Material Safety Data Sheet
Dow AgroSciences Canada Inc.

Product Name: TROPHY* A Emulsifiable Concentrate Herbicide **Issue Date:** 2009.09.03

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
TROPHY* A Emulsifiable Concentrate 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, Product Regulatory Management Department.
450-652-1029
Revision 2009.09.03

Customer Information Number: 800-667-3852

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

2. Hazards Identification

Emergency Overview
Color: Brown
Physical State: Liquid.
Odor: Odorless

Hazards of product:

WARNING! Combustible liquid and vapor. Causes eye irritation. May cause central nervous system effects; may cause respiratory tract irritation. Aspiration hazard. Can enter lungs and cause damage. Isolate area. Keep upwind of spill. Toxic fumes may be released in fire situations. Suspect cancer hazard. May cause cancer.

Potential Health Effects

Eye Contact: May cause moderate eye irritation which may be slow to heal. May cause slight corneal injury. Vapor may cause eye irritation experienced as mild discomfort and redness.
Skin Contact: Brief contact may cause slight skin irritation with local redness.
Skin Absorption: Prolonged skin contact is unlikely to result in absorption of harmful amounts.
Inhalation: No adverse effects are anticipated from single exposure to mist. Excessive exposure to solvent(s) may cause respiratory irritation and central nervous system depression.
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.
Aspiration hazard: Aspiration into the lungs may occur during ingestion or vomiting, causing lung damage or even death due to chemical pneumonia.
Effects of Repeated Exposure: For the solvent(s): Excessive exposure to solvent(s) may cause respiratory irritation and central nervous system depression. For the minor component(s): In animals, effects have been reported on the following organs: Liver. Kidney. Blood-forming organs (Bone marrow & Spleen). Blood. Respiratory tract.
Cancer Information: For the minor component(s) Naphthalene. Has caused cancer in some laboratory animals. In humans, there is limited evidence of cancer in workers involved in naphthalene production. Limited oral studies in rats were negative.
Birth Defects/Developmental Effects: For the active ingredient(s): Fluroxypyr 1-methylheptyl ester. Has been toxic to the fetus in laboratory animals at doses toxic to the mother. For the minor component(s): Has been toxic to the fetus in lab animals at doses nontoxic to the mother. Has caused birth defects in laboratory animals only at doses toxic to the mother.
Reproductive Effects: For the minor component(s): 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
Fluroxypyr 1-methylheptyl ester	81406-37-3	26.2 %
Naphthalene	91-20-3	<= 6.0 %
N-Methyl-2-pyrrolidone	872-50-4	5.1 %
1,2,4-Trimethylbenzene	95-63-6	<= 3.4 %
Solvent naphtha (petroleum), light aromatic	64742-95-6	0.7 %
Balance		58.6 %

Amounts are presented as percentages by weight.

4. First-aid measures

Eye Contact: Immediately flush eyes with water; remove contact lenses, if present, after the first 5 minutes, then continue flushing eyes for at least 15 minutes. Obtain medical attention without delay, preferably from an ophthalmologist.
Skin Contact: Wash skin with plenty of water.

Inhalation: Move person to fresh air. If not breathing, give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask, etc). If breathing is difficult, oxygen should be administered by qualified personnel. Call a physician or transport to a medical facility.
Ingestion: Do not induce vomiting. Call a physician and/or transport to emergency facility immediately.
Notes to Physician: Maintain adequate ventilation and oxygenation of the patient. The decision of whether to induce vomiting or not should be made by a 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. If burn is present, treat as any thermal burn, after decontamination. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

5. Fire Fighting Measures

Extinguishing Media: Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective.
Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. 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. Burning liquids may be extinguished by dilution with water. 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.
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 fluoride. Hydrogen chloride. Carbon monoxide. Carbon dioxide.

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. Keep upwind of spill. Ventilate area of leak or spill. No smoking in area. 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: Avoid contact with eyes, skin, and clothing. Wash thoroughly after handling. Do not swallow. Avoid breathing vapor. Use with adequate ventilation. Keep container closed. Containers, even those that have been emptied, can contain vapors. Do not cut, drill, grind, weld, or perform similar operations on or near empty containers. Keep away from heat, sparks and flame. Keep out of reach of children. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

Storage

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

8. Exposure Controls / Personal Protection

Exposure Limits

Component	List	Type	Value
Fluroxypyr 1-methylheptyl ester	Dow IHG	TWA	10 mg/m3
Naphthalene	CAD AB OEL	TWA	52 mg/m3 10 ppm SKIN
	CAD AB OEL	STEL	79 mg/m3 15 ppm SKIN
	CAD BC OEL	TWA	10 ppm SKIN
	CAD BC OEL	STEL	15 ppm SKIN
	CAD ON OEL	TWAEV	52 mg/m3 10 ppm
	CAD ON OEL	STEV	78 mg/m3 15 ppm
	ACGIH	TWA	10 ppm SKIN
	ACGIH	STEL	15 ppm SKIN
	OEL (QUE)	TWA	52 mg/m3 10 ppm
	OEL (QUE)	STEL	79 mg/m3 15 ppm
N-Methyl-2-pyrrolidone	CAD ON OEL	TWAEV	400 mg/m3
	WEEL	TWA	40 mg/m3 10 ppm SKIN
1,2,4-Trimethylbenzene	CAD AB OEL	TWA	123 mg/m3 25 ppm
	CAD BC OEL	TWA	25 ppm
	CAD ON OEL	TWAEV	123 mg/m3 25 ppm
	ACGIH	TWA	25 ppm
	OEL (QUE)	TWA	123 mg/m3 25 ppm

Consult local authorities for recommended exposure limits.
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.
A "skin" notation following the inhalation 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.

Personal Protection

Eye/Face Protection: Use chemical goggles. If exposure causes eye discomfort, use a full-face respirator.
Skin Protection: Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task.

Hand protection: Use gloves chemically resistant to this material. Examples of preferred glove barrier materials include: Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Polyvinyl chloride ("PVC" or "vinyl"). Viton. Styrene/butadiene rubber. Examples of acceptable glove barrier materials include: Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Chlorinated polyethylene. Butyl rubber. Natural rubber ("latex"). 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. For emergency conditions, use an approved positive-pressure self-contained breathing apparatus. The following should be effective types of air-purifying respirators: Organic vapor cartridge with a particulate pre-filter.

Ingestion: Avoid ingestion of even very small amounts; do not consume or store food or tobacco in the work area; wash hands and face before smoking or eating.

Engineering Controls

Ventilation: Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations. Local exhaust ventilation may be necessary for some operations.

9. Physical and Chemical Properties

Physical State	Liquid.
Color	Brown
Odor	Odorless
Odor Threshold	Odorless
Flash Point - Closed Cup	63 °C *Closed Cup*
Flammable Limits In Air	**Lower**: No test data available **Upper**: No test data available
Autoignition Temperature	No test data available
Vapor Pressure	No test data available
Boiling Point (760 mmHg)	202 °C *Literature* .
Vapor Density (air = 1)	No test data available
Specific Gravity (H2O = 1)	No test data available
Liquid Density	0.99 g/cm3 @ 25 °C *Calculated*
Freezing Point	-10 °C *Literature*
Melting Point	No test data available
Solubility in water (by weight)	No test data available
pH	5.5 *Literature* 1% aqueous solution.
Decomposition Temperature	No test data available
Evaporation Rate (Butyl Acetate = 1)	No test data available
Kinematic Viscosity	No test data available

10. Stability and Reactivity

Stability/Instability

Unstable at elevated 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. Hydrogen fluoride. Nitrogen oxides. Toxic gases are released during decomposition.

11. Toxicological Information

Acute Toxicity
Ingestion
LD50, Rat, male 3,738 mg/kg
LD50, Rat, female 3,162 mg/kg
Skin Absorption
LD50, Rabbit > 2,000 mg/kg
Inhalation
LC50, 4 h, Aerosol, Rat, male and female > 6.2 mg/l

Sensitization
Skin
Did not cause allergic skin reactions when tested in guinea pigs.

Repeated Dose Toxicity
For the active ingredient(s): Based on available data, repeated exposures are not anticipated to cause significant adverse effects. For the solvent(s): Excessive exposure to solvent(s) may cause respiratory irritation and central nervous system depression. For the minor component(s): In animals, effects have been reported on the following organs: Liver. Kidney. Blood-forming organs (Bone marrow & Spleen). Blood. Respiratory tract.

Chronic Toxicity and Carcinogenicity
Active ingredient did not cause cancer in laboratory animals. For the minor component(s) Naphthalene. Has caused cancer in some laboratory animals. In humans, there is limited evidence of cancer in workers involved in naphthalene production. Limited oral studies in rats were negative.
Carcinogenicity Classifications:

Component	List	Classification
Naphthalene	IARC	Possible carcinogen.; 2B

Developmental Toxicity
For the active ingredient(s): Fluroxypyr 1-methylheptyl ester. Has been toxic to the fetus in laboratory animals at doses toxic to the mother. For the minor component(s): Has been toxic to the fetus in lab animals at doses nontoxic to the mother. Has caused birth defects in laboratory animals only at doses toxic to the mother. For the active ingredient(s): Fluroxypyr 1-methylheptyl ester. Did not cause birth defects in laboratory animals.

Reproductive Toxicity
In animal studies, active ingredient did not interfere with reproduction. For the minor component(s): 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): In vitro genetic toxicity studies were negative. For some component(s): In vitro genetic toxicity studies were negative in some cases and positive in other cases. For the active ingredient(s): For the component(s) tested: Animal genetic toxicity studies were negative.

12. Ecological Information

ENVIRONMENTAL FATE

Data for Component: **Fluroxypyr 1-methylheptyl ester**

Movement & Partitioning

Bioconcentration potential is low (BCF less than 100 or log Pow less than 3). Expected to be relatively immobile in soil (Koc > 5000).

Henry's Law Constant (H): 5.42E-08 atm*m3/mole; 25 °C Measured
Partition coefficient, n-octanol/water (log Pow): 4.5 Measured
Partition coefficient, soil organic carbon/water (Koc): 6,200
Bioconcentration Factor (BCF): 26; rainbow trout (Oncorhynchus mykiss); Measured

Persistence and Degradability

No relevant information found.

Data for Component: **Naphthalene**

Movement & Partitioning

Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5). Potential for mobility in soil is medium (Koc between 150 and 500).

Henry's Law Constant (H): 2.92E-04 - 5.53E-04 atm*m3/mole; 25 °C Measured
Partition coefficient, n-octanol/water (log Pow): 3.3 Measured
Partition coefficient, soil organic carbon/water (Koc): 240 - 1,300 Measured
Bioconcentration Factor (BCF): 40 - 300; fish; Measured
Distribution in Environment: Mackay Level 1 Fugacity Model:

Air	Water.	Biota	Soil	Sediment
74 %	8.5 %	< 0.01 %	18 %	0.39 %

Persistence and Degradability

Biodegradation under aerobic static laboratory conditions is high (BOD20 or BOD28/ThOD > 40%).

Indirect Photodegradation with OH Radicals

Rate Constant	Atmospheric Half-life	Method
2.16E-11 cm3/s	5.9 h	Estimated.

Biological oxygen demand (BOD):

BOD 5	BOD 10	BOD 20	BOD 28
57 %	71 %	71 %	

Theoretical Oxygen Demand: 3.00 mg/mg

Data for Component: **N-Methyl-2-pyrrolidone**

Movement & Partitioning

Bioconcentration potential is low (BCF less than 100 or log Pow less than 3). Potential for mobility in soil is very high (Koc between 0 and 50). Given its very low Henry's constant, volatilization from natural bodies of water or moist soil is not expected to be an important fate process.

Henry's Law Constant (H): 4.46E-08 atm*m3/mole; 25 °C Measured
Partition coefficient, n-octanol/water (log Pow): -0.38 Measured
Partition coefficient, soil organic carbon/water (Koc): 21 Estimated.

Persistence and Degradability

Material is readily biodegradable. Passes OECD test(s) for ready biodegradability. Material is ultimately biodegradable (reaches > 70% mineralization in OECD test(s) for inherent biodegradability).

Indirect Photodegradation with OH Radicals

Rate Constant	Atmospheric Half-life	Method
2.199E-11 cm3/s	0.486 d	Estimated.

OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method
91 %	28 d	OECD 301B Test
73 %	28 d	OECD 301C Test

Theoretical Oxygen Demand: 2.58 mg/mg

Data for Component: **1,2,4-Trimethylbenzene**

Movement & Partitioning

Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5). Potential for mobility in soil is low (Koc between 500 and 2000).
Henry's Law Constant (H): 6.16E-03 atm*m3/mole; 25 °C Measured
Partition coefficient, n-octanol/water (log Pow): 3.63 Measured
Partition coefficient, soil organic carbon/water (Koc): 720 Estimated.
Bioconcentration Factor (BCF): 33 - 275; common carp (Cyprinus carpio); Measured

Persistence and Degradability

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

Indirect Photodegradation with OH Radicals

Rate Constant	Atmospheric Half-life	Method
1.670E-11 cm3/s	0.641 d	Estimated.

OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method
4 - 18 %	28 d	OECD 301C Test

Theoretical Oxygen Demand: 3.19 mg/mg

Data for Component: **Solvent naphtha (petroleum), light aromatic**

Movement & Partitioning

For the major component(s): Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5). Potential for mobility in soil is low (Koc between 500 and 2000). For the minor component(s): Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient, n-octanol/water (log Pow): No test data available:

Persistence and Degradability

For the major component(s): Biodegradation under aerobic static laboratory conditions is high (BOD20 or BOD28/ThOD > 40%). For some component(s): Biodegradation under aerobic static laboratory conditions is low (BOD20 or BOD28/ThOD between 2.5 and 10%).

ECOTOXICITY
Material is practically non-toxic to birds on an acute basis (LD50 > 2000 mg/kg).

Toxicity to Non-mammalian Terrestrial Species
oral LD50, bobwhite (Colinus virginianus): > 2,250 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: 27246

National Fire Code of Canada
Class IIIA

16. Other Information

Hazard Rating System

NFPA	Health	Fire	Reactivity
	2	2	1

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

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