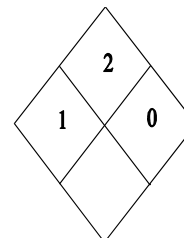


MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Hivol™-44
GENERAL USE: Plant Growth Regulator
PRODUCT DESCRIPTION: Amber liquid with an aliphatic solvent odor
EPA Registration Number: 5481-509
MSDS No.: 308_2
Current Revision Date: 15 July, 2004



MANUFACTURER:
AMVAC CHEMICAL CORPORATION
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Ph: 323-264-3910
FAX: 323-268-1028

EMERGENCY TELEPHONE NUMBERS:
MANUFACTURER: 323-264-3910
TRANSPORTATION (24 HOURS)
CHEMTREC: 800-424-9300
OTHER (24 HOURS)
AMVAC: 323-264-3910

2. COMPOSITION/INFORMATION ON INGREDIENTS

COMPONENT	WT %	CAS No.
Isopropyl ester of 2,4-Dichlorophenoxyacetic Acid	44.0%	94-11-1
Inert Ingredients (Includes small amounts of unreacted 2,4-Dichlorophenoxyacetic Acid (2,4-D Acid))	56.0%	94-75-7

OSHA HAZARDOUS COMPONENTS (29 CFR1910.1200)

COMPONENT(CAS No.)	HAZARD	OSHA PEL*	ACGIH TLV*
Petroleum distillates (8008-20-6)	Flammable		100 mg/m ³ (skin)
Naphthalene (91-20-3)	Skin and eye irritation; CNS depression; respiratory irritation		
2,4-Dichlorophenoxyacetic Acid (2,4-D acid) (94-75-7)	Possible carcinogen	10 ppm	10 ppm
	Irritant	10 mg/m ³	10 mg/m ³

* Exposure Limits 8 hrs. TWA

Hivol is a trademark of AMVAC Chemical Corporation.

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:

CAUTION! Harmful if swallowed. Avoid inhaling fumes or spray. Avoid contact with skin, eyes, or clothing.

Do not contaminate bodies of water.

POTENTIAL HEALTH EFFECTS

ROUTE(S) OF ENTRY: Inhalation, ingestion, skin and eye contact.

SIGNS OF ACUTE OVEREXPOSURE: Nausea, headaches, eye irritation. The presence of petroleum distillates may lead to central nervous system (CNS) depression, drying of the skin and dermatitis. Aspiration (breathing) of vomitus after swallowing may lead to aspiration pneumonitis.

SIGNS OF CHRONIC OVEREXPOSURE: See above.

CARCINOGENICITY: EPA lists 2,4-D acid, an impurity in 2,4-D Isopropyl Ester, as being in category D, not classifiable as a Human Carcinogen. IARC lists 2,4-D acid as being in category 2B, possibly carcinogenic to humans. IARC has recently listed Naphthalene, a minor component of the solvent, as also being in category 2B. Care should be taken when handling this product.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Preexisting neurological problems may be aggravated by exposure to this product. Near fatal exposures may result in congestive effects to a wide variety of organs based on the presence of petroleum distillates.

4. FIRST AID MEASURES

EYES: Immediately flush the eyes with copious amounts of clear, cool running water for a minimum of 15 minutes. Hold the eyelids apart during the flushing to ensure rinsing of the entire surface of the eyes and lids with water. Contact a physician immediately. If there will be a delay in getting medical attention, rinse the eyes for at least another 15 minutes.

INHALATION: Remove victim to fresh air. If breathing has ceased, clear the victim's airway and start mouth-to-mouth artificial respiration. If breathing is difficult, give oxygen. Contact a physician immediately.

4. FIRST AID MEASURES, cont'd

INGESTION: Immediately dilute the swallowed product by giving large quantities of water, but do not induce vomiting. If vomiting occurs, give fluids again. Have a physician determine if condition of patient will permit induction of vomiting or evacuation of stomach. Never give anything by mouth to an unconscious person. Contact a physician immediately.

SKIN: Immediately flush all affected areas with large amounts of clear water for at least 15 minutes. Remove contaminated clothing. Do not attempt to neutralize with chemical agents. Wash clothing before reuse. If skin irritation develops, contact a physician immediately.

NOTE TO PHYSICIANS: This product contains petroleum distillates. Gastric lavage should be considered following intubation with a cuffed endotracheal tube to prevent aspiration of vomitus. Contact your local or state poison control center for further information.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES:

Flash Point:	115°F (45°C), TCC
Autoignition Temperature:	410°F (210°C) for solvent
Flammable Limits:	
Lower flammable limit:	0.7%
Upper flammable limit:	7.0%
Flammability:	This is a flammable liquid (NFPA rating = 2)

EXPLOSIVITY:

Mechanical Impact:	Not explosive
Static Discharge:	No information available

HAZARDOUS COMBUSTION PRODUCTS: This product emits hazardous fumes of unknown composition when burned.

EXTINGUISHING MEDIA: Foam, carbon dioxide, dry chemical, water fog - DO NOT USE WATER STREAM. Water can be used to cool unopened containers of this product.

FIRE FIGHTING INSTRUCTIONS: Do not breathe fumes. Wear complete fire fighting gear, including protective gloves, eye protection, and self-contained breathing apparatus. Wash clothing before reuse.

6. ACCIDENTAL RELEASE MEASURES

GENERAL: Use adequate ventilation and air-supplied respirators, as well as impervious clothing and safety goggles. Keep bystanders upwind and away from the spill. Turn off all ignition sources and use sparkproof equipment to prevent accidental ignition of the solvent.

6. ACCIDENTAL RELEASE MEASURES, cont'd

SMALL SPILL: Cover with nonflammable absorbent (clay, kitty litter, etc.), to absorb the liquid. Sweep or vacuum and place into an open drum. Clean the area with common powdered household detergent and a stiff brush and just enough water to make a slurry. Absorb and sweep into the same open drum. Rinse with water, absorb, and add to the waste drum. Close the drum and dispose of properly.

LARGE SPILL: Dike the spill to prevent contamination of local water sources. Siphon the majority of the liquid into drums for use or disposal, depending on the circumstances. Clean the area as described for a small spill.

7. HANDLING AND STORAGE

HANDLING: Wear recommended personal protective equipment (PPE; See Section 8). Avoid breathing fumes or spray. Avoid contact with skin, eyes, or clothing. Wash PPE after each day of use and before reuse. Wash hands and face thoroughly after use.

STORAGE: Store product in original container in a secure, dry and temperate area. Do not use, pour, spill or store product near heat or open flame. Keep container closed when not in use. Do not store near food, feed, fertilizers, seeds, insecticides or fungicides. Do not use or store around the home. Avoid contact with water. Keep away from children and pets.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: Ventilation should be provided that is sufficient to keep exposure to this product below the TLV's.

RESPIRATORY PROTECTION: A properly FIT-TESTED NIOSH/MSHA approved respirator fitted with organic vapor cartridges should be used when working with this product, if ventilation is insufficient to keep exposures below the TLV's.

SKIN PROTECTION: Long-sleeved shirt and long pants, chemical-resistant gloves, shoes plus socks, are all required when working with this product. If there is a possibility of splashing or spillage, a chemical resistant apron or chemical resistant coverall should also be worn.

EYE PROTECTION: Safety glasses must be worn when working with any chemical. If there is a possibility of splashing or spillage, safety goggles or a faceshield should also be worn.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Liquid
Appearance:	Amber liquid
Odor:	Aliphatic solvent odor
Odor Threshold:	None established
Boiling Point:	176.6°C (350°F)
Freezing/melting Point:	< 0°C
Specific Gravity:	0.99
Density:	8.26 lb/gal
Vapor Pressure (mm/Hg):	0.01 mm Hg @ 100°F
Vapor Density:	Heavier than air
Percent Volatile by Vol:	Approx. 50%
Solubility in Water:	Emulsifies
Solubility (other):	Soluble in aromatic, aliphatic, and chlorinated solvents
Reactivity with Water:	None
Partition Coefficient (a.i.):	Not available
pH:	4-5 (as 5% emulsion)
Evaporation Rate:	Slow

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY (Conditions to avoid): Stable under normal storage and use conditions.

INCOMPATIBILITY: Strong acids, alkaline compounds, and oxidizing compounds.

HAZARDOUS DECOMPOSITION PRODUCTS: Emits hazardous fumes and smoke of unknown composition when heated to decomposition or burned.

HAZARDOUS POLYMERIZATION: This product will not polymerize.

11. TOXICOLOGICAL INFORMATION

The information given below is for either the active ingredient (a.i.) or for this product (p)

INGESTION:	Oral LD ₅₀ (rat):	1.25 g/kg (Toxicity Category III)(p)
INHALATION:	Inhalation LC ₅₀ (rat):	> 4.7 mg/L (Toxicity Category IV)(p)
DERMAL:	Skin LD ₅₀ (rabbit):	> 2000 mg/kg (Toxicity Category III)(p)
IRRITATION:	Eye irritation:	Non-irritant (Toxicity Category IV)(p)
	Skin irritation:	Non-irritating (Toxicity Category IV)(p)
SENSITIZATION:	Skin sensitization:	Not a sensitizer (p)
	(guinea pig)	

11. TOXICOLOGICAL INFORMATION, cont'd

TERATOGENICITY: No evidence of teratogenicity has been observed in laboratory testing. (a.i.)

MUTAGENICITY: No evidence of mutagenicity has been observed in animal testing. (a.i.)

CARCINOGENICITY: No evidence of carcinogenicity has been observed (a.i.). Information available from studies done with rodents led EPA to list 2,4-D acid as not classifiable as a human carcinogen. The IARC has listed both 2,4-D acid and Naphthalene as being possible human carcinogens (Category 2B). Both are present as minor impurities in this product.

REPRODUCTIVE TOXICITY: No evidence of reproductive toxicity has been observed. (a.i.)

TOXICOLOGICALLY SYNERGISTIC PRODUCTS: No data are available. (a.i., p)

12. ECOLOGICAL INFORMATION

This product may adversely affect nontarget plants, including cotton, beans, peas, grapes and ornamentals. Do not apply to water bodies.

13. DISPOSAL CONSIDERATIONS

Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture, rinsate, or spilled product is a violation of Federal law and may contaminate groundwater. If wastes from this product cannot be disposed by use according to the 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 the container for recycling or reconditioning, or puncture and dispose of it in a sanitary landfill, or incineration, or, if allowed by State and local authorities, by burning. If burning is used, stay out of the smoke. Contact the State and local authorities for current regulations.

14. TRANSPORTATION INFORMATION

DOT Class*	3
UN Number	UN1993
IMDG Class (sea)	3
IATA Class (air)	3
Marine Pollutant	No
Packing Group	III
Hazard label(s)	Flammable Liquid
ADR Class (road)	3
Proper shipping name(s)	Flammable liquid(s), n.o.s. (Contains petroleum distillates, 2,4-D acid ester)

14. TRANSPORTATION INFORMATION, cont'd

Reportable Quantity: Yes (for quantities equal to or greater than 222 lbs/25.6 gal)

PACKAGING

General Description: 1 quart plastic bottles packed 12/case and 1 gallon plastic bottles packed 4/case.

* The DOT information listed above only applies when this product is shipped in bulk. The DOT exception for materials with a flashpoint between 100°F and 141°F allowing for reclassification as a Combustible Liquid is used for gallon and quart shipments of this product (Section 173.150(f)).

15. REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS:

This product is registered under EPA/FIFRA Regulations. It is a violation of Federal Law to use this product in any manner inconsistent with its labeling. Read and follow all label directions. This product is excluded from listing requirements under EPA/TSCA.

SARA TITLE III DATA

Section 311 & 312 Hazard Categories:

Immediate Health Hazard:	Yes
Delayed Health Hazard:	Yes
Fire Hazard:	Yes
Reactive Hazard:	No
Sudden Pressure Release Hazard:	No

Section 302 Extremely Hazardous Substances: None

Section 313 Toxic Chemicals: Naphthalene (91-20-3); 2,4-D Acid, Ester (CAS 94-11-1); 2,4-D Acid (CAS 94-75-7)

CERCLA Reportable Quantities: 2,4-D Acid, Ester - 100 lbs; 2,4-D Acid - 100 lb; Naphthalene - 100 lbs; Product (calculated on 2,4-D Acid, Ester content) - 222 lbs.

RCRA Status: Wastes from this product should be disposed under RCRA code D001

STATE REGULATIONS: The following information is given for one or more states.

CALIFORNIA (Proposition 65): This product contains a chemical known to the State of California to cause cancer - Naphthalene.

16. OTHER INFORMATION

MSDS Status:

Date This Revision: 15 July, 2004

Date Previous Revision: 30 April, 2004

Person Responsible for Preparation: Gary A. Braden

Reasons for Revision: New information has become available that required changes in sections 11 (Toxicological) and 14 (Transportation).

DISCLAIMER:

This information is provided for the limited guidance to the user. While AMVAC believes that the information is, as of the date hereof, reliable, it is the user's responsibility to determine the suitability of the information for its purposes. The user is advised not to construe the information as absolutely complete since additional information may be necessary or desirable when particular, exceptional, or variable conditions or circumstances exist (like combinations with other materials), or because of applicable regulations. No express or implied warranty of merchantability or fitness for a particular purpose or otherwise is made hereunder with respect to the information or the product to which the information relates.

ABBREVIATIONS:

ACGIH	-	American Conference of Governmental Industrial Hygienists
CERCLA	-	Comprehensive Environmental Response, Compensation, and Liability Act
DOT	-	Department of Transportation
EPA	-	Environmental Protection Agency
FIFRA	-	Federal Insecticide, Fungicide, and Rodenticide Act
IARC	-	International Agency for Research on Cancer
IATA	-	International Air Transport Association
IMDG	-	International Maritime Dangerous Goods
NTP	-	National Toxicology Program
OSHA	-	Occupational Safety and Health Agency
SARA	-	Superfund Amendments and Reauthorization Act
TLV	-	Threshold Limit Value
TSCA	-	Toxic Substances Control Act
TWA	-	Time Weighted Average (8 hour)

This is the last page of this MSDS. There should be 8 pages.