# BETANEX HERBICIDE

MSDS Version 2.2

## SECTION 1. CHEMICAL PRODUCT AND COMPANY INFORMATION

| | |
|---|---|
| **Product Name** | BETANEX HERBICIDE |
| **Chemical Name** | |
| **Common Name** | |
| **MSDS Number** | 21 |
| **Chemical Family** | |
| **Chemical Formulation** | |
| **EPA Registration No.** | 264-620 |

Bayer CropScience
2 T.W. Alexander Drive
Research Triangle PK, NC 27709
USA

For MEDICAL, TRANSPORTATION or Other EMERGENCY call 1-800-334-7577 24 hours/day
For Product Information call 1-866-99BAYER (1-866-992-2937)

**Product Use Description** BETANEX is a sugar beet herbicide. Maximum use rate 7.5 pints/acre (1.22 lbs/acre).

## SECTION 2. COMPOSITION/INFORMATION ON INGREDIENTS

| Hazardous Component Name | CAS No. | Concentration % by Weight | |
|---|---|---|---|
| | | Minimum | Maximum |
| Desmedipham | 13684-56-5 | 16.0000 | |
| Isopropanol | 67-63-0 | 3.1400 | 3.4700 |
| Isophorone | 78-59-1 | 48.9900 | 52.0200 |
| Trimethylbenzene | 25551-13-7 | 3.2500 | 3.6000 |
| Xylene | 1330-20-7 | 0.3100 | 0.3400 |

## SECTION 3. HAZARDS IDENTIFICATION

*NOTE: Please refer to Section 11 for detailed toxicological information.*

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| **Emergency Overview** | Caution! Harmful if swallowed. Causes moderate eye irritation. Avoid contact with eyes or clothing. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. |
| **Physical State** | Liquid |
| **Odor** | Mild hydrocarbon |
| **Appearance** | Amber |
| **Routes of Exposure** | Skin contact. Vapor/mist inhalation. |
| **Immediate Effects** | |
| **Eye** | May produce severe eye irritation, especially under conditions of prolonged contact. The liquid is a moderate eye irritant. The vapor is a mild to moderate eye irritant. Not know to be corrosive to eyes. |
| **Skin** | Can cause moderate skin irritation. The liquid is a mild skin irritant. The vapor is a mild to moderate skin irritant. Not known to be a skin sensitizer in animal study. |
| **Ingestion** | Harmful if swallowed. Ingestion of significant amounts of liquid may cause increased salivation, general ataxia (confusion and lack of muscular coordination), weakness and tremors. |
| **Inhalation** | Prolonged inhalation of solvent vapor may cause respiratory tract irritation, narcosis (a state of feeling drunken), headache, and nausea. |
| **Medical Conditions Aggravated by Exposure** | Prolonged exposure and inhalation may aggravate pre-existing conditions of the respiratory system. |
| **Signs and Symptoms** | Solvent vapor may cause respiratory tract irritation, narcosis, headache and nausea. Ingestion and prolonged inhalation may cause increased salivation, general ataxia (confusion and lack of muscular coordination), weakness and tremors. |

## SECTION 4. FIRST AID MEASURES

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| **Eye** | 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 center or doctor for treatment advice. |
| **Skin** | 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. |
| **Ingestion** | Immediately call a poison control center or doctor for treatment advice. Do not |

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| | induce vomiting unless told to do so by a poison control center or doctor. Have person sip a glass of water if able to swallow. Do not give anything by mouth to an unconscious person. |
| **Inhalation** | Move person to fresh air. Seek medical attention if breathing difficulties occur. |
| **Note to Physician** | Gastric lavage may be used if this product has been swallowed. Probable mucosal damage may contradicate the use of gastric lavage. |

## SECTION 5. FIRE FIGHTING MEASURES

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| **Flash Point** | 147 °F / 64 °C<br>Method: Tagliabue Closed Cup<br>Combustible. |
| **Fire and Explosion Hazards** | May decompose at high temperatures and give off poisonous oxides. |
| **Suitable Extinguishing Media** | Foam, Dry chemical, Carbon dioxide (CO2), Water |
| **Fire Fighting Instructions** | Fire fighters should wear self-contained breathing apparatus. |

## SECTION 6. ACCIDENTAL RELEASE MEASURES

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| **General and Disposal** | Use proper protective equipment to minimize personal exposure (see Section 8). Take all necessary action to prevent and to remedy the effects of the spill. Ensure that the disposal is in compliance with Federal or local disposal regulations. |
| **Land Spill or Leaks** | Keep unnecessary people away. Contain and absorb spillage with non-combustible absorbent materials such as soda ash, lime, clay or earth. Scrub contaminated area with detergent and bleach solution. Report immediately to authorities if liquid enters watercourse or sewer. |

## SECTION 7. HANDLING AND STORAGE

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| **Handling Procedures** | Combustible liquid. Avoid breathing spray mist. Avoid contact with skin and eyes. Avoid contamination of feed and foodstuffs. |
| **Storing Procedures** | Store in original container. Keep tightly closed. Keep in a dry, cool place. Do not use or store near heat or open flame.<br><br>Do not contaminate water, food, or feed by storage or disposal.<br><br>If freezing occurs, thaw and remix before using. Frozen material may be thawed |

in a warm room.

**Work/Hygienic Procedures**

Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.

Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.

Remove Personal Protective Equipment (PPE) immediately after handling this product. Wash the outside of gloves before removing. As soon as practical, wash thoroughly and change into clean clothing.

Do not apply this product in a way that will contact workers or other persons, either directly or through drift.

## SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**Engineering Controls**

Control airborne concentrations below the exposure guidelines. Use with adequate ventilation. Local exhaust ventilation may be necessary, when used in a confined area.

**Eye/Face Protection**

Splash goggles Face-shield

**Hand Protection**

Chemical-resistant gloves (barrier laminate, butyl rubber, nitrile rubber or Viton)

**Body Protection**

Long-sleeved shirt and long pants

Shoes plus socks

**Respiratory Protection**

Ensure adequate ventilation. Air-purifying (half-mask/full-face) respirator with cartridges/canister approved for use against organic vapors, dusts, mists and fumes.

**General Protection**

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

**Exposure Limits**

| | | | | | |
|---|---|---|---|---|---|
| Isopropanol | 67-63-0 | NIOSH | REL | 400 ppm | 980 mg/m3 |
| | | NIOSH | STEL | 500 ppm | 1,225 mg/m3 |
| | | OSHA Z1 | PEL | 400 ppm | 980 mg/m3 |
| | | OSHA Z1A | TWA | 400 ppm | 980 mg/m3 |
| | | OSHA Z1A | STEL | 500 ppm | 1,225 mg/m3 |
| | | US CA OEL | TWA PEL | 400 ppm | 980 mg/m3 |
| | | US CA OEL | STEL | 500 ppm | 1,225 mg/m3 |
| | | ACGIH NIC | TWA | | 200 ppm |
| | | ACGIH NIC | STEL | | 400 ppm |

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|---|---|---|---|---|---|
| | | ACGIH | TWA | | 400 ppm |
| | | ACGIH | STEL | | 500 ppm |
| Isophorone | 78-59-1 | ACGIH | Ceiling | | 5 ppm |
| | | NIOSH | REL | 4 ppm | 23 mg/m3 |
| | | OSHA Z1 | PEL | 25 ppm | 140 mg/m3 |
| | | OSHA Z1A | TWA | 4 ppm | 23 mg/m3 |
| | | US CA OEL | TWA PEL | 4 ppm | 23 mg/m3 |
| Trimethylbenzene | 25551-13-7 | OSHA Z1A | TWA | 25 ppm | 125 mg/m3 |
| | | US CA OEL | TWA PEL | 25 ppm | 125 mg/m3 |
| | | ACGIH | TWA | | 25 ppm |
| Xylene | 1330-20-7 | OSHA Z1 | PEL | 100 ppm | 435 mg/m3 |
| | | OSHA Z1A | TWA | 100 ppm | 435 mg/m3 |
| | | OSHA Z1A | STEL | 150 ppm | 655 mg/m3 |
| | | US CA OEL | TWA PEL | 100 ppm | 435 mg/m3 |
| | | US CA OEL | Ceiling | | 300 ppm |
| | | US CA OEL | STEL | 150 ppm | 655 mg/m3 |
| | | NIOSH | REL | 100 ppm | 435 mg/m3 |
| | | NIOSH | STEL | 150 ppm | 655 mg/m3 |
| | | NIOSH | REL | 100 ppm | 435 mg/m3 |
| | | NIOSH | STEL | 150 ppm | 655 mg/m3 |
| | | NIOSH | REL | 100 ppm | 435 mg/m3 |
| | | NIOSH | STEL | 150 ppm | 655 mg/m3 |
| | | ACGIH | TWA | | 100 ppm |
| | | ACGIH | STEL | | 150 ppm |

## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

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|---|---|
| **Appearance** | Amber |
| **Physical State** | Liquid |
| **Odor** | Mild hydrocarbon |
| **Density** | 0.98 g/cm3 |
| **Bulk Density** | 8.16 lbs/gal |

## SECTION 10. STABILITY AND REACTIVITY

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| **Chemical Stability** | Stable |
| **Hazardous Products of Decomposition** | Decomposition Type: thermal<br>Nitrogen oxides (NOx) |

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| **Hazardous Polymerization (Conditions to avoid)** | Will not occur. |

## SECTION 11. TOXICOLOGICAL INFORMATION

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| **Acute Oral Toxicity** | Rat: LD50: 3,960 mg/kg<br>Low toxicity. Harmful if swallowed. |
| **Acute Dermal Toxicity** | Rabbit: LD50: > 9,900 mg/kg<br>Low toxicity.<br><br>Rat: LD50: > 19,800 mg/kg<br>Low toxicity. |
| **Acute Inhalation Toxicity** | Rat: LC50: > 10 mg/l 4 h<br><br>Greater than 2.6 mg/l, the highest attainable aerosol concentration in air. No mortality was observed when rats were exposed to this maximum dose. In addition, an estimated LC50 value for this Betanex product can be calculated from the known LC50 data for the several organic solvents. |
| **Skin Irritation** | A moderate skin irritant. |
| **Eye Irritation** | Severe eye irritation |
| **Sensitization** | Not known to cause skin sensitization. |

The toxicity studies reported below were carried out with the active ingredients: Desmedipham technical (>96%). In comparison, Betanex contains only 16% of DMP. Also reported is the data for Isophorone (the inert ingredient) from the chronic feeding studies in animals.

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| **Sub-Chronic Toxicity** | Results from 90-day animal studies suggest no target organ effects under the conditions of normal handling and use. |
| **Chronic Toxicity** | Desmedipham:<br>In two-year feeding studies with desmedipham in mice and rats, adverse effects were observed only in animals receiving high doses (750-1500 ppm). These include increased spleen weight, toxic hemolytic anemia (both species) and elevated methemoglobin levels (rats only, 300-1500 ppm).However, there were no significant increases in mortality rate in both species even at high dose levels. In a similar one-year study with dogs (up to 5000 ppm), toxic hemolytic anemia associated with compensatory erythropoiesis (generation of red blood cells) was the main effect noted, with a threshold level of 300 ppm. The approximate no-effect level for desmedipham is 25 mg/kg per day in mice; 3 mg/kg/day in rats; and 10 mg/kg/day in dogs.<br><br>Isophorone:<br>When administered to mice or rats, by stomach tube in corn oil, at dosage levels |

of 250 or 500 mg/kg of body weight, isophorone was found to associated with a slightly increased incidence of renal and prepuitial tumorsin male rats and of liver tumors in male mice. However,isophorone did not exhibit similar potential in either female rats or female mice. Thus, under the conditions of this bioassay, isophorone appeared to exhibit weak carcinogenic activity in these animal studies. The significance of this data is uncertain with regard to potential human health hazard under the realistic exposure conditions, i.e., exposure by inhalation or dermal contact during normal product handling and use. Isophorone is also listed as a NTP Testing Program Substance.

**Assessment Carcinogenicity**

| | | |
|---|---|---|
| **ACGIH** | | |
| Isophorone | 78-59-1 | Group A3 |
| Xylene | 1330-20-7 | Group A4 |
| **NTP** | | |
| None | | |
| **IARC** | | |
| Isopropanol | 67-63-0 | 1 |
| Isopropanol | 67-63-0 | 3 |
| Xylene | 1330-20-7 | 3 |
| **OSHA** | | |
| None | | |

**Reproductive & Developmental Toxicity**

Desmedipham showed no adverse effects on fertility or reproduction in a two-generation rat reproduction studies at dose levels up to 1250 mg/kg/day.

**Teratogenicity**

No teratogenic effects of desmedipham were observed in fetuses of rabbits given up to 450 mg/kg/day during gestation. In rats, desmedipham induced methemoglob information in dams at all doses tested (10-1000 ppm). However, no teratogenic or embryotoxic effects were observed in the offspring from dams administered a low dose of 10mg/kg/day. At the higher doses (100-1000 mg/kg/day), the dose-dependent, elevated methemoglobin levels were found to be maternally toxic, leading to an increased frequency of malformation.

**Mutagenicity**

Desmedipham was not mutagenic or genotoxic when tested in the Ames mutation test and chromosomal aberration tests using human lymphocytes or mouse micronucleus. It was mutagenic only in a mouse lymphoma cells when tested at highdoses which extended into the toxic range (50-100 mg/ml).

## SECTION 12. ECOLOGICAL INFORMATION

**Environmental Precautions**

This product is toxic to fish. Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Do not apply where runoff is likely to occur. Do not apply when weather conditions favor drift from treated areas. Do not contaminate water by cleaning of equipment or disposal of equipment wastewaters.

## SECTION 13. DISPOSAL CONSIDERATIONS

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| **General Disposal Guidance** | Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance. |
| **Container Disposal** | Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities.<br><br>Do not reuse containers. |
| **RCRA Classification** | 1330-20-7 Xylene<br><br>US. EPA Resource Conservation and Recovery Act (RCRA) U List of Hazardous Wastes (40 CFR 261.33(f) and 40 CFR 302 [CERCLA]): U239 |

## SECTION 14. TRANSPORT INFORMATION

DOT CLASSIFICATION:
Not regulated for Domestic Surface Transportation

FREIGHT CLASSSIFICATION:
Compounds,Tree or Weedkilling,N.O.I.; other than poison, having a density of 20 LBS or greater per cubic foot

*When shipped in a Bulk Container greater than 119 gallon the DOT Classification is as follows:
Combustible Liquid,N.O.S.(Isophorone),NA1993, PG III

## SECTION 15. REGULATORY INFORMATION

**EPA Registration No.** 264-620

**US Federal Regulations**

**TSCA list**

| | |
|---|---|
| Isopropanol | 67-63-0 |
| Isophorone | 78-59-1 |
| Trimethylbenzene | 25551-13-7 |
| Xylene | 1330-20-7 |

**TSCA 12b export notification**

None

**SARA Title III - section 302 - notification and information**

None

**SARA Title III - section 313 - toxic chemical release reporting**

| | | |
|---|---|---|
| Desmedipham | 13684-56-5 | 1.0% |
| Isopropanol | 67-63-0 | 1.0% |
| Xylene | 1330-20-7 | 1.0% |

**US States Regulatory Reporting**

**CA Prop65**

This product does not contain any substances known to the State of California to cause cancer.

This product does not contain any substances known to the State of California to cause reproductive harm.

**US State right-to-know ingredients**

| | | |
|---|---|---|
| Desmedipham | 13684-56-5 | NJ |
| Isopropanol | 67-63-0 | CA, CT, IL, MN, NJ, PA, RI |
| Isophorone | 78-59-1 | CA, CT, IL, MN, NJ, PA, RI |
| Trimethylbenzene | 25551-13-7 | CA, IL, MN, PA, RI |
| Xylene | 1330-20-7 | CA, CT, IL, MI, MN, NJ, PA, RI |

**Canadian Regulations**

**Canadian Domestic Substance List**

| | |
|---|---|
| Isopropanol | 67-63-0 |
| Isophorone | 78-59-1 |
| Trimethylbenzene | 25551-13-7 |
| Xylene | 1330-20-7 |

**Environmental**

**CERCLA**

| | | |
|---|---|---|
| Isopropanol | 67-63-0 | 100 lbs |
| Isophorone | 78-59-1 | 5,000 lbs |
| Xylene | 1330-20-7 | 100 lbs |

**Clean Water Section 307 Priority Pollutants**

| | |
|---|---|
| Isophorone | 78-59-1 |

**Safe Drinking Water Act Maximum Contaminant Levels**

| | |
|---|---|
| Xylene | 1330-20-7 |

**International Regulations**

**EU Classification**

| | | |
|---|---|---|
| Xylene | 1330-20-7 | Harmful |
| R Phrases | Flammable. Harmful by inhalation and in contact with skin. Irritating to skin. | |
| S Phrases | Keep out of the reach of children. Avoid contact with the eyes. | |

**European Inventory of Existing Commercial Substances (EINECS)**

| | |
|---|---|
| Desmedipham | 13684-56-5 |
| Isopropanol | 67-63-0 |
| Isophorone | 78-59-1 |
| Trimethylbenzene | 25551-13-7 |
| Xylene | 1330-20-7 |

### SECTION 16. OTHER INFORMATION

| | Health | Flammability | Reactivity | Others |
|---|---|---|---|---|
| NFPA | 2 | 2 | 0 | None |

MSDS REVISION INDICATOR: Main updates in Section 2. Composition/Information on Ingredients and Section 4. First Aid Measures.

Approval Date: 10/29/2003

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