

OFFICE OF TOXIC SUBSTANCES  
CODING FORM FOR GLOBAL INDEXING

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Biochemical Research Laboratory

The Dow Chemical Company

RESULTS OF RANGE FINDING TOXICOLOGICAL TESTS ON 1,2-EPOXYBUTANE

File  
K No.  
Chg.

Source: Ethylene Res.  
Sub. By M. E. Huscher  
Rept. By K. W. Perry  
K. J. Olson

Signed Tom Olson Jan 14, 1965

Signed Karen W Perry Jan 14, 1965

Checked F. Oyer 1-15-65

Tom Olson, Jan 25, 1965  
Karen W Perry Jan 26, 1965

PROBLEM

The subject material was submitted to the Biochemical Research Laboratory for toxicological studies and definition of hazard incidental to industrial handling.

CONCLUSIONS

The subject material has a low acute oral toxicity. Toxicological studies on the rat indicate that there should be no problem from ingestion incidental to the industrial handling of this substance. If large quantities are swallowed some injury may result; the likelihood of serious injury is remote.

Eye contact tests were not run because of insufficient material. Judging from skin irritation data, the material might produce moderate conjunctival irritation and possibly some corneal injury.

Results of skin irritation studies indicate that the undiluted subject material is essentially nonirritating to intact skin. Prolonged contact might burn abraded skin. Epoxy materials are notorious for sensitizing skin and subsequently producing an allergic, edematous, contact-type dermatitis. Largely for this reason skin exposure

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should be avoided. Protective clothing should be worn when skin contact is likely.

The material apparently has a very high vapor pressure. Laboratory rats survived a six minute exposure to saturated atmospheres at room temperature but failed to survive 12 minutes. Due to the relatively large amounts of material used during these short periods, part of the toxicological effect may be due to oxygen replacement in the exposure chamber. In order to more clearly define the vapor hazard more elaborate studies would be required under conditions of controlled atmospheric concentrations. Exposure to vapors of the material should be avoided. It should be handled under a hood. For cleaning up sizeable spills a gas mask with an appropriate canister should be employed. The vapors will likely cause allergic asthma.

These conclusions are based upon range finding toxicological tests and are limited to precautions for industrial handling of the material. Development of specific uses will require consideration of the health problems presented and of the need for further toxicological studies.

SUMMARY OF RANGE FINDING TOXICOLOGICAL DATA

Acute Oral Toxicity

<u>Animal</u>	<u>Preparation Fed</u>	<u>Dose (g./kg.)</u>	<u>No. Died No. Fed</u>	<u>Response-Remarks</u>
Rat (F)	10% solution in corn oil	1.0	0/2	Animals appeared normal during and after feeding and during a two week observation period.
Rat (F)	10% solution in corn oil	2.0	3/3	Two of the animals died in one hour and the third died in the night.

Skin Contact - Rabbit (Repeated Application)

<u>Material</u>	<u>Condition of Skin</u>	<u>No. of Appl.</u>	<u>Site</u>	<u>Response-Remarks</u>
Undiluted	Intact	9	Ear	No response.
Undiluted	Intact	9	Belly	Slight to moderate scaling.
Undiluted	Abraded	2	Belly	A moderate burn occurred after the second application and after three weeks left a slight scar.

Skin Absorption

There is no indication, from the skin irritation tests conducted, that this material is absorbed through the skin in toxic amounts.

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Inhalation (Saturated Atmosphere)

<u>Animal</u>	<u>Bath Temp.</u>	<u>Duration of Exposure</u>	<u>No. Died No. Treated</u>	<u>Response-Remarks</u>
Rat (F)	Room	30 minutes	5/5	All unconscious when removed. Died by end of day.
Rat (F)	Room	12 minutes	5/5	All unsteady when removed and died two hours after exposure.
Rat (F)	Room	6 minutes	0/3	Unsteady when removed from chamber. Appeared normal several hours later. Lung congestion observed at autopsy.

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## FIRST AID MEASURES

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EYE CONTACT	<input checked="" type="checkbox"/> If the eyes are contaminated, they should be flushed immediately with copious amounts of flowing water for at least 15 minutes. <input checked="" type="checkbox"/> Medical attention should be obtained if irritation persists or develops after washing of the eyes. <input type="checkbox"/> Medical attention should be obtained. <input type="checkbox"/> <b>MEDICAL ATTENTION SHOULD THEN BE OBTAINED WITHOUT DELAY.</b>
SKIN CONTACT	<input checked="" type="checkbox"/> Any injuries or irritations which may develop should receive medical attention. <input type="checkbox"/> Contaminated clothing and shoes should be removed and not re-used until thoroughly cleaned. <input type="checkbox"/> Wash contaminated skin with soap and plenty of water. <input checked="" type="checkbox"/> Contaminated clothing, including shoes, should be removed and the affected skin area should be washed thoroughly with soap and plenty of water. <input type="checkbox"/> Medical attention should then be obtained. <input checked="" type="checkbox"/> Contaminated clothing and shoes should not be re-used until thoroughly cleaned. <input type="checkbox"/> All contaminated clothing, including shoes, <u>must</u> be removed immediately and the affected skin area flushed thoroughly with water from a safety shower, or other suitable device and cleansed with soap and plenty of water. <input type="checkbox"/> <b>MEDICAL ATTENTION MUST THEN BE OBTAINED AS RAPIDLY AS POSSIBLE.</b> <input type="checkbox"/> Contaminated clothing including shoes, <u>must not be re-used until thoroughly cleaned or must be discarded.</u>
INHALATION	<input type="checkbox"/> If a person should experience any noticeable ill effects from breathing the vapor or fumes of this material, medical attention should be obtained promptly. <input checked="" type="checkbox"/> If a person should be overcome from breathing this material, he should be removed to fresh air at once, be made to rest, kept warm, and <b>MEDICAL ATTENTION SHOULD BE OBTAINED IMMEDIATELY.</b> If breathing stops, artificial respiration should be administered.
INGESTION	<input type="checkbox"/> If appreciable amounts of material are swallowed, vomiting should be induced by tickling the back of the tongue with the finger or by giving an emetic such as 2 tablespoonsful of table salt in a glass of warm water. Medical attention should then be obtained. <input type="checkbox"/> If the material is swallowed, vomiting must be induced by tickling the back of the tongue with the finger or by giving an emetic such as 2 tablespoonsful of table salt in a glass of warm water. <b>MEDICAL ATTENTION SHOULD THEN BE OBTAINED WITHOUT DELAY</b>

COMMENTS:

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