

**Product Name:** CROSSBOW\* Herbicide

**Issue Date:** 07/23/2010

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Dow AgroSciences LLC 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**

CROSSBOW\* Herbicide

**COMPANY IDENTIFICATION**

Dow AgroSciences LLC  
A Subsidiary of The Dow Chemical Company  
9330 Zionsville Road  
Indianapolis, IN 46268-1189  
USA

Customer Information Number: 800-992-5994

**EMERGENCY TELEPHONE NUMBER**

**24-Hour Emergency Contact:** 800-992-5994

**Local Emergency Contact:** 800-992-5994

## 2. Hazards Identification

**Emergency Overview**

**Color:** Red to brown

**Physical State:** Liquid.

**Odor:** Sweet

**Hazards of product:**

**DANGER!** Combustible liquid and vapor. May cause allergic skin reaction. May cause eye irritation. May cause skin irritation. May cause respiratory tract irritation. Harmful or fatal if swallowed; 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.

**OSHA Hazard Communication Standard**

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

**Potential Health Effects**

**Eye Contact:** May cause moderate eye irritation. Corneal injury is unlikely.

**Skin Contact:** Brief contact is essentially nonirritating to skin. Prolonged contact may cause moderate skin irritation with local redness. May cause drying and flaking of the skin.

**Skin Absorption:** Prolonged skin contact is unlikely to result in absorption of harmful amounts. Observations in animals include: Lethargy.

**Skin Sensitization:** Skin contact may cause an allergic skin reaction.

**Inhalation:** Prolonged excessive exposure to mist may cause adverse effects. Excessive exposure may cause irritation to upper respiratory tract (nose and throat) and lungs. Observations in animals include: Lethargy.

**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. Observations in animals include: Lethargy. In humans, symptoms may include: Abdominal discomfort. May cause central nervous system depression. Diarrhea.

**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 active ingredient(s): In animals, effects have been reported on the following organs: Kidney. Liver. Eye. Thyroid. For kerosene: In animals, effects have been reported on the following organs after exposure to aerosols: Central nervous system. Respiratory tract. Observations in animals include: Anesthetic or narcotic effects.

**Cancer Information:** For the solvent(s): In a lifetime animal dermal carcinogenicity study, an increased incidence of skin tumors was observed when kerosene was applied at doses that also produced skin irritation. This response was similar to that produced in skin by other types of chronic chemical/physical irritation. No increase in tumors was observed when non-irritating dilutions of kerosene were applied at equivalent doses, indicating that kerosene is unlikely to cause skin cancer in the absence of long-term continued skin irritation. 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): For the minor component(s): Has been toxic to the fetus in laboratory animals at doses toxic to the mother.

**Reproductive Effects:** For similar active ingredient(s). 2,4-Dichlorophenoxyacetic acid. In laboratory animals, excessive doses toxic to the parent animals caused decreased weight and survival of offspring. 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

Component	CAS #	Amount
2,4-Dichlorophenoxyacetic acid, butoxyethyl ester	1929-73-3	34.4 %
Triclopyr-2-butoxyethyl ester	64700-56-7	16.5 %
Kerosene (petroleum)	8008-20-6	41.5 %
2-Ethylhexanol	104-76-7	1.9 %
Balance		5.7 %

### 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. If breathing is difficult, oxygen should be administered by qualified personnel.

**Ingestion:** Immediately call a poison control center or doctor. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give any liquid to the person. Do not give anything by mouth to an unconscious person.

**Notes to Physician:** Maintain adequate ventilation and oxygenation of the patient. May cause asthma-like (reactive airways) symptoms. Bronchodilators, expectorants, antitussives and corticosteroids may be of help. 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. Exposure to this material may impair the ability to operate hazardous equipment or drive vehicles. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

**Medical Conditions Aggravated by Exposure:** Skin contact may aggravate preexisting dermatitis.

## 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. Consider feasibility of a controlled burn to minimize environment damage. Foam fire extinguishing system is preferred because uncontrolled water can spread possible contamination. Burning liquids may be extinguished by dilution with water. Do not use direct water stream. May spread fire. 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:** 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.

## 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:** 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. 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.

**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.

<b>8. Exposure Controls / Personal Protection</b>
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**Exposure Limits**

Component	List	Type	Value
Kerosene (petroleum)	Dow IHG	TWA as total hydrocarbon vapor	10 mg/m3 SKIN
	ACGIH	TWA Non-aerosol. as total hydrocarbon vapor	200 mg/m3 P: Application restricted to conditions in which there are negligible aerosol exposures.
2,4-Dichlorophenoxyacetic acid, butoxyethyl ester	ACGIH	TWA	10 mg/m3
	OSHA Table Z-1	PEL	10 mg/m3
Triclopyr-2-butoxyethyl ester	Dow IHG	TWA	2 mg/m3 D-SEN
1,2,4-Trimethylbenzene	ACGIH	TWA	25 ppm
Naphthalene	ACGIH	TWA	10 ppm SKIN
	ACGIH	STEL	15 ppm SKIN
	OSHA Table Z-1	PEL	50 mg/m3 10 ppm

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 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. 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. Examples of preferred glove barrier materials include: Chlorinated polyethylene. Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Viton. Examples of acceptable glove barrier materials include: Butyl rubber. Natural rubber ("latex"). Polyvinyl chloride ("PVC" or "vinyl"). 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:** 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 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	Red to brown
Odor	Sweet
Odor Threshold	No test data available
Flash Point - Closed Cup	64 °C (147 °F) <i>Closed Cup</i>
Flammable Limits In Air	<b>Lower:</b> No test data available <b>Upper:</b> No test data available
Autoignition Temperature	No test data available
Vapor Pressure	0.1 mmHg @ 37.8 °C (kerosene)
Boiling Point (760 mmHg)	> 175 °C (> 347 °F) (kerosene).
Vapor Density (air = 1)	4.7 (kerosene)
Specific Gravity (H <sub>2</sub> O = 1)	
Liquid Density	1.0114 g/cm <sup>3</sup> @ 20 °C <i>Digital density meter</i>
Freezing Point	No test data available
Melting Point	Not applicable
Solubility in water (by weight)	emulsifiable
pH	3.8 (@ 10 %) <i>pH Electrode</i> (10% solution in water)
Decomposition Temperature	No test data available
Evaporation Rate (Butyl Acetate = 1)	No test data available
Dynamic Viscosity	6.56 mPa.s @ 25 °C

## 10. Stability and Reactivity

### Stability/Instability

Thermally stable at typical use temperatures.

**Conditions to Avoid:** None known.

**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

Estimated. LD50, Rat, male and female 1,000 mg/kg

#### Dermal

LD50, Rabbit, male and female > 5,000 mg/kg

#### Inhalation

LC50, 4 h, Aerosol, Rat, male and female > 5.19 mg/l

### Eye damage/eye irritation

May cause moderate eye irritation. Corneal injury is unlikely.

### Skin corrosion/irritation

Brief contact is essentially nonirritating to skin. Prolonged contact may cause moderate skin irritation with local redness. May cause drying and flaking of the skin.

### Sensitization

#### Skin

Skin contact may cause an allergic skin reaction.

### Repeated Dose Toxicity

For the active ingredient(s): In animals, effects have been reported on the following organs: Kidney. Liver. Eye. Thyroid. For kerosene: In animals, effects have been reported on the following organs after exposure to aerosols: Central nervous system. Respiratory tract. Observations in animals include: Anesthetic or narcotic effects.

### Chronic Toxicity and Carcinogenicity

For similar active ingredient(s). Various animal cancer tests have shown no reliably positive association between 2,4-D exposure and cancer. Epidemiology studies on herbicide use have been both positive and negative with the majority being negative. For similar active ingredient(s). Triclopyr. Did not cause cancer in laboratory animals. For the solvent(s): In a lifetime animal dermal carcinogenicity study, an increased incidence of skin tumors was observed when kerosene was applied at doses that also produced skin irritation. This response was similar to that produced in skin by other types of chronic chemical/physical irritation. No increase in tumors was observed when non-irritating dilutions of kerosene were applied at equivalent doses, indicating that kerosene is unlikely to cause skin cancer in the absence of long-term continued skin irritation. 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
Kerosene (petroleum)	ACGIH	Confirmed animal carcinogen with unknown relevance to humans.; Group A3

### Developmental Toxicity

For the active ingredient(s): For the minor component(s): Has been toxic to the fetus in laboratory animals at doses toxic to the mother. For the component(s) tested: Did not cause birth defects in laboratory animals.

### Reproductive Toxicity

For similar active ingredient(s). 2,4-Dichlorophenoxyacetic acid. In laboratory animals, excessive doses toxic to the parent animals caused decreased weight and survival of offspring. 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 majority of components: In vitro genetic toxicity studies were predominantly negative. For the minor component(s) Naphthalene. In vitro genetic toxicity studies were negative in some cases and positive in other cases. For the component(s) tested: Animal genetic toxicity studies were predominantly negative.

## 12. Ecological Information

### ENVIRONMENTAL FATE

Data for Component: **2,4-Dichlorophenoxyacetic acid, 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): 4.35 Measured

#### Persistence and Degradability

Chemical degradation (hydrolysis) is expected in the environment. For similar active ingredient(s). Material is expected to be readily biodegradable.

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

Data for Component: **Kerosene (petroleum)**

#### Movement & Partitioning

Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5). Expected to be relatively immobile in soil (Koc > 5000).

Henry's Law Constant (H): 8.24E+00 atm\*m3/mole; 25 °C Measured

Partition coefficient, n-octanol/water (log Pow): 6.1 Measured

Partition coefficient, soil organic carbon/water (Koc): 5,900 Estimated.

Bioconcentration Factor (BCF): 314; fish; Estimated.

61 - 159; fish

#### 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
1.393E-11 cm3/s	0.767 d	Estimated.

#### Biological oxygen demand (BOD):

BOD 5	BOD 10	BOD 20	BOD 28
31 %	39.7 %	58.6 %	

Chemical Oxygen Demand: 1.16 mg/mg

Data for Component: **2-Ethylhexanol**

#### 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): 2.49E-05 atm\*m3/mole Estimated.

Partition coefficient, n-octanol/water (log Pow): 3.1 Measured

|| Partition coefficient, soil organic carbon/water (Koc): 800 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
1.32E-11 cm <sup>3</sup> /s	9.7 h	Estimated.

#### OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method
68 %	17 d	OECD 301B Test
> 95 %	5 d	OECD 302B Test

#### Biological oxygen demand (BOD):

BOD 5	BOD 10	BOD 20	BOD 28
26 - 70 %	75 - 81 %	86 - 87 %	

|| Chemical Oxygen Demand: 2.70 mg/mg

|| Theoretical Oxygen Demand: 2.95 mg/mg

## ECOTOXICITY

### Data for Component: **2,4-Dichlorophenoxyacetic acid, 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 practically non-toxic to birds on an acute basis (LD50 > 2000 mg/kg). Material is practically non-toxic to birds on a dietary basis (LC50 > 5000 ppm).

#### Fish Acute & Prolonged Toxicity

|| LC50, fathead minnow (*Pimephales promelas*), static, 96 h: 2.5 mg/l

|| LC50, bluegill (*Lepomis macrochirus*), static, 96 h: 0.61 mg/l

|| LC50, rainbow trout (*Oncorhynchus mykiss*), static, 96 h: 2.0 mg/l

#### Aquatic Invertebrate Acute Toxicity

|| LC50, water flea *Daphnia magna*, static, 48 h, survival: 7.2 - 33 mg/l

#### Aquatic Plant Toxicity

|| EbC50, green alga *Pseudokirchneriella subcapitata* (formerly known as *Selenastrum capricornutum*), static, biomass growth inhibition, 5 d: 25 mg/l

|| EbC50, diatom *Skeletonema costatum*, static, biomass growth inhibition, 5 d: 1.66 mg/l

|| EbC50, diatom *Navicula* sp., static, biomass growth inhibition, 5 d: 1.86 mg/l

|| EbC50, blue-green alga *Anabaena flos-aquae*, static, biomass growth inhibition, 5 d: 6.37 mg/l

|| EbC50, duckweed *Lemna* sp., static, biomass growth inhibition, 5 d: 0.576 mg/l

#### Toxicity to Above Ground Organisms

|| dietary LC50, bobwhite (*Colinus virginianus*): > 5,620 ppm

|| dietary LC50, mallard (*Anas platyrhynchos*): > 5,620 ppm

|| oral LD50, bobwhite (*Colinus virginianus*): > 2,000 mg/kg

### 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 <i>Daphnia magna</i>		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

**Data for Component: Kerosene (petroleum)**

- || Based on information for component(s): Material is slightly toxic to fish on an acute basis (LC50 between 10 and 100 mg/L).

**Fish Acute & Prolonged Toxicity**

- || LC50, fathead minnow (*Pimephales promelas*), static, 72 h: 42.7 mg/l

**Data for Component: 2-Ethylhexanol**

- || Material is slightly toxic to aquatic organisms on an acute basis (LC50/EC50 between 10 and 100 mg/L in the most sensitive species tested).

**Fish Acute & Prolonged Toxicity**

- || LC50, rainbow trout (*Oncorhynchus mykiss*), 96 h: 32 - 37 mg/l

**Aquatic Invertebrate Acute Toxicity**

- || LC50, water flea *Daphnia magna*, 48 h, lethality: 35.2 mg/l

**Aquatic Plant Toxicity**

- || EC50, green alga *Pseudokirchneriella subcapitata* (formerly known as *Selenastrum capricornutum*), Growth rate inhibition, 72 h: 11.5 mg/l

**Toxicity to Micro-organisms**

- || EC50; bacteria, 16 h: 256 - 320 mg/l

**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****DOT Non-Bulk**

**Proper Shipping Name:** ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.

**Technical Name:** 2,4-D ESTER

**Hazard Class:** 9 **ID Number:** UN3082 **Packing Group:** PG III

**DOT Bulk**

**Proper Shipping Name:** COMBUSTIBLE LIQUID, N.O.S.

**Technical Name:** 3,5,6-TRICHLORO-2-PYRIDINYLOXY-ACETIC ACID, ETHYL ESTER

**Hazard Class:** COMBUSTIBLE LIQUID **ID Number:** NA1993 **Packing Group:** PG III

**IMDG**

**Proper Shipping Name:** ENVIRONMENTALLY HAZARDOUS SUBSTANCES, LIQUID, N.O.S

**Technical Name:** 2,4-D ESTER

**Hazard Class:** 9 **ID Number:** UN3082 **Packing Group:** PG III

**EMS Number:** F-A,S-F

**Marine pollutant.:** Yes

**ICAO/IATA****Proper Shipping Name:** ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.**Technical Name:** 2,4-D ESTER**Hazard Class:** 9 **ID Number:** UN3082 **Packing Group:** PG III**Cargo Packing Instruction:** 914**Passenger Packing Instruction:** 914**Additional Information**

Reportable quantity: 291 lb – 2,4-D ESTER

MARINE POLLUTANT

*This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.*

<b>15. Regulatory Information</b>
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**OSHA Hazard Communication Standard**

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

**Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312**

<b>Immediate (Acute) Health Hazard</b>	Yes
<b>Delayed (Chronic) Health Hazard</b>	Yes
<b>Fire Hazard</b>	Yes
<b>Reactive Hazard</b>	No
<b>Sudden Release of Pressure Hazard</b>	No

**Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313**

This product contains the following substances which are subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and which are listed in 40 CFR 372.

<b>Component</b>	<b>CAS #</b>	<b>Amount</b>
2,4-Dichlorophenoxyacetic acid, butoxyethyl ester	1929-73-3	34.4%
Naphthalene	91-20-3	0.2%

**Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Hazardous Substances List and/or Pennsylvania Environmental Hazardous Substance List:**

The following product components are cited in the Pennsylvania Hazardous Substance List and/or the Pennsylvania Environmental Substance List, and are present at levels which require reporting.

<b>Component</b>	<b>CAS #</b>	<b>Amount</b>
2,4-Dichlorophenoxyacetic acid, butoxyethyl ester	1929-73-3	34.4%
Kerosene (petroleum)	8008-20-6	41.5%

**Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Special Hazardous Substances List:**

To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

**Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) Section 103**

This product contains the following substances which are subject to CERCLA Section 103 reporting requirements and which are listed in 40 CFR 302.4.

Component	CAS #	Amount
2,4-Dichlorophenoxyacetic acid, butoxyethyl ester	1929-73-3	34.4%
Naphthalene	91-20-3	0.2%

#### California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)

WARNING: This product contains a chemical(s) known to the State of California to cause cancer.

#### Toxic Substances Control Act (TSCA)

All components of this product are on the TSCA Inventory or are exempt from TSCA Inventory requirements under 40 CFR 720.30

## 16. Other Information

#### Hazard Rating System

<b>NFPA</b>	<b>Health</b>	<b>Fire</b>	<b>Reactivity</b>
	1	2	0

#### Revision

Identification Number: 50258 / 1016 / Issue Date 07/23/2010 / Version: 3.0

DAS Code: XRM-4715

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
Action Level	A value set by OSHA that is lower than the PEL which will trigger the need for activities such as exposure monitoring and medical surveillance if exceeded.

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