MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE COMMUNICATION

October 30, 1996

TO: File for Salicylaldehyde (CAS No. 90-02-8)

FROM: Michael Depa, Toxics Unit, Air Quality Division

SUBJECT: Screening Level Determination

The initial threshold screening level (ITSL) for salicylaldehyde is 30 $\mu g/m^3$ based on an annual averaging time.

The following references or databases were searched to identify data to determine the screening level: IRIS, RTECS, ACGIH Threshold Limit Values, NIOSH Pocket Guide to Hazardous Chemicals, Environmental Protection Bureau Library, IARC Monographs, CAS Online (1967-May 8, 1996), National Library of Medicine, Health Effects Assessment Summary Tables, and NTP Status Report. Occupational exposure limits were not available for salicylaldehyde. The EPA has not established an RfC or RfD. There was no data meeting the minimum criteria for establishing an RfC. A subacute gavage study was available and is described below.

Groups of 5 rats (strain not specified) were dosed by gavage with 0, 100, 300, or 1000 mg/kg/day over a 3 to 18 day period (Kodak, 1991). The 1000 mg/kg dose produced severe depression immediately after administration. Three of five (3/5) rats died after the first dose and the other 2/5 died after the second dose. The animals receiving 300 mg/kg had a moderate decrease in feed consumption and body weight gain. One rat died after three doses and the remaining four survived 11 doses over an 18 day period. The authors stated that the moderate reduction in body weight gain was reflected in slightly increased relative kidney weights. Hematology was normal. The serum activity of glutamic oxaloacetic transaminase and glutamic pyruvic transaminase was moderately increased compared to the controls. No gross pathology was seen at necropsy. Histopathologic changes seen were diffuse hyperkeratosis (5/5), diffuse acanthosis (5/5) and submucosal edema (3/5) and ulcer (1/5) in the stomach. The authors stated that all these changes except for the ulcer were of a minor to moderate degree. Minimal cytoplasmic vacuolation was found in the liver (4/5). Based on organ weight changes, clinical chemistries and histopathology, the liver may be the site of toxic action. The effects noted in the stomach are probably due to irritation which will likely be found in any tissue exposed to the compound. The low dose tested (100 mg/kg) was administered 12 times over an 18 day period. The authors stated that this dose was a no-effect level. The authors also stated that body weight gain, feed consumption, absolute and relative organ weights, hematology, clinical chemistries and gross and histopathologic findings were

not adversely affected. Several shortcomings of this study were noted. It was clear that the dosing schedule was not continuous and it could not be determined the duration of the recovery periods. No statistical analysis was presented and the strain of the rat was not reported. Despite the flaws of this study it was deemed to be adequate, given the various uncertainty factors incorporated into the equation, to develop the ITSL. The 100 mg/kg dose level was determined to be a 7 day NOAEL.

The ITSL was calculated pursuant to Rule 232(1)(e).

$ITSL = NOAEL/(100 \times 35) \times W_a/I_a$

Where W_a is the default weight of the rat (EPA, 1988) and
I_a is the default inhalation rate of the rat (EPA, 1988).

$ITSL = (100 \text{ mg/kg})/(3500) \times (0.47)/(0.43)$

$ITSL = 3.12 \times 10^{-2} \text{ mg/m}^3$

$ITSL = 30 \ \mu\text{g/m}^3$ (based on annual averaging time)

The ITSL for salicylaldehyde is 30 μg/m^3 based on an annual averaging time.

REFERENCES

Kodak. 1991. Letter from Eastman Kodak company to USEPA submitting enclosed toxicity and hazard summary and toxicity report on salicylaldehyde with attachments (sanitized). Obtained from EPA/OTS, Doc# 86-920000075.

MD:slb