

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE COMMUNICATION

TO: File for Cadmium (CAS No. 7440-43-9)

FROM: Keisha Williams, Air Quality Division

DATE: May 1, 2015

SUBJECT: Updates for Initial Risk Screening Level File

The initial risk screening level (IRSL) for cadmium is $0.0006 \mu\text{g}/\text{m}^3$ (annual averaging time) based on the Environmental Protection Agency's (EPA's) inhalation unit risk, 0.0018 per $\mu\text{g}/\text{m}^3$ (EPA 1992, MDNR 1992). The IRSL and secondary risk screening level (SRSL) were established by the Air Quality Division on June 4, 1992.

EPA used an epidemiological study on occupational exposures to cadmium and associated increased incidence of lung, trachea and bronchus cancers (Thun et al., 1985 found in EPA, 1992). The IRSL and SRSL are calculated as shown in Equations 1 and 2.

Equation 1.

$$IRSL = \frac{1 \times 10^{-6}}{\text{unit risk estimate}} = \frac{1 \times 10^{-6}}{\frac{0.0018}{\frac{\mu\text{g}}{\text{m}^3}}} = 0.00056 \frac{\mu\text{g}}{\text{m}^3} \approx 0.0006 \frac{\mu\text{g}}{\text{m}^3}$$

Equation 2.

$$SRSL = \frac{1 \times 10^{-5}}{\text{unit risk estimate}} = \frac{1 \times 10^{-5}}{\frac{0.0018}{\frac{\mu\text{g}}{\text{m}^3}}} = 0.0056 \frac{\mu\text{g}}{\text{m}^3} \approx 0.006 \frac{\mu\text{g}}{\text{m}^3}$$

References

EPA. 1992. IRIS Summary for Cadmium (CASRN 7440-43-9). Integrated Risk Information System, US Environmental Protection Agency, Accessed on May 1, 2015.
<http://www.epa.gov/iris/subst/0141.htm>

(References Thun, M.J., T.M. Schnorr, A.B. Smith and W.E. Halperin. 1985. Mortality among a cohort of U.S. cadmium production workers: An update. J. Natl. Cancer Inst. 74(2): 325-333.)

MDNR. 1992. Memo from Garry Butterfield to File. Subject: Cadmium File (CAS# 7440-43-9). June 4, 1992. AQD, MDNR.

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

INTEROFFICE COMMUNICATION

June 4, 1992

TO: Cadmium file (CAS # 7440-43-9)

FROM: Gary Butterfield

SUBJECT: Update of IRSL

The IRSL and SRSL for cadmium of 0.00056 and 0.0056 $\mu\text{g}/\text{m}^3$, respectively, are based on a slope factor calculated by EPA from epidemiology data. AQD continues to rely on EPA's evaluation and expertise when the development of a slope factor is from epidemiology data.

A review of new data since EPA completed its calculation of the slope factor (in Jan 1986) is appropriate and should be conducted at the earliest convenient date.