

MATERIAL SAFETY DATA SHEET

Phen-Des 8+8 Herbicide

Revision: 2

Date issued: 11/11/04

SECTION 1 CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Company: United Phosphorus, Inc.
423 Riverview Plaza
Trenton, NJ 08611
Product Use Information: 1-800-247-1557 or www.upi-usa.com
Name used on label: Phen-Des 8+8 Herbicide
Product use: Phen-Des 8+8 is a sugarbeet herbicide

FOR MEDICAL EMERGENCIES: contact the National Pesticide Information Center at 1-800-838-7378
FOR CHEMICAL EMERGENCY: Spill, leak, fire, exposure, or accident, call CHEMTREC 1-800-424-9300

SECTION 2 COMPOSITION/INFORMATION ON INGREDIENTS

Component Name	CAS #	Weight %
Phenmedipham [3-methoxycarbonylamino-phenyl 3-methylcarbanilate] *	13684-63-4	8%
Desmedipham [Ethyl m-hydroxycarbanilate carbanilate (ester)] *	13684-56-5	8%
Other ingredients , including:		84%
Isophorone	78-59-1	
Trimethylbenzene	25551-13-7	
Isobutyl alcohol	78-83-1	
Aromatic Hydrocarbons	64742-95-6	
Xylene	1330-20-7	<1%

* Active Ingredients

** Only the regulated other ingredients are listed above.

SECTION 3 HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

WARNING. Combustible liquid. Harmful if swallowed. Prolonged contact can cause moderate to severe eye and skin irritation. Product is an amber liquid with a faint aromatic odor.

Routes of Exposure Skin contact, vapor or mist inhalation.

Signs and Symptoms EFFECTS OF OVEREXPOSURE: Solvent vapor may cause respiratory tract irritation, narcosis, headache, nausea. Ingestion and prolonged inhalation may cause increased salivation, general ataxia (confusion and lack of muscular coordination), weakness and tremors.

Immediate Effects

- 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 studies.
- Eye** May produce severe eye irritation, especially under conditions of prolonged eye contact. The liquid is a moderate eye irritant and the vapor is a mild to moderate eye irritant. Now known to be corrosive to eyes.
- Inhalation** Prolonged inhalation of solvent vapor may cause respiratory tract irritation, narcosis (a state of feeling drunken), headache, and nausea.
- 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.

Delayed/Long Term Effects Isophorone has shown some evidence of carcinogenicity in male rats and equivocal evidence of carcinogenicity in male mice in NTP studies. No other components of Phen-Des 8+8 are listed as carcinogenic by NTP, IARC or OSHA. **TARGET ORGAN EFFECTS:** Results from 90-day animal studies suggest no target organ effects under conditions of normal handling and use.

Medical Conditions Aggravated by Exposure Prolonged exposure and inhalation may aggravate pre-existing conditions of the respiratory system.

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SECTION 4 FIRST AID MEASURES

- IF SWALLOWED:** Immediately call a poison control center or doctor for treatment advice. Do not 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
- IF IN EYES:** Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing. Call a poison control center or doctor for treatment advice.
- IF ON SKIN OR CLOTHING:** 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.

Have the product container or label with you when calling a poison control center or doctor or going for treatment.

NOTE TO PHYSICIAN: Probable mucosal damage may contraindicate the use of gastric lavage. Avoid aspiration.

SECTION 5 FIRE FIGHTING MEASURES

- FLASH POINT** 144 °F / 62 °C, (Combustible) T.C.C.
Flammability Class: IIIA (Classified by NFPA/OSHA criteria)
- FIRE AND EXPLOSION HAZARD** Evolution of toxic fumes including nitrogen oxides.
- SUITABLE EXTINGUISHING MEDIA** Foam, dry chemical, carbon dioxide (CO₂), or water.
- FIRE FIGHTING INSTRUCTIONS** Persons fighting fire should wear self-contained breathing apparatus.

SECTION 6 ACCIDENTAL RELEASE MEASURES

- 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. Notify the appropriate authorities immediately. (See Section 15 for applicable Reportable Quantity (RQ) and other federal regulatory information)
- LAND SPILL OR LEAK** Keep people away. Contain and absorb spillage with absorbent material. Wash area with water containing detergent and ammonia. Inform authorities immediately if material enter watercourses.

SECTION 7 HANDLING AND STORAGE

- HANDLING PROCEDURES** WARNING. Harmful if swallowed. May produce severe irritation of eyes and irritation of the skin. Avoid breathing spray mist. Avoid contact with skin and eyes.
- STORING PROCEDURES** Store in original container and keep closed. Store in a cool, dry place. Do not use or store near heat or open flame.
If exposed to subzero temperatures, Phen-Des 8+8 gradually thickens. The liquid returns to its original consistency when placed in a room (over 50°F) for several days.
- WORK/HYGENIC PROCEDURES** Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this products concentrate. Follow manufacturer's instructions for cleaning/maintaining Personal Protective Equipment (PPE). If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.
Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Do not apply when weather conditions favor drift. Do not apply through any type of irrigation system. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation.

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SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

END USER MUST READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL

Engineering Controls	Control airborne concentrations below the exposure guideline (see below for any OSHA/ACGIH exposure limits). Use with adequate ventilation. Local exhaust ventilation may be necessary, especially when used in a confined area.
Eye/Face Protection	Splash goggles, face shield
Body Protection	Nitrile protective gloves
Respiratory Protection	Ensure good ventilation. Wear organic Vapor respirator for maximum protection.
For Applicators and Handlers (Agricultural Uses)	The personal protective equipment (PPE) for agricultural uses which are within the scope of the EPA Worker Protection Standards (WPS) (40 CFR Part 170) are specified on the Product Label.
For Manufacturing and Packaging Employees	The personal protective equipment (PPE) in accordance with OSHA standards are recommended above.

Exposure Limits

Chemical	CAS No.	Limit	
Isophorone	78-59-1	ACGIH, Ceiling	5 ppm (28 mg/m ³)
		NIOSH, REL	4 ppm (23 mg/m ³)
		OSHA Z1, PEL	25 ppm (140 mg/m ³)
		OSHA Z1A, TWA	4 ppm (23 mg/m ³)
Trimethylbenzene	25551-13-7	ACGIH, TWA	25 ppm (123 mg/m ³)
		OSHA Z1A, TWA	25 ppm (125 mg/m ³)
Isobutyl Alcohol	78-83-1	ACGIH, TWA	50 ppm (152 mg/m ³)
		NIOSH, REL	50 ppm (150 mg/m ³)
		OSHA Z1, PEL	100 ppm (300 mg/m ³)
		OSHA Z1A, TWA	50 ppm (150 mg/m ³)
Xylene	1330-20-7	ACGIH, TWA	100 ppm (434 mg/m ³)
		ACGIH STEL	150 ppm (651 mg/m ³)
		NIOSH, REL	100 ppm (435 mg/m ³)
		NIOSH STEL	150 ppm (655 mg/m ³)
		OSHA Z1, PEL	100 ppm (435 mg/m ³)
		OSHA Z1A, TWA	100 ppm (435 mg/m ³)

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE	Amber Liquid
ODOR	Faint organic solvent
VAPOR PRESSURE	Pure isophorone, < 1.0 mmHg (20°C)
DENSITY	0.99 g/cm ³
BOILING POINT	Not available
SOLUBILITY	Not applicable

SECTION 10 STABILITY AND REACTIVITY

CHEMICAL STABILITY	Stable
HAZARDOUS POLYMERIZATION	Will not occur

SECTION 11 TOXICOLOGICAL INFORMATION

Acute Oral Toxicity	Rat: 4,059 mg/kg (Low toxicity. Harmful if swallowed)
Acute Dermal Toxicity	Rabbit: 1,980 mg/kg (Low toxicity.)

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Acute Inhalation Toxicity Not available for Phen-Des 8+8 Herbicide. However, data from a formulation with similar ingredients suggest low toxicity for Phen-Des 8+8. The calculated LC50 is > 10 mg/l (estimated from the known LC50 values for the inert solvents).

Skin Irritation Product is a moderate skin irritant.

Eye Irritation Can cause severe eye irritation under conditions of prolonged contact.

Sensitization Not known to be a skin sensitizer in animal study.

The toxicity studies reported below were carried out with the active ingredients: Phenmedipham (PMP) and Desmedipham (DMP) technical (>96%). In comparison, Phen-Des 8+8 contains only 8% each of PMP and DMP. Also reported is the data for isophorone (the inert ingredient) from the chronic feeding studies in animals.

Sub-chronic Toxicity Results from 90-day animal studies suggest no target organ effects under the conditions of normal handling and use.

Chronic Toxicity **Phenmedipham:** In two-year feeding studies with phenmedipham in rats, mice and dogs, no organotoxic effects were observed; the only effects noted at the high experimental doses (500-1000 ppm) were reduced weight gain (rats) and increased kidney weight (mice).

Desmedipham: In two-year feeding studies with desmedipham in mice and rats, adverse effects were observed only in animals receiving high doses (750-1,500 ppm). The effects include increased spleen weight, toxic hemolytic anemia (both species) and elevated methemoglobin levels (rats only, 300-1,500 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 5,000 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 in the tested animals is: 25 mg/kg/day in mice; 3 mg/kg/day in rats; and 10 mg/kg/day in dogs.

Isophorone: 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 be associated with a slightly increased incidence of renal and preputial tumors in 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	Xylene	1330-20-7	
OSHA	None		

Reproductive & Developmental Toxicity Both phenmedipham and desmedipham were shown to have no adverse effects on fertility or reproduction in multi-generation rat reproduction studies at dose levels up to 1,250 mg/kg/day.

Teratogenicity Phenmedipham showed no embryotoxic or teratogenic effects in a rat or a rabbit teratology study. No teratogenic effects of desmedipham were observed in fetuses of rabbits given up to 450 mg/kg/day during gestation. In rats, desmedipham induced methemoglobin formation in dams at all doses tested (10-1,000 ppm). However, no teratogenic or embryotoxic effects were observed in the offspring from dams administered a low dose of 10 mg/kg/day. At the higher doses (100-1,000 mg/kg/day), the dose-dependent, elevated methemoglobin levels were found to be maternally toxic, leading to an increased frequency of malformation.

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

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SECTION 12 ECOLOGICAL INFORMATION

ENVIRONMENTAL PRECAUTIONS

This pesticide is toxic to fish and aquatic organisms. For terrestrial uses, do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Drift and runoff from treated areas may be hazardous to fish and aquatic organisms in adjacent aquatic sites. Do not contaminate water through disposal of equipment washwaters.

SECTION 13 DISPOSAL CONSIDERATIONS

GENERAL DISPOSAL GUIDANCE

PESTICIDE DISPOSAL: Do not contaminate water, food or feed by storage or disposal. 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

Please refer to the product label for other specific disposal instructions (e.g., CONTAINER DISPOSAL).

RCRA CLASSIFICATION

78-83-1 Isobutyl Alcohol
U.S. EPA Resource Conservation and Recovery Act (RCRA) U List of Hazardous Wastes (40 CFR 261.33(f) and 40 CFR 302 [CERCLA]: U140

1330-20-7 Xylene
U.S. 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

PROPER SHIPPING NAME None
DOT SHIPPING LABEL None

SECTION 15 REGULATORY INFORMATION

US FEDERAL

TSCA List

Isophorone	78-59-1
Trimethylbenzene	25551-13-7
Isobutyl alcohol	78-83-1
Aromatic Hydrocarbons	64742-95-6
Xylene	1330-20-7

TSCA 12b export notifications 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%
Xylene	1330-20-7	1.0%

U.S. STATES REGULATORY

CA Prop 65

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.

U.S. State right-to-know- ingredients

Desmedipham	13684-56-5	NJ
Isophorone	78-59-1	CA, CT, IL, NJ, PA, RI
Trimethylbenzene	25551-13-7	CA, IL, PA, RI
Isobutyl Alcohol	78-83-1	CA, CT, IL, NJ, PA, RI
Xylene	1330-20-7	CA, CT, IL, NJ, PA, RI

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ENVIRONMENTAL

CERCLA

Isophorone	78-59-1	5,000 lbs.
Isobutyl Alcohol	78-83-1	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

SECTION 16 OTHER INFORMATION

HAZARD RATINGS

	Health	Flammability	Reactivity	Others
NFPA	2	2	0	None
HMIS	2	2	0	H

ABBREVIATIONS

ACGIH = American Conference of Governmental Industrial Hygienists

OSHA = Occupational Safety and Health Administration

REL = Recommended Exposure Limit

TLV = Threshold Limit Value

NIOSH = National Institute for Occupational Safety and Health

PEL = Permissible Exposure Limit

STEL = Short Term Exposure Limit

TWA = Time Weighted Average

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This Material Safety Data Sheet (MSDS) serves different purposes than and DOES NOT REPLACE OR MODIFY THE EPA-APPROVED PRODUCT LABELING (attached to and accompanying the product container). This MSDS provides important health, safety, and environmental information for employers, employees, emergency responders and others handling large quantities of the product in activities generally other than product use, while the labeling provides that information specifically for product use in the ordinary course.

MSDS status:

Revision 2 replaces Revision 1, 6/20/02. Reason for revision: update company information in Section 1; update First Aid in Section 4, add emergency treatment contact information.