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UNION CARBIDE CORPORATION OLD RIDGEBURY ROAD, DANBURY, CT 06817
Corporate Health, Safety and Environmental Affairs Department



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February 27, 1985

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6/27/85

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Louis Borghi, Senior Scientist
Industrial Chemical Info. Sect.
Dynamac Corp., The Dynamac Building
11140 Rockville Pike
Rockville, MD 20852

Dear Mr. Borghi:

Attached are the data from aquatic studies on 2-(diethylamino)ethanol, (DEEA, CAS No. 100-37-8) as requested by you in your letter of January 23, 1985. I understand that this information will be used by the TSCA Interagency Testing Committee as part of the process in considering DEEA for possible recommendation to the EPA for testing. There are no aspects of this information for which Union Carbide asserts a claim of confidentiality.

The scientist who provided this information adds the following explanatory comments.

"Since there is an obvious difference in biooxidation measurements at Day 20 in the two test series, we may want to consider additional tests. However, I believe the difference between 4 and 76 percent biooxidation at Day 20 simply serves to emphasize the importance of some level of acclimation for suitable biodegradation of DEEA. It should be stressed that these biodegradation tests were conducted using domestic sewage microorganisms as seed rather than an industrial seed source.

Also, the aquatic toxicity data were collected without any pH adjustment in an effort to measure the toxicity of this chemical if it were spilled directly to a stream". These comments should accompany the enclosed data for the consideration by the Testing Committee.

I take the liberty of enclosing a later MSDS (Dec. 1984) than the one referred to in your letter, viz., Aug. 1978. The same statement "toxic to fish" appears in the more recent MSDS - now in Sect. VII. Please call if there are further questions.

Very truly yours,

D. L. Heywood

D. L. Heywood
Asst. Dir., Prod. Safety
(203) 794-5224

DLH/cr
Attachment

0206J

10/18/94

TABLE I

ECOLOGICAL FATE AND EFFECTS DATA ON
 N,N-DIETHYLETHANOLAMINE

Biodegradation

Theoretical oxygen demand (ThOD)(a)	
Calculated, carbonaceous, mgO ₂ /mg compd	2.33
Calculated, nitrogenous, mgO ₂ /mg compd	0.55

Biochemical oxygen demand(b)	<u>TEST PERIOD</u>	<u>INITIAL SCREENING TEST</u>	<u>RECENT EVALUATION TEST</u>
Biooxidation, % (BOD/ThOD x 100)	Day 5	0	< 5
	Day 10	0	< 5
	Day 20	4	76

Aquatic Toxicity(c)

96-hour LC50 using fathead minnows 73 mg/L

- (a) This value is based on the theoretical oxidation of the test material to its lowest energy state (i.e., CO₂, H₂O) except for nitrogen containing products. The ThOD of nitrogen containing materials (nitrogenous oxygen demand) is based on the nitrogen (via ammonia) being completely oxidized to nitric acid.
- (b) The biochemical oxygen demand (BOD) test was conducted by procedures published in Standard Methods for the Examination of Water and Wastewater. Some modifications were needed for the 20-day test which involved reaeration and calculations. Domestic sewage was used as seed. Since the static BOD test system usually inhibits nitrifying bacteria, the reported biooxidation is a percent of the theoretical carbonaceous oxygen demand.
- (c) Aquatic toxicity tests were conducted using ASTM/EPA procedures. Ten fathead minnows were used for each test concentration, but replicates were not used.

G. T. Waggy
 1326J



MATERIAL SAFETY DATA SHEET

EFFECTIVE DATE: December, 1984



Union Carbide Corporation urges the customer receiving this Material Safety Data Sheet to study it carefully to become aware of hazards, if any, of the product involved. In the interest of safety you should (1) notify your employees, agents, and contractors of the information on this sheet, (2) furnish a copy to each of your customers for the product, and (3) request your customers to inform their employees and customers as well.

IDENTIFICATION

PRODUCT NAME: N,N-Diethylethanolamine

CHEMICAL NAME: N,N-Diethylethanolamine CHEMICAL FAMILY: Alkanolamines

FORMULA: $(C_2H_5)_2NC_2H_4OH$ MOLECULAR WEIGHT: 117.19

SYNONYMS: Diethylaminoethanol

DEPARTMENT OF TRANSPORTATION	Hazard Classification Shipping Name	Corrosive Material Corrosive Liquid, NOS
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CAS # 100-37-8 CAS NAME Ethanol, 2-(diethylamino)-

PHYSICAL AND CHEMICAL PROPERTIES

BOILING POINT, 760 mm Hg, 101.325 kPa	162.1°C (323.8°F)	POUR POINT	-78°C (-108°F)
SPECIFIC GRAVITY (H ₂ O = 1)	0.8855 at 20/20°C	VAPOR PRESSURE at 20°C.	(0.1 kPa) 1 mm Hg
VAPOR DENSITY (air = 1)	4.04	SOLUBILITY IN WATER, % by wt. at 20°C	Complete
PERCENT VOLATILES BY VOLUME	None	EVAPORATION RATE (Butyl Acetate = 1)	0.17
APPEARANCE AND ODOR	Water-white to pale yellow liquid; amine odor.		

TOXICITY DATA

MATERIAL	%	TLV	HAZARD
N,N-Diethylethanolamine	> 99	10 ppm (skin)	Corrosive, toxic by skin absorption, combustible

FLAMMABILITY DATA

FLASH POINT (test method[s])	120°F, Tag closed cup 130°F, Tag open cup		
FLAMMABLE LIMITS IN AIR, % by volume	LOWER	1.4 (calc'd)	UPPER 7.2 (calc'd)

EXTINGUISHING MEDIA: Use water spray, carbon dioxide, dry chemical, alcohol-type or universal-type foam applied by manufacturer's recommended technique.

SPECIAL FIRE FIGHTING PROCEDURES: Use supplied breathing air and protective clothing.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

EMERGENCY PHONE NUMBERS

HEALTH HAZARD DATA**NAME AND SOURCE:**

OSHA CFR 29 para 1910.1000, Table Z-1; ACGIH (1980).

ACUTE EFFECTS OF OVEREXPOSURE

SWALLOWING	Modestly toxic by swallowing. May cause nausea, vomiting, abdominal pain, and collapse.
SKIN ABSORPTION	Prolonged or extensive exposure may result in the absorption of harmful amounts of material.
INHALATION	Causes nausea and vomiting. High concentrations may be irritating.
SKIN CONTACT	Contact with skin, especially prolonged contact, may cause burns.
EYE CONTACT	Causes severe irritation.

CHRONIC EFFECTS OF OVEREXPOSURE

None currently known.

OTHER HEALTH HAZARDS

None currently known.

EMERGENCY AND FIRST AID PROCEDURES

SWALLOWING	Give two (2) glasses of water and induce vomiting. Call a physician.
SKIN	Immediately flush skin with plenty of water while removing contaminated clothing and shoes. Wash clothing before wearing again.
INHALATION	Remove to fresh air. Call a physician if symptoms persist.
EYES	Immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

NOTES TO PHYSICIAN

There is no specific antidote. Treatment of overexposure should be directed at the control of symptoms and the clinical conditions.

VI. REACTIVITY DATA

STABILITY		CONDITIONS TO AVOID	None
UNSTABLE	STABLE		
	X		
INCOMPATIBILITY (materials to avoid)		Strong acids and strong oxidizing agents.	
HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS		Burning can produce carbon monoxide, carbon dioxide, and nitrogen oxide.	
HAZARDOUS POLYMERIZATION		CONDITIONS TO AVOID	None
May Occur	Will Not Occur		
	X		

VII. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED	Wear suitable protective equipment. Collect for disposal. Toxic to fish; avoid discharge to natural waters.
WASTE DISPOSAL METHOD	Incinerate in a furnace where permitted under appropriate Federal, State, and local regulations. See Section IX.

VIII. SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION	Self-contained breathing apparatus in high concentrations.		
VENTILATION	This product should be confined within covered equipment, in which case general (mechanical) room ventilation is expected to be satisfactory.		
PROTECTIVE GLOVES	Rubber	EYE PROTECTION	Monogoggles
OTHER PROTECTIVE EQUIPMENT	Eye bath and safety shower		

IX. PRECAUTIONS**PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING**

Do not get in eyes, on skin, or on clothing. Keep away from heat and open flame. Avoid breathing vapor. Keep container closed. Use with adequate ventilation. Wash thoroughly after handling.

FOR INDUSTRY USE ONLY

OTHER PRECAUTIONS

Disposal: If spilled material cannot be collected, it may be possible to neutralize with dilute hydrochloric acid and then landfill the neutral salt in accordance with appropriate Federal, State, and local regulations.

The opinions expressed herein are those of qualified experts within Union Carbide Corporation. We believe that the information contained herein is current as of the date of this Material Safety Data Sheet. Since the use of this information and these opinions and the conditions of use of the product are not within the control of Union Carbide Corporation, it is the user's obligation to determine the conditions of safe use of the product.

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