

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE COMMUNICATION

TO: File for Fluoranthene (CAS No. 206-44-0)

FROM: Michael Depa, Air Quality Division, Toxics Unit

DATE: April 7, 2015

SUBJECT: Screening Level

A chronic initial threshold screening level (ITSL) for fluoranthene is 140 µg/m³ with annual averaging time.

The ITSL was previously established in 1993 (Bush, 1993; see attached memo) with a 24-hr averaging time; an acute exposure duration. The averaging time is now changing from 24-hrs to annual. This annual/chronic ITSL was calculated pursuant to Rule 229. Rule 229 does not specify an averaging time. Annual averaging time is appropriate for this ITSL because the screening level was adjusted for and based on data to account for chronic continuous inhalation exposure up to a lifetime.

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

INTEROFFICE COMMUNICATION

May 27, 1993

TO: File for Fluoranthene, CAS # 206-44-0
FROM: Dennis Bush, Surface Water Quality Division
SUBJECT: ITSL Derivation

Fluoranthene is considered a Class D carcinogen by EPA (1993) in IRIS because there is insufficient data available to classify it as a human carcinogen.

The ITSL is based on the RfD of 0.04 ug/kg/d provided in IRIS (EPA, 1993) because no RfC is available. In the key study by EPA (1988), male and female CD-1 mice (20/sex/group) were gavaged for 13 weeks with 0, 125, 250, or 500 mg/kg/d fluoranthene. Body weight, food consumption, hematological parameters and serum parameters were measured during the study. At the end of the study, organ weight measurements and histological evaluations were made on the animals. Mice exposed to 250 and 500 mg/kg/d had statistically significant increases in SGPT values as well as an increase in absolute and relative liver weights. There was also an increase in liver lesions in the mid- and high-dose mice. The NOAEL for this study was 125 mg/kg/d. An uncertainty factor of 3000 was used to derive the RfD. This uncertainty factor consisted of 10x for each interspecies, interspecies and subchronic-to-chronic extrapolation. An additional uncertainty factor of 3x was used for gaps in the database (i.e. insufficient reproduction/development studies and insufficient data for a second species).

A review of the Toxicological Profile for Polycyclic Aromatic Hydrocarbons (ATSDR, 1990) revealed no inhalation studies using fluoranthene. A May 10, 1993 CAS-online literature search, covering the period since 1990, also failed to locate any toxicity studies. There were also no occupational exposure levels (OELs) available. Due to a lack of inhalation studies, there is no available information to suggest that it is inappropriate to base the ITSL on data from an oral route of exposure study. It was considered appropriate to base the ITSL on the RfD, as follows.

ITSL Derivation:

$$\begin{aligned} \text{ITSL} &= \text{RfD} \times 70\text{kg}/20\text{m}^3 \\ \text{ITSL} &= 0.04 \text{ mg/kg/d} \times 70\text{kg}/20\text{m}^3 \end{aligned}$$

$$\text{ITSL} = 0.14 \text{ mg/m}^3 \text{ (averaging time of 24 hours)}$$

REFERENCES

ATSDR. 1990. Toxicological Profile for Polycyclic Aromatic Hydrocarbons.

EPA. 1988. 13-week mouse oral subchronic toxicity study. Prepared by Toxicity Research Laboratories.

EPA. 1993. Integrated Risk Information System (IRIS database). Chemical file for fluoranthene (206.-44-0).

DB:ma