

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 TRANS 2,3-EPOXY BUTANE

File
K No. [REDACTED]
Chg. [REDACTED]
Source Ethylene Research
Sub. By M. E. Huscher
Rept. By K. J. Olson

Signed *John Olson Jan 19, 1965*

Checked *F. Payne 1-19-65*

John Olson, Jan 25, 1965

PROBLEM

A sample of the subject material was submitted to the Biochemical Research Laboratory for toxicological investigation and definition of industrial handling hazards. The material is an experimental chemical.

CONCLUSIONS

The subject material possesses a low acute oral toxicity and should present no problem from ingestion incidental to industrial handling.

The undiluted material is slightly to moderately irritating to the eye. Direct contact might produce some pain accompanied by conjunctival redness, slight swelling and also some slight transient corneal injury. Eye reactions would be expected to subside within a day or two. Permanent effects would not be expected. Safety glasses are recommended for industrial wear whenever the likelihood of eye contact exists.

The undiluted material would not be expected to produce a primary skin irritation type reaction unless it were confined in the presence of abraded skin. Due to its epoxy chemical structure however, it should be recognized that it likely possesses some potential for producing skin sensitization and a subsequent allergic, edematous contact-type dermatitis particularly in cases where amounts are contacted repeatedly. The potential to produce allergic reactions to the skin were not evaluated in the Biochemical Research Laboratory due to the inadequacy of test animals in this regard. Materials which are to be handled extensively or which are to become products of The Dow Chemical Company should be re-submitted to our laboratory for evaluation on human subjects. Such a program will be initiated upon request. Until further defined, this potential should be recognized in industrial handling. It is recommended that skin contact with the subject material be avoided. In cases where contact cannot be avoided, protective clothing impervious to the material should be worn.

The material poses a hazard from vapor inhalation. The material possesses a high vapor pressure and should be handled under a hood or in a very well ventilated area. In cases where exposure to the vapor cannot be avoided, a gas mask equipped with a suitable canister should be employed. Here

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again, due to the epoxide chemical structure, it is anticipated that repeated inhalation of even relatively small amounts of vapors might possess the potential for producing allergic asthma. People handling or purchasing the material on an experimental basis should be so warned. If a more precise evaluation of the toxicity of this material is desired, further laboratory studies should be conducted using laboratory animals. It would be necessary to carefully control vapor concentrations on various atmospheric levels to define toxicity precisely. Such experiments will be initiated upon request.

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	10% solution in corn oil	2.0	0/2	Some kidney, lung and liver injury observed at autopsy.

Eye Contact - Rabbit

<u>Material</u>	<u>Treatment</u>	<u>Response-Remarks</u>
Undiluted	Unwashed	Slight pain with moderate conjunctival redness and swelling accompanied by slight transient corneal injury--all subsided in 48 hours.
Undiluted	Washed with Water	Essentially the same as above.

Skin Contact - Rabbit (Repeated Application)

<u>Material</u>	<u>Condition of Skin</u>	<u>No. of Applic.</u>	<u>Site</u>	<u>Response-Remarks</u>
Undiluted	Intact	9	Ear	No irritation observed.
Undiluted	Intact	9	Belly	Slight to moderate scale only.
Undiluted	Abraded	3	Belly	No irritation followed first application, slight to moderate burn followed 2nd and 3rd.

Skin healed apparently normally in 21 days.

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Skin Absorption

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

Inhalation (Saturated Atmosphere)

<u>Animal</u>	<u>Bath Temp.</u>	<u>Hours Exposed</u>	<u>No. Died</u> <u>No. Treated</u>	<u>Response-Remarks</u>
Rat	Room	1	5/5	Mild, immediate irritation to eyes and nose. Animals died in one hour. 42.5 grams used during the exposure.

FIRST AID MEASURES

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"/> MEDICAL ATTENTION SHOULD THEN BE OBTAINED WITHOUT DELAY.
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 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 checked="" type="checkbox"/> Medical attention should then be obtained. <input type="checkbox"/> Contaminated clothing and shoes should not be re-used until thoroughly cleaned. <input checked="" type="checkbox"/> All contaminated clothing, including shoes, must 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"/> MEDICAL ATTENTION MUST THEN BE OBTAINED AS RAPIDLY AS POSSIBLE. <input type="checkbox"/> Contaminated clothing including shoes, must not be re-used until thoroughly cleaned or must be discarded.
INHALATION	<input checked="" 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 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 MEDICAL ATTENTION SHOULD BE OBTAINED IMMEDIATELY. 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. MEDICAL ATTENTION SHOULD THEN BE OBTAINED WITHOUT DELAY

COMMENTS:

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