

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE COMMUNICATION

October 16, 1995

TO: File for Methyl Acetylene (74-99-7)

FROM: Marco Bianchi

SUBJECT: Initial Threshold Screening Level

Prior review of methyl acetylene by AQD staff (date unknown) led to the approval of an interim initial threshold screening level (ITSL) of 16,500 $\mu\text{g}/\text{m}^3$ based on an 8 hr. averaging time. After re-evaluating the data for this compound, it was determined this information was still the most appropriate to use. The ITSL for methyl acetylene will be kept at 16,500 $\mu\text{g}/\text{m}^3$ based on an 8 hr. averaging time.

Both RTECS and ACGIH listed just one toxicology study by Horn et al., (1957). In this study, Horn et al., conducted both acute and subchronic inhalation exposures on rats and dogs. For the acute exposure, 20 male albino rats were exposed to 42,000 ppm methyl acetylene and were routinely examined during the total exposure time of 6 hours. At 7 minutes, rats appeared to be lethargic and began to show some signs of ataxia. After 95 minutes, the animals were completely anesthetized. There was no mortality when the exposure was terminated at the end of 6 hours, and most of the animals recovered completely within 40 minutes. Edema and alveolar hemorrhage were present in animals killed at termination of the single exposure, whereas bronchiolitis and pneumonitis were observed in rats sacrificed 9 days postexposure.

For the subchronic portion of the study, 20 male albino rats and 2 dogs were exposed to an average concentration of 28,700 ppm methyl acetylene for a period of 6 months on a 6 hr/day, 5 day/wk basis. An additional 2 dogs and 20 rats served as controls. During the course of the study, eight treated and two control rats died, but dogs from the treated or control group survived throughout the study. Signs of toxicity included excitement, ataxia, salivation, mydriasis, and tremors. Both of the dogs inhaling the compound experienced convulsions three times during 6 months. The authors gave no explanation of rat mortality during the study other than pulmonary irritation leading to pulmonary infection. They described the pathology of these rats as *the lungs being dark red on the external surface and on cut section. The lungs remained distended when the thorax was opened, but no edema fluid could be demonstrated. On palpation the lungs had a firm consistency. In one rat a purulent empyema was observed. The remaining organs appeared to be within normal limits.* Microscopic pathology showed chronic exposures to cause pulmonary irritation in the rats, but sections of the lungs of dogs were not remarkable. The authors summarized by stating it appeared that methyl acetylene in very high concentration is capable of producing some pulmonary irritation which could progress to pulmonary infection.

The ACGIH based the TLV of 1000 ppm (1640 mg/m^3) for methyl acetylene on the Horn et al., study stating that it appears this compound is a general anesthetic of comparatively low toxicity. OSHA and NIOSH concurred with the ACGIH by also setting their PEL and REL limits at 1000 ppm. There have been no studies identified to contradict this data. Therefore, it seems appropriate to finalize the interim ITSL at 16,500 $\mu\text{g}/\text{m}^3$.

REFERENCES

ACGIH Documentation. 1994. Documentation of the TLV's and the BEI's.

Horn et al., 1957. Arch. Ind. Health. Inhalation toxicology of methyl acetylene. 15:20-26.
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