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**UNION CARBIDE CHEMICALS AND PLASTICS COMPANY INC.**  
HEALTH, SAFETY AND ENVIRONMENTAL AFFAIRS

October 31, 1991

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Office of Toxic Substances  
U.S. Environmental Protection Agency  
401 M Street, SW  
Washington, DC 20460



88920000113

Attn: Section 8(e) Coordinator (CAP Agreement)

Re: CAP Agreement Identification No. 8ECAP-0110

Dear Sir or Madam:

Union Carbide Corporation ("Union Carbide") herewith submits the following report pursuant to the terms of the TSCA §8(e) Compliance Audit Program and Union Carbide's CAP Agreement dated August 14, 1991 (8ECAP-0110). This report describes a range finding (acute) toxicity study with iminobis (propylamine) (CASRN 92-88-6).

"Iminobis (propylamine): Range Finding Toxicity Studies", Chemical Hygiene Fellowship (Carnegie-Mellon University), Project Report 40-103, August 17, 1977.

A complete summary of this report is attached.

Previous TSCA Section 8(e) or "FYI" Submission(s) related to this substance are:

(none)

Previous PMN submissions related to this substance are: (none)

iminobis

This information is submitted in light of EPA's current guidance. Union Carbide does not necessarily agree that this information reasonably supports the conclusion that the subject chemical presents a substantial risk of injury to health or the environment.

In the attached report the term "BUSINESS CONFIDENTIAL" is entered on the first page. This precautionary statement was for internal use at the time of issuance of the report. Confidentiality is hereby waived for purposes of the needs of the Agency in assessing health and safety information. The Agency is advised, however, that the publication rights to the contained information are the property of Union Carbide.

Yours truly,



William C. Kuryla, Ph.D.  
Assistant Director  
Product Safety  
(203/794-5230)

WCK/cr

Attachment (3 copies of cover letter, summary, and report)

**SUMMARY**

40-103

**Iminobis (propylamine)**

**Range Finding Toxicity Studies**

Sponsor: *Union Carbide Corporation*

\* \* \* \* \*

**Summary**

Stomach Intubation, rat - LD50 = 0.707 ml/kg; dosed as received.  
Skin Penetration, rabbit - LD50 = 0.252 ml/kg; dosed as received.  
Inhalation, rat -  
    Substantially saturated vapor, dynamic conditions at 24°C.  
    8 hours killed 0 of 6.  
Uncovered Skin Irritation, rabbit - Moderate, Grade 6.  
Eye Injury, rabbit - Severe, Grade 9.

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**CONFIDENTIAL:** Not to be released  
outside UCC without the written  
consent of the C & P Medical Director,  
Occupational Health Team Operations  
Manager or Product Safety Director.

Project Report 40-103 **TTS**  
4 Pages  
August 17, 1977  
Tel: (412) 527-1020

CHEMICAL HYGIENE FELLOWSHIP (CHF)  
Carnegie-Mellon Institute of Research  
Carnegie-Mellon University  
4400 Fifth Avenue  
Pittsburgh, PA 15213.

Iminobis (propylamine)

Range Finding Toxicity Studies

Sponsor: *Union Carbide Corporation*

\* \* \* \* \*

Summary

Stomach Intubation, rat - LD50 ~ 0.707 ml/kg; dosed as received.  
Skin Penetration, rabbit - LD50 = 0.25% ml/kg; dosed as received.  
Inhalation, rat -  
Substantially saturated vapor, dynamic conditions at 24°C.  
8 hours killed 0 of 6.  
Uncovered Skin Irritation, rabbit - Moderate, Grade 6.  
Eye Injury, rabbit - Severe, Grade 9.

Interpretation

Iminobis (propylamine) was moderately toxic following single stomach intubation and was highly toxic following single covered dermal application. Small quantities of the undiluted material applied to uncovered rabbit skin resulted in necrosis. Therefore, the CHF would rate this material as a D.O.T. "corrosive" although the actual 4-hr covered D.O.T. test was not completed. Application of a 10% dilution in distilled water resulted in minor skin irritation. Severe corneal injury, with iritis and eyelid injury, resulted from instillation of the undiluted sample in rabbit eyes. No hazard is anticipated from the infrequent inhalation of substantially saturated vapor generated at room temperature under normal handling conditions.

Iminobis (propylamine) has been tested previously and the results appeared in CHF Report No. 21-26 (1958). These previous results indicate that the sample was roughly twice as toxic by skin penetration as the current sample. This material was rated as a D.O.T. Class B poison dermally in 1958 but is just outside the critical limits in the present study. By other routes, the toxicity of the two samples is quite similar. The current sample appeared to be somewhat more irritating to rabbit skin but less irritating to rabbit eyes.

Sample

Quantity: 4 oz

Date Received: 4-4-77

CHF Sample No.: 40-139

Submitted By: D. F. Marples

Division: Chemicals and Plastics  
South Charleston, WV

Identification: Ref. #38-DFM-21  
Reg. #1757

Charge No.: 03099

Peroral, Single Dose to Rats

LD50 - 0.707 (0.461 to 1.08) ml/kg; dosed as received.

Conditions - Standard.

Dosage; ml/kg	Dead Dosed	Days to Death	Weight Change	Signs and/or Symptoms
4.0	3/3	0,0,0	-	Death within 2 hr
2.0	5/5	1,1,1,1,1	-	Piloerection 2.5 hr
1.0	4/5	1,1,1,1	55 gm	In survivor, piloerection, bloody urine 2 days; emaciation 3 to 6 days; fur orangish 6 days; bilateral lens opacity 8 days; eyes completely opaque 13 days*
0.5	1/5	1	91 to 106 gm	-
0.25	0/5	-	100 to 144 gm	-

Gross Pathology - In victims, petechial hemorrhages to diffuse hemorrhages of the lungs; livers pale, mottled, acini prominent; spleens mottled; kidneys pale, mottled, sections congested; adrenals congested; stomachs and intestines distended, transparent, liquid-filled; pylori pink to hemorrhaged; intestines yellow or pink. In survivors, acini of livers prominent.

Conclusions - Moderately toxic following acute peroral intubation.

Skin Penetration, Single Dose to Rabbits

LD50 - 0.252 (0.154 to 0.411) ml/kg; dosed as received.

Conditions - Standard. Dosed under polyethylene sheeting.

Dosage, ml/kg	Dead Dosed	Days to Death	Weight Change	Skin Irritation	Signs and/or Symptoms
0.80	2/2	1,1	-	Necrosis	-
0.40	4/4	1,2,2,2	-	Necrosis	-
0.20	1/4	11	-	Necrosis; scabs at death or sacrifice	-

Gross Pathology - In victims, lungs congested; livers congested and mottled; kidneys pale or congested. In survivor, kidneys pale.

Conclusions - Highly toxic following acute covered dermal application.

\*Marked retinal degeneration and cataract formation observed upon micropathologic examination following the 14-day holding period. Because the condition was observed in only one animal, its relationship to treatment cannot be assessed without extended study. It may be that a pre-existing condition was exacerbated.

Inhalation, Single, by Rats

Conditions - Vapor dynamically generated at 24°C; chamber temperature at 24°C.  
Procedure A of standard test procedures.

Procedure	Time	Concentration	Dead/ Dosed	Death	Weight Change	Signs and/or Symptoms
A	8 hr	Substantially saturated vapor	0/6	-	65 to 77 gm	Fur wet within 30 min.

Gross Pathology - Nothing remarkable.

Conclusions - No hazard is anticipated from the infrequent inhalation of substantially saturated vapor generated at room temperature under normal handling conditions.

Skin Irritation, Rabbit, Uncovered

Conditions - Standard. Applied undiluted or in distilled water.

Conclusions - Necrosis on 2 of 2 rabbits from the undiluted material; moderate capillary injection on one, marked capillary injection on 2, moderate erythema on one, marked erythema on one from 10% in distilled water. Grade 6.

Eye Irritation, Rabbit

Conditions - Standard. Instilled undiluted or in distilled water.

Conclusions - Severe corneal injury, with iritis and eyelid injury (edema, pus, hemorrhages, necrosis), on 2 of 2 eyes from 0.005 ml undiluted per eye; moderate corneal injury, with iritis on 2 of 5, from 0.5 ml per eye of a 5% dilution in distilled water; no corneal injury on 5 eyes from 1% in distilled water. Grade 9.

Roy C. Myers  
Roy C. Myers, B.S.  
Research Associate

Charles P. Carpenter  
Charles P. Carpenter, Ph.D.  
Advisory Fellow

Approved:

Eugene F. Cox  
Eugene F. Cox, Ph.D.  
Director

Acknowledgments:

Single Peroral Tests

Linda J. Calisti, B.S.  
Research Associate

Skin Penetration, Irritation Tests

Naomi I. Condra, B.S.  
Fellow

Inhalation Studies

Donald J. Nachreiner, B.S.  
Research Associate

Histopathologic Evaluation

Robert R. Maronpot, Ph.D.  
Fellow

Date: August 25, 1977

Typed: njt.

Standard Test Procedures

In all tests, the nonfasted animals are maintained on appropriate Wayne diets and water *ad lib* except during period of manipulation or confinement. Dosage levels differ by a factor of 2 in a geometric series. LD50s or LC50s are calculated by the moving average method based on a 14-day observation period.

Toxicity Terminology for Peroral and 24-Hr Dermal LD50s (A)/Inhalation 4-Hr LC50 (B)

	A, gm/kg	B, ppm		A, gm/kg	B, ppm
Extremely low order	> 15	> 100M	Highly	0.05-0.5	100-1M
Slightly	5-15	10M-100M	Seriously	0.01-0.05	10-100
Moderately	0.5-5	1M-10M	Dangerously	< 0.001	< 10

Peroral. Compounds administered by stomach intubation to Wistar derived male rats, 90-120 grams in weight and 3 to 4 weeks of age, reared in our own colony.

Sk'n Penetration. Male albino rabbits, 3 to 5 months of age, are immobilized during the 24-hour contact period with the compound retained under impervious sheating on the clipped intact skin of the trunk. Thereafter, excess fluid is removed to prevent ingestion. Maximum dosage that can be retained is 16 to 20 ml/kg.

Inhalation. Procedure A. Concentrated vapor is generated in a gas washing bottle by passing dried air at 2.5 liters/min through a fritted glass disc immersed to a depth of at least 1-1/2 inches in the chemical which is delivered to rats in a 9-liter glass exposure chamber. Mean vapor concentration is calculated from the loss in weight of the liquid or estimated from the vapor pressure at the actual temperature of the chemical during aeration.

Procedure B. Substantially saturated vapor is prepared by spreading 50 grams of chemical over 200 cm<sup>2</sup> area on shallow tray placed near the top of a 120-liter glass chamber which is then sealed for at least 16 hours while an intermittently operated fan agitates the internal chamber atmosphere. Rats are then introduced in a gasketed drawer-type cage designed and operated to minimize vapor loss.

Procedure C. Mist, vapor and any oxidation or decomposition products of the chemical held at 170°C are generated and delivered as in A.

Procedure D. Vapor at metered concentration, not checked analytically, is generated by feeding the liquid at a constant rate down the inside of a spirally corrugated surface of a minimally heated one-inch Pyrex tube, through which metered air is passed. Resultant vapor is delivered as in A.

Procedure E. Spray - Solutions or suspensions are atomized in a glass VAPONEFRIN nebulizer using dried compressed air at 9 liters/min (corrected) and 22 psi. The resultant aerosol of droplets averaging 2 microns in diameter is conducted directly into a 60-liter cubic glass chamber containing rats. Mean aerosol concentration is calculated from the amount of material atomized.

Procedure F. Dust - Dust clouds are generated by a baffled Wright Dust Feed through which air is passed at 14 liters/min (uncorrected) at 5 psi. The dust is delivered directly to a 120-liter plexiglas chamber containing rats. Airborne dust concentrations are measured gravimetrically every half hour.

Skin Irritation. Chemical is applied in 0.01 ml amounts to clipped, uncovered intact skin of 5 rabbit bellies either undiluted or in progressive dilutions of 10, 1, 0.1, and 0.01% in solvent. Ten grades are recognized based on appearance of moderate or marked capillary injection, erythema, edema or necrosis within 24 hours. No injury from undiluted = Grade 1.

Eye Irritation. Eyes not staining with 5% fluorescein in 20 seconds contact are accepted. Single instillation of 0.005, 0.02, 0.10 or 0.5 ml undiluted or of 0.5 ml of 40, 15, 5 and 1% dilutions are made into conjunctival sac of 5 rabbits. Read immediately unstained and after fluorescein at 24 hours, with ten grades recognized. Trace or no injury from 0.5 ml undiluted = Grade 1.

11/21/91

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