyl ester**

Material is highly toxic to aquatic organisms on an acute basis (LC50/EC50 between 0.1 and 1 mg/L in the most sensitive species tested). Material is slightly toxic to birds on an acute basis (LD50 between 501 and 2000 mg/kg). Material is practically non-toxic to birds on a dietary basis (LC50 > 5000 ppm).

Fish Acute & Prolonged Toxicity
LC50, bluegill (Lepomis macrochirus), flow-through, 96 h: 0.36 mg/l
Aquatic Invertebrate Acute Toxicity
EC50, water flea Daphnia magna, 48 h, immobilization: 6.8 mg/l
Aquatic Plant Toxicity
EbC50, diatom Navicula sp., biomass growth inhibition, 120 h: 0.193 mg/l
Aquatic Invertebrates Chronic Toxicity Value:

ChV Value mg/l	Species	Test Type	Endpoint	Exposure Time
2.9 mg/l	water flea Daphnia magna		number of offspring	21 d

Toxicity to Above Ground Organisms
oral LD50, bobwhite (Colinus virginianus): 735 mg/kg
dietary LC50, bobwhite (Colinus virginianus): 5,401 - 9,026 ppm
Toxicity to Soil Dwelling Organisms
LC50, Earthworm Eisenia foetida, adult, 14 d: > 1,042 mg/kg

13. Disposal Considerations

If wastes and/or containers cannot be disposed of according to the product label directions, disposal of this material must be in accordance with your local or area regulatory authorities. This information

presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. If the material as supplied becomes a waste, follow all applicable regional, national and local laws.

14. Transport Information

TDG Small container
NOT REGULATED

TDG Large container
NOT REGULATED

IMDG
NOT REGULATED

ICAO/IATA
NOT REGULATED

15. Regulatory Information

CEPA - Domestic Substances List (DSL)
All substances contained in this product are listed on the Canadian Domestic Substances List (DSL) or are not required to be listed.

Hazardous Products Act Information: CPR Compliance
This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

Hazardous Products Act Information: WHMIS Classification
This product is exempt under WHMIS.

Pest Control Products Act Registration number: 28945

National Fire Code of Canada
Not applicable

16. Other Information

Hazard Rating System

NFPA	Health	Fire	Reactivity
	2	1	0

Recommended Uses and Restrictions
Product use: End use herbicide product

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Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

Legend

N/A	Not available
W/W	Weight/Weight
OEL	Occupational Exposure Limit
STEL	Short Term Exposure Limit
TWA	Time Weighted Average
ACGIH	American Conference of Governmental Industrial Hygienists, Inc.
DOW IHG	Dow Industrial Hygiene Guideline
WEEL	Workplace Environmental Exposure Level
HAZ_DES	Hazard Designation
VOL/VOL	Volume/Volume

Dow AgroSciences Canada Inc. urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.