

Product Name: CURTAIL* M Herbicide**Issue Date:** 12/18/2009**Print Date:** 18 Dec 2009

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**

CURTAIL* M 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:** Yellow**Physical State:** Liquid.**Odor:** Sweet**Hazards of product:**

Attention! Combustible liquid and vapor. May cause eye irritation. May cause skin irritation. May cause central nervous system effects. May cause anesthetic effects. May be harmful if swallowed. Aspiration hazard. Can enter lungs and cause damage. Vapor explosion hazard. Vapors may travel a long distance; ignition and/or flash back may occur. Isolate area. Keep upwind of spill. Stay out of low areas. Toxic fumes may be released in fire situations.

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. May cause slight temporary corneal injury. In humans, eye irritation resulted from brief (minutes) exposure to cyclohexanone vapor concentration of 50 ppm and above.

Skin Contact: Brief contact is essentially nonirritating to skin. Prolonged contact may cause skin irritation with local redness.

Skin Absorption: Prolonged skin contact is unlikely to result in absorption of harmful amounts.

Inhalation: Prolonged excessive exposure to mist may cause adverse effects. Symptoms of excessive exposure may be anesthetic or narcotic effects; dizziness and drowsiness may be observed. May cause central nervous system effects. Excessive exposure may cause irritation to upper respiratory tract (nose and throat).

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: Contains component(s) which have been reported to cause effects on the following organs in animals: Blood. Central nervous system. Kidney. Liver. Testes.

Birth Defects/Developmental Effects: Contains component(s) which, in laboratory animals, have been toxic to the fetus only at doses toxic to the mother. Clopyralid caused birth defects in test animals, but only at greatly exaggerated doses that were severely toxic to the mothers. No birth defects were observed in animals given clopyralid at doses several times greater than those expected during normal exposure.

Reproductive Effects: Based on information for component(s): In laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals. Cyclohexanone caused reduced growth and survival of offspring in an animal reproduction study. Dose levels producing this effect also caused central nervous system effects in parental animals.

3. Composition Information

Component	CAS #	Amount
3,6-Dichloropicolinic acid (Clopyralid)	1702-17-6	4.94 %
MCPA 2-EHE: 2-Methyl-4-Chlorophenoxyacetic Acid 2-Ethylhexyl Ester	29450-45-1	43.16 %
Cyclohexanone	108-94-1	19.9 %
Ethylene oxide, propylene oxide and di-sec-butylphenol polymer	69029-39-6	7.5 %
Balance		3.7 %
Solvent naphtha (petroleum), light aromatic consists of:	64742-95-6	20.8 %
1,2,4-Trimethylbenzene	95-63-6	%
1,3,5-Trimethylbenzene	108-67-8	%

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. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

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. If lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. The decision of whether to induce vomiting or not should be made by a 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.

Emergency Personnel Protection: First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.

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. Stay upwind. Keep out of low areas where gases (fumes) can accumulate. 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. Eliminate ignition sources. 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). If protective equipment is not available or not used, fight fire from a protected location or safe distance.

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. Vapors are heavier than air and may travel a long distance and accumulate in low lying areas. Ignition and/or flash back may occur. 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: Hydrogen fluoride. Hydrogen chloride. Carbon monoxide. Carbon dioxide.

6. Accidental Release Measures

Steps to be Taken if Material is Released or Spilled: Contain spilled material if possible. Pump with explosion-proof equipment. If available, use foam to smother or suppress. Collect in suitable and properly labeled containers. Large spills: Contact Dow AgroSciences for clean-up assistance.

Personal Precautions: Isolate area. Keep unnecessary and unprotected personnel from entering the area. Refer to Section 7, Handling, for additional precautionary measures. Keep personnel out of low areas. Keep upwind of spill. Ventilate area of leak or spill. No smoking in area. Eliminate all sources of ignition in vicinity of spill or released vapor to avoid fire or explosion. Eliminate all sources of ignition in vicinity of spill or released vapor to avoid fire or explosion. Ground and bond all containers and handling equipment. Vapor explosion hazard. Keep out of sewers. 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. No smoking, open flames or sources of ignition in handling and storage area. Vapors are heavier than air and may travel a long distance and accumulate in low lying areas. Ignition and/or flash back may occur. Electrically ground and bond all equipment. 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. Use of non-sparking or explosion-proof equipment may be necessary, depending upon the type of operation. Keep away from heat, sparks and flame. This product is a poor conductor of electricity and can become electrostatically charged, even in bonded or grounded equipment. If sufficient charge is accumulated, ignition of flammable mixtures can occur. Handling operations that can promote accumulation of static charges include but are not limited to mixing, filtering, pumping at high flow rates, splash filling, creating mists or sprays, tank and container filling, tank cleaning, sampling, gauging, switch loading, vacuum truck operations.

Storage

Minimize sources of ignition, such as static build-up, heat, spark or flame. 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
3,6-Dichloropicolinic acid (Clopyralid)	Dow IHG	TWA	10 mg/m3
1,3,5-Trimethylbenzene	ACGIH	TWA	25 ppm
Cyclohexanone	ACGIH	TWA	20 ppm SKIN
	ACGIH	STEL	50 ppm SKIN
	OSHA Table Z-1	PEL	200 mg/m3 50 ppm
1,2,4-Trimethylbenzene	ACGIH	TWA	25 ppm
Ethylene oxide, propylene oxide and di-sec-butylphenol polymer	Dow IHG	TWA	2 mg/m3

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: Wear clean, body-covering clothing.

Hand protection: Use gloves chemically resistant to this material when prolonged or frequently repeated contact could occur. 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. 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	Yellow
Odor	Sweet
Flash Point - Closed Cup	57.9 °C (136.2 °F) <i>Pensky-Martens Closed Cup ASTM D 93</i>
Flammable Limits In Air	Lower: No test data available Upper: No test data available
Autoignition Temperature	No test data available
Vapor Pressure	10 mmHg @ 23.5 °C
Boiling Point (760 mmHg)	155 °C (311 °F) <i>Literature (cyclohexanone).</i>
Vapor Density (air = 1)	>1
Specific Gravity (H₂O = 1)	1.1432 20 °C/4 °C <i>Pyknometer</i>
Liquid Density	1.012 g/cm ³
Freezing Point	No test data available
Melting Point	Not applicable
Solubility in water (by weight)	forms an emulsion
pH	2.8 <i>pH Electrode</i> (1% aqueous suspension)
Decomposition Temperature	No test data available
Partition coefficient, n-octanol/water (log Pow)	No data available for this product. See Section 12 for individual component data.

10. Stability and Reactivity

Stability/Instability

Thermally stable at typical use temperatures.

Conditions to Avoid: Some components of this product can decompose at elevated temperatures. Generation of gas during decomposition can cause pressure in closed systems.

Incompatible Materials: Avoid contact with: Strong acids. Strong bases. Strong oxidizers. Avoid contact with metals such as: Ferrous metals. Lead.

Hazardous Polymerization

Will not occur.

Thermal Decomposition

Decomposition products depend upon temperature, air supply and the presence of other materials. Toxic gases are released during decomposition.

11. Toxicological Information

Acute Toxicity**Ingestion**

As product. Single dose oral LD50 has not been determined.

For the active ingredient(s): MCPA 2-EHE: (2-methyl-4-chlorophenoxyacetic acid 2-ethylhexyl ester). LD50, Rat 1,478 mg/kg

Skin Absorption

As product. The dermal LD50 has not been determined.

For the active ingredient(s): LD50, Rabbit > 2,000 mg/kg

Inhalation

As product. The LC50 has not been determined.

For the active ingredient(s): Clopyralid. LC50, 4 h, Dust., Rat > 1.3 mg/l

Maximum attainable concentration. No deaths occurred at this concentration.

Sensitization**Skin**

For the active ingredient(s): Did not cause allergic skin reactions when tested in guinea pigs.

Repeated Dose Toxicity

Contains component(s) which have been reported to cause effects on the following organs in animals: Blood. Central nervous system. Kidney. Liver. Testes.

Chronic Toxicity and Carcinogenicity

For the active ingredient(s): Clopyralid. Did not cause cancer in laboratory animals. Based on information for component(s): Cyclohexanone. Available data are inadequate to evaluate carcinogenicity.

Carcinogenicity Classifications:

Component	List	Classification
Cyclohexanone	ACGIH	Confirmed animal carcinogen with unknown relevance to humans.; Group A3

Developmental Toxicity

Contains component(s) which, in laboratory animals, have been toxic to the fetus only at doses toxic to the mother. Clopyralid caused birth defects in test animals, but only at greatly exaggerated doses that were severely toxic to the mothers. No birth defects were observed in animals given clopyralid at doses several times greater than those expected during normal exposure.

Reproductive Toxicity

Based on information for component(s): In laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals. Cyclohexanone caused reduced growth and survival of offspring in an animal reproduction study. Dose levels producing this effect also caused central nervous system effects in parental animals. For the active ingredient(s): In animal studies, did not interfere with reproduction.

Genetic Toxicology

Contains component(s) which were negative in some in vitro genetic toxicity studies and positive in others. For the active ingredient(s): In vitro genetic toxicity studies were negative. For the active ingredient(s): Animal genetic toxicity studies were negative. Based on information for component(s): Cyclohexanone. Animal genetic toxicity studies were inconclusive

12. Ecological Information

ENVIRONMENTAL FATEData for Component: **3,6-Dichloropicolinic acid (Clopyralid)****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).

Henry's Law Constant (H): 4.92E-09 atm*m3/mole; 25 °C Estimated.

Partition coefficient, n-octanol/water (log Pow): -1.81

Partition coefficient, soil organic carbon/water (Koc): 4.9

Bioconcentration Factor (BCF): < 1; fish; Measured

Persistence and Degradability

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

OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method
5 - 10 %	28 d	OECD 301B Test

Biological oxygen demand (BOD):

BOD 5	BOD 10	BOD 20	BOD 28
		0 %	

Chemical Oxygen Demand: 0.81 mg/mg

Theoretical Oxygen Demand: 1.08 mg/mg

Data for Component: **MCPA 2-EHE: 2-Methyl-4-Chlorophenoxyacetic Acid 2-Ethylhexyl Ester****Movement & Partitioning**

Expected to be relatively immobile in soil (Koc > 5000). Bioconcentration potential is high (BCF > 3000 or Log Pow between 5 and 7).

Henry's Law Constant (H): 6.253E-05 atm*m3/mole; 25 °C Estimated.

Partition coefficient, n-octanol/water (log Pow): 6.17 Estimated.

Partition coefficient, soil organic carbon/water (Koc): 10,500 Estimated.

Bioconcentration Factor (BCF): 11,250

Persistence and Degradability

No relevant information found.

Stability in Water (1/2-life):

76 d; 25 °C; pH 7; Measured

Data for Component: **Cyclohexanone****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).

Henry's Law Constant (H): 1.04E-05 atm*m3/mole Measured

Partition coefficient, n-octanol/water (log Pow): 0.81 Measured

Partition coefficient, soil organic carbon/water (Koc): 15 Estimated.

Persistence and Degradability

Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.

Indirect Photodegradation with OH Radicals

Rate Constant	Atmospheric Half-life	Method
1.21E-11 cm3/s	10.6 h	Estimated.

OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method
87 %	14 d	OECD 301C Test

Theoretical Oxygen Demand: 2.61 mg/g

Data for Component: **Ethylene oxide, propylene oxide and di-sec-butylphenol polymer****Movement & Partitioning**

No bioconcentration is expected because of the relatively high water solubility. May foam in water.

Persistence and Degradability

Biodegradation under aerobic laboratory conditions is below detectable limits (BOD20 or BOD28/ThOD < 2.5%).

Chemical Oxygen Demand: 1.78 mg/mg

Theoretical Oxygen Demand: 2.35 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: **1,3,5-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): 1.97E-02 atm*m3/mole; 25 °C Estimated.

Partition coefficient, n-octanol/water (log Pow): 3.42 Measured

Partition coefficient, soil organic carbon/water (Koc): 700 Estimated.

Bioconcentration Factor (BCF): 23 - 342; fish; Measured

Distribution in Environment: Mackay Level 1 Fugacity Model:

Air	Water.	Biota	Soil	Sediment
97.26 %	0.62 %	< 0.01 %	2.08 %	0.05 %

Persistence and Degradability

Material is not readily biodegradable according to OECD/EEC guidelines.

Indirect Photodegradation with OH Radicals

Rate Constant	Atmospheric Half-life	Method
3.51E-11 cm3/s	3.7 h	Estimated.

OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method
0 %	28 d	OECD 301C Test

Theoretical Oxygen Demand: 3.19 mg/mg

ECOTOXICITY

Data for Component: **3,6-Dichloropicolinic acid (Clopyralid)**

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). 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, rainbow trout (*Oncorhynchus mykiss*), static, 96 h: > 99.9 mg/l

NOEC, fathead minnow (*Pimephales promelas*), flow-through, 34 d: 10.8 mg/l

Aquatic Invertebrate Acute Toxicity

EC50, water flea *Daphnia magna*, static, 48 h: > 99.9 mg/l

NOEC, water flea *Daphnia magna*, static renewal, 21 d: 17 mg/l

Aquatic Plant Toxicity

ErC50, green alga *Pseudokirchneriella subcapitata* (formerly known as *Selenastrum capricornutum*), Growth rate inhibition, 72 h: 33.1 mg/l

Toxicity to Above Ground Organisms

oral LD50, mallard (*Anas platyrhynchos*): 1465 mg/kg bodyweight.

dietary LC50, mallard (*Anas platyrhynchos*): > 4640 mg/kg diet.

oral LD50, Honey bee (*Apis mellifera*): > 100 micrograms/bee

contact LD50, Honey bee (*Apis mellifera*): > 100 micrograms/bee

Toxicity to Soil Dwelling Organisms

LC50, Earthworm *Eisenia foetida*, adult, 14 d: > 1,000 mg/kg

Data for Component: **MCPA 2-EHE: 2-Methyl-4-Chlorophenoxyacetic Acid 2-Ethylhexyl 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 a dietary basis (LC50 > 5000 ppm). Material is practically non-toxic to birds on an acute basis (LD50 > 2000 mg/kg).

Fish Acute & Prolonged Toxicity

LC50, rainbow trout (*Oncorhynchus mykiss*), flow-through, 96 h: 3.2 mg/l

Aquatic Invertebrate Acute Toxicity

EC50, water flea *Daphnia magna*, 48 h: 0.29 mg/l

Aquatic Plant Toxicity

EC50, green alga *Pseudokirchneriella subcapitata* (formerly known as *Selenastrum capricornutum*), Growth inhibition (cell density reduction), 96 h: 0.43 mg/l

NOEC, duckweed *Lemna sp.*, biomass growth inhibition, 14 d: 0.0065 mg/l

EC50, duckweed *Lemna sp.*, 14 d: 0.13 mg/l

EC50, duckweed *Lemna sp.*, 14 d: 0.31 mg/l

Toxicity to Above Ground Organisms

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

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

oral LD50, bobwhite (*Colinus virginianus*): > 2,250 mg/kg

Data for Component: **Cyclohexanone**

|| Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested).

Fish Acute & Prolonged Toxicity

|| LC50, golden orfe (*Leuciscus idus*), static, 48 h: 630 mg/l

Aquatic Invertebrate Acute Toxicity

|| EC50, water flea *Daphnia magna*, 24 h, immobilization: 820 mg/l

Toxicity to Micro-organisms

|| EC50, OECD 209 Test; activated sludge, respiration inhibition: > 1,000 mg/l

Data for Component: **Ethylene oxide, propylene oxide and di-sec-butylphenol polymer**

|| Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested).

Fish Acute & Prolonged Toxicity

|| LC50, fathead minnow (*Pimephales promelas*), 96 h: 13.3 mg/l

|| LC50, bluegill (*Lepomis macrochirus*), 96 h: 4.8 mg/l

|| LC50, rainbow trout (*Oncorhynchus mykiss*), 96 h: 3.7 mg/l

Aquatic Invertebrate Acute Toxicity

|| LC50, water flea *Daphnia magna*, 48 h: 10.5 mg/l

Toxicity to Above Ground Organisms

|| contact LD50, Honey bee (*Apis mellifera*): > 100 micrograms/bee

|| dietary LC50, Honey bee (*Apis mellifera*): > 108 micrograms/bee

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

Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested).

Fish Acute & Prolonged Toxicity

LC50, fathead minnow (*Pimephales promelas*), flow-through, 96 h: 7.7 mg/l

Aquatic Invertebrate Acute Toxicity

EC50, water flea Daphnia magna, 48 h: 3.6 mg/l

Data for Component: **1,3,5-Trimethylbenzene**

|| Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested).

Fish Acute & Prolonged Toxicity

|| LC50, Japanese medaka (Oryzias latipes), static, 48 h: 8.6 mg/l

Aquatic Invertebrate Acute Toxicity

|| LC50, water flea Daphnia magna, 24 h, immobilization: 50 mg/l

Aquatic Plant Toxicity

|| EC50, alga Scenedesmus sp., biomass growth inhibition, 48 h: 25 mg/l

|| EC50, alga Scenedesmus sp., Growth rate inhibition, 48 h: 53 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

NOT REGULATED

DOT Bulk

Proper Shipping Name: FLAMMABLE LIQUID, N.O.S.

Technical Name: AROMATIC NAPHTHA, CYCLOHEXANONE

Hazard Class: 3 **ID Number:** UN1993 **Packing Group:** PG III

IMDG

Proper Shipping Name: FLAMMABLE LIQUID, N.O.S.

Technical Name: AROMATIC NAPHTHA, CYCLOHEXANONE

Hazard Class: 3 **ID Number:** UN1993 **Packing Group:** PG III

EMS Number: f-e,s-e

Marine pollutant.: Yes

ICAO/IATA

Proper Shipping Name: FLAMMABLE LIQUID, N.O.S.

Technical Name: AROMATIC NAPHTHA, CYCLOHEXANONE

Hazard Class: 3 **ID Number:** UN1993 **Packing Group:** PG III

Additional Information

Reportable quantity: 25,125 lb – CYCLOHEXANONE

MARINE POLLUTANT

Phenoxyacetic herbicide

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.

15. Regulatory Information

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

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

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

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

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.

Component	CAS #
Cyclohexanone	108-94-1
1,2,4-Trimethylbenzene	95-63-6
1,3,5-Trimethylbenzene	108-67-8

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
Cyclohexanone	108-94-1	19.9%

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

This product contains no listed substances known to the State of California to cause cancer, birth defects or other reproductive harm, at levels which would require a warning under the statute.

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

NFPA	Health	Fire	Reactivity
	1	2	0

Revision

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DAS Code: XRM-5171

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.

Dow AgroSciences LLC 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.