

# MICHIGAN DEPARTMENT OF NATURAL RESOURCES

## INTRROFFICE COMMUNICATION

December 17, 1993

TO: File for Acryloyl Chloride (814-68-6)

FROM: Marco Bianchi

SUBJECT: Initial Threshold Screening Level

The initial threshold screening level (ITSL) for acryloyl chloride is  $0.3 \mu\text{g}/\text{m}^3$  based on an annual averaging time.

The following references or databases were searched to identify data to determine the ITSL: IRIS, HEAST, NTP Management Status Report, RTECS, EPB-CCD, EPB library, CAS-online, NLM-online, IARC, NIOSH Pocket Guide, and ACGIH Guide. Only limited toxicological information for acryloyl chloride could be obtained from RTECS. A Russian reference listed a LC50 of  $92 \text{ mg}/\text{m}^3$  for a 2-hour mouse inhalation study, but no other details were available.

A search of the EPB library revealed a subacute inhalation study by Gage 1970, that examined 109 industrial chemicals including acryloyl chloride. Gage initially conducted range finding studies by exposing different groups of Alderly Park rats to decreasing concentrations of acryloyl chloride with increased exposure times. Dose groups consisted of either 4 male or 4 female rats for the high dose groups and 4 rats of each sex for the lower dose group. The studies started with a 1 x 2-hour exposure at 100 ppm, followed by a 1 x 4-hour exposure at 25 ppm; 5 x 5-hour exposures at 5 ppm; 3 x 6-hour exposures at 25 ppm; and 15 x 6-hour exposures (5 days/week) at 1 ppm. Adverse effects included respiratory difficulties and, lung edema and inflammation at all dose levels except at 1 ppm, where no toxic effects were reported. Therefore, the 1 ppm dose level ( $3.7 \text{ mg}/\text{m}^3$ ) is the NOAEL for this study. Due to the similarity in exposure times, 7-day versus 15-day, a safety factor of 35 will be used to calculate the ITSL.

The ITSL is derived as shown below by using the NOAEL of  $3.7 \text{ mg}/\text{m}^3$ .

$$\text{ITSL} = 3.7 / (35 \times 100) \times 6/24 = 0.00026 \text{ mg}/\text{m}^3$$

$$0.00026 \text{ mg}/\text{m}^3 \times 1000 \mu\text{g}/\text{mg} = 0.3 \mu\text{g}/\text{m}^3$$

The ITSL for acryloyl chloride =  $0.3 \mu\text{g}/\text{m}^3$  for an annual averaging time.

### References:

Gage, JC. The subacute inhalation toxicity of 109 industrial chemicals. Brit. J. industr. Med., 27; 1—18.

MB : ma