

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE COMMUNICATION

July 20, 1998

TO: Crosslinker CX100 file (CAS #64265-57-2)
FROM: Gary Butterfield, Toxics Unit, Air Quality Division
SUBJECT: Initial Threshold Screening Level for Crosslinker CX100

The Initial Threshold Screening Level (ITSL) is being established at 10 ug/m³ with annual averaging. Crosslinker CX100 (a manufacturer name) is also known as 1-aziridinepropanoic acid, 2-methyl-, 2-ethyl-2-[[3-(2methyl-1-aziridinyl)-1-oxopropoxy]methyl]-1-,3-propanediyl ester, as well as, many other manufacturer names. This material is a clear liquid with slight yellow color. This material is a member of the chemical class know as polyfunctional aziridines hardeners. Polyfunctional aziridines are added to polyurethanes in paint primers, inks, lacquers, topcoats, and protective coatings. The polyfunctional aziridines are used as cross linkers that promote self-curing.

On June 4, 1998, a CAS and NLM on-line literature search was conducted to find published toxicity studies. A couple of articles related to contact dermatitis was the only published articles that were found. This material was not contained in any of the standard secondary references or databases (IRIS, RTECS, NIOSH, NTP).

Polyfunctional aziridines are known to cause contact dermatitis, allergic reactions, asthma and rhinitis. However, data on the extent of exposure to cause these adverse reactions was not located. Several journal articles only report that workers who have worked with this material in the past now are sensitive to dermal patch tests. The conditions necessary for production of an allergic reactions should be an issue considered if this screening level comes under review in the future.

A copy of a rat oral LD50 study was obtained from the manufacturer. The study was conducted by IBT in 1976 (which puts some doubt on validity of this study). The resulting LD50 in albino rats was 3038 mg/kg. Very little details (for example, strain of rat, number and sex of animals per dose group, dose levels tested, and method of LD50 calculation were not in the report) were given in this report.

Rather than basing the screening level on the default value, this study will be considered sufficiently adequate to provide the basis of the screening level. The ITSL can be calculated from the LD50 under Rule 232(h) as follows.

$$\text{ITSL} = [(3038 \text{ mg/kg}) / (500 * 40 * 100 * 0.167)] * [1 \text{ kg} / 0.9 \text{ m}^3] = 10 \text{ ug/m}^3$$
with annual averaging

Where 0.9 m³/kg is the default inhalation rate for rats.

GB:SLB

cc: Mary Lee Hultin, AQD