

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE COMMUNICATION

TO: File for alpha-Picoline (CAS# 109-06-8)

FROM: Doreen Lehner, Toxics Unit, Air Quality Division

DATE: January 27, 2017

SUBJECT: alpha-Picoline (CAS# 109-06-8) ITSL change in the averaging time from 24 hours to annual

The initial threshold screening level (ITSL) for alpha-picoline is 24 µg/m³ based on an annual averaging time. The ITSL was originally established on 10/20/1993 and is based on a 6 month inhalation study by Dow Chemical Company. The current file review concludes that the averaging time may appropriately be set at annual, as the key study is a 6 month inhalation study. Therefore, the averaging time is being changed from 24 hours to annual.

References:

Act 451 of 1994, Natural Resources and Environmental Protection Act and Air Pollution Control Rules, Michigan Department of Environmental Quality.

NTIS. 1984. OTS0215270. Six month inhalation study of alpha picoline in rats with cover letter. Dow Chem Co. National Technical Information Service. Springfield, VA 22161.

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

INTEROFFICE COMMUNICATION

October 20, 1993

TO: File for alpha - Picoline (CAS # 109-06-8)

FROM: George Eurich

SUBJECT: Screening Level for alpha - Picoline

The ITSL for alpha - picoline = calculated RfC = 24 ug/m³ with a 24 hour averaging time.

There is no RfC or RfD listed by the EPA for this compound, nor is there a listing in the ACGIH TLV or NIOSH Pocket Guide. The screening level is based on a Dow Chemical study received from EPA-Office of Toxic Substances Library. The study, "Six Month Inhalation Study of a-Picoline in Rats", exposed 4 groups of Sprague-Dawley rats (10/sex/group) to 0, 5, 35, or 100 ppm a-picoline for 6 hrs/day, 5 days/week, for 6 months. During the exposure period rats were observed for possible signs of toxicity with particular attention paid to sensory or motor deficits indicative of neurological changes. At the end of the exposure period, basic hematology, urinalysis, and clinical chemistry were performed. Gross necropsies were conducted on all animals and representative samples of organs and tissues were taken for histopathological examination. The only significant change seen in the treatment groups was at the highest exposure level (100 ppm), where there was an increase in relative and absolute liver weights in both sexes. While histopathological examination didn't reveal any treatment related effects, this result can't be ignored. The next lowest exposure level (35 ppm), where no significant effects were seen as compared to controls, will therefore be considered the NOAEL. This level will be used to calculate an RfC following EPA guidelines for the development of inhalation reference concentrations.

RfC Determination for a-Picoline

NOAEL = 35 ppm

Uncertainty Factors: 10 animal to human, 10 normal to sensitive,
10 subchronic to chronic

$$\text{Conversion to mg/m}^3 = \frac{35 \text{ ppm} \times 93.14}{24.45} = 133 \text{ mg/m}^3$$

$$\text{NOAEL}_{(\text{adj})} = 133 \text{ mg/m}^3 \times \frac{6 \text{ hrs/day}}{24 \text{ hrs}} \times \frac{5 \text{ days}}{7 \text{ days}} = 24 \text{ mg/m}^3 \quad (\text{Eq. 4-3})$$

$$\text{NOAEL}_{(\text{hec})} = \text{NOAEL}_{(\text{adj})} \times \frac{\text{lambda A}}{\text{lambda H}} \quad (\text{Eq. 4-10})$$

(lambda A / lambda H) = 1 when individual values for each are unknown

$$\text{NOAEL}_{(\text{hec})} = 24 \text{ mg/m}^3 \times 1 = 24 \text{ mg/m}^3$$

$$\text{RfC} = \frac{\text{NOAEL}_{(\text{hec})}}{\text{UF} \times \text{UF} \times \text{UF}} \quad (\text{Eq. 4-1})$$

$$\text{RfC} = \frac{24 \text{ mg/m}^3}{1000} = 0.024 \text{ mg/m}^3 = 24 \text{ ug/m}^3$$

ITSL = RfC = 24 ug/m³ based on 24 hr averaging time.

References:

EPA. 1990. Interim methods for development of inhalation reference concentrations - review draft. EPA/600/8-90/066A.

GE:ma