

MICHIGAN DEPARTMENT OF NATURAL RESOURCES & ENVIRONMENT

INTEROFFICE COMMUNICATION

TO: File for 2,4-Dimethylphenol (CAS# 105-67-9)

FROM: Doreen Lehner, Toxics Unit, Air Quality Division

DATE: January 23, 2017

SUBJECT: 2,4-Dimethylphenol (CAS# 105-67-9) change in the averaging time from 24 hours to annual

The initial threshold screening level (ITSL) for 2,4-dimethylphenol is 70 µg/m³ based on an annual averaging time. The ITSL was originally established on 6/3/1993 and was set at 70 µg/m³ based on a 24-hour averaging time. The ITSL was based on an EPA (1993) oral reference dose (RfD) of 0.02 mg/kg/day based on an EPA (1989) 90-day gavage study in mice. As the key study used to derive the ITSL is a 90-day gavage study, the averaging time is appropriately set at annual. Therefore, the averaging time is being changed from 24 hours to annual at this time.

References:

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

EPA. 1989. Ninety-day gavage study in Albino mice using 2,4-dimethylphenol. Study no. 410-2831, prepared by Dynamic Corporation.

EPA. 1993. Integrated Risk Information System (IRIS database). 2,4-Dimethylphenol; CASRN 105-67-9. Available online at:
https://cfpub.epa.gov/ncea/iris2/chemicalLanding.cfm?substance_nمبر=466

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

INTEROFFICE COMMUNICATION

June 3, 1993

TO: File for 2,4-dimethylphenol, CAS # 105-67-9

FROM: Dennis Bush, Surface Water Quality Division

SUBJECT: ITSL Derivation

No RfC is available for 2,4-dimethylphenol. The ITSL was based on the RfD of 0.02 mg/kg/d listed in the IRIS database (EPA, 1993). The RfD is based on a 90 day gavage study conducted by EPA (1989) in Albino mice. In this study, the mice (30/sex/group) were dosed for 90 days with 5.0, 50.0 or 250 mg/kg/d. Mortality, clinical signs, body weights, food consumption, ophthalmology, hematology, organ weights and gross histopathology were examined. Clinical signs such as squinting, lethargy, prostration and ataxia were observed in the high dose group. The dose of 50.0 was considered the NOAEL. A total uncertainty factor of 3000 was used to derive the RfD. This uncertainty factor consisted of 10x for each intraspecies, interspecies and subchronic-to-chronic extrapolation. An additional 3x was used because there were insufficient data on reproduction/development and there were also insufficient data in a second species.

No ATSDR documents were available for 2,4-dimethylphenol or its isomers. No occupational exposure levels (OELs) for this compound or its isomers were available either. A May 20, 1993 CAS-on-line search failed to locate any inhalation toxicity studies useful for calculation of the ITSL. No inhalation studies were located that suggested it is inappropriate to base the ITSL on oral data. Therefore, it was considered appropriate to derive an ITSL using the RfD, as follows:

ITSL Derivation:

$$ITSL = RfD \times \frac{70 \text{ kg}}{20 \text{ m}^3}$$

$$ITSL = 0.02 \text{ mg/kg/d} \times \frac{70 \text{ kg}}{20 \text{ m}^3}$$

$$ITSL = 0.07 \text{ mg/m}^3 \text{ 24 hour averaging time}$$

REFERENCES

EPA, 1989. Ninety-day gavage study in Albino mice using 2,4-dimethyl phenol. Study no. 410-2831, prepared by Dynamic Corporation.

EPA, 1993. Integrated Risk Information System (IRIS database). Chemical file for 2,4-dimethylphenol (105-67-9). Verification date 2/21/90.

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