

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE COMMUNICATION

TO: File for Nickel subsulfide (CAS# 12035-72-2)  
FROM: Keisha Williams, Air Quality Division (AQD)  
DATE: January 13, 2017  
SUBJECT: Screening Level for Nickel subsulfide

The initial risk screening level (IRSL) for nickel subsulfide (CAS# 12035-72-2) is  $0.0021 \mu\text{g}/\text{m}^3$  with an annual averaging time and the secondary risk screening level (SRSL) is  $0.021 \mu\text{g}/\text{m}^3$  with an annual averaging time. The IRSL and SRSL are based on the United States Environmental Protection Agency's (USEPA's) inhalation unit risk for nickel subsulfide (USEPA, 1987). The IRSL and SRSL were adopted by the MDEQ AQD on May 9, 1991.

Nickel subsulfide is classified as a human carcinogen (USEPA, 1987). The inhalation unit risk value of 0.00048 per  $\mu\text{g}/\text{m}^3$  was derived from "increased risks of lung and nasal cancer in humans exposed to nickel refinery dust, most of which was believed to have been nickel subsulfide; increased tumor incidences in animals by several routes of administration in several animal species and strains; and positive results in genotoxicity assays" (USEPA, 1987). The IRSL and secondary risk screening level (SRSL) are calculated as follows:

$$IRSL = \frac{1 \times 10^{-6}}{\text{unit risk estimate}} = \frac{1 \times 10^{-6}}{\frac{0.00048}{\frac{\mu\text{g}}{\text{m}^3}}} = 0.002083 \frac{\mu\text{g}}{\text{m}^3} \approx 0.0021 \frac{\mu\text{g}}{\text{m}^3}$$

$$SRSL = \frac{1 \times 10^{-6}}{\text{unit risk estimate}} = \frac{1 \times 10^{-5}}{\frac{0.00048}{\frac{\mu\text{g}}{\text{m}^3}}} = 0.02083 \frac{\mu\text{g}}{\text{m}^3} \approx 0.021 \frac{\mu\text{g}}{\text{m}^3}$$

**References:**

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

USEPA. 1987. Chemical Assessment Summary: Nickel subsulfide; CASRN 12035-72-2. Integrated Risk Information System, US Environmental Protection Agency, Accessed on January 13, 2017.

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