MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE COMMUNICATION

TO: File for Methyl Bromide (CAS # 74-83-9)

FROM: Robert Sills, AQD Toxics Unit Supervisor

SUBJECT: Methyl Bromide ITSL change in the averaging time from 24 hrs to annual

DATE: December 29, 2015

The current ITSL for Methyl Bromide (bromomethane) (5 ug/m^3) was derived on May 11, 1993 (see attached justification memo). The averaging time (AT) assigned to the ITSL at that time was 24 hours, as per the default methodology at that time (Rule 232(2)(b)). The current file review concludes that the AT may appropriately be set at annual, based on the nature and duration of the key study and the ITSL value derivation, as allowed under Rule 229(2)(b). Therefore, the AT is being changed from 24 hours to annual at this time.

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

INTEROFFICE COMMUNICATION

May 11, 1993

TO: File for Bromomethane (Methyl Bromide), 74-83-9

FROM: Robert Sills, Surface Water Quality Division

SUBJECT: Screening Level Development for AQD

A review of the IRIS database for bromomethane revealed a RfC of 5 E-3 mg/cu.m. This is based on a LOAEL of 3 ppm (11.7 mg/cu.m.) to rats exposed via inhalation (gas) for 6 hour/day, 7 days/week over 29 months. The critical effects were degenerative and proliferative lesions of the olfactory epithelium of the nasal cavity (Reuzel et al., 1987, 1991). EPA (1992) utilized a UF of 100 to derive the RfC from the human equivalent concentration (0.48 mg/cu.m.). The overall confidence in the RfC is "high" (EPA, 1992).

The ACGIH (1986) provides a TLV-TWA of 5 ppm (20 mg/m^3), but mentions a 90 day oral rat study which reported the induction of cancer of the forestomach at a dose of 50 mg/kg (Danse et al., 1984). RTECS (1993) also cites this rat study as the basis for regarding bromomethane as tumorigenic. NIOSH (1990) regards methyl bromide as an occupational carcinogen, presumably also based on the Danse et al. (1984) study. However, NTP pathologists doubted the reported findings of tumor development in that study, and a pathological review concluded that the reported tumors were merely hyperplastic (Boorman, 1988, personal communication; Anonymous, 1984). Boorman et al. (1986) repeated the protocol used by Danse et al. (1984), resulting in similar nonneoplastic lesions which regressed following cessation of exposure. The IARC (1986) evaluated the Danse et al. (1984) and other available information, and concluded that there is limited evidence of carcinogenicity to experimental animals. The EPA (1992) places bromomethane in carcinogenicity group D (not classifiable). Furthermore, the NTP (1992) tested methyl bromide by inhalation in B6C3F1 mice for 2 years, and reported no evidence of carcinogenic activity. Based on this information it can be concluded that the data are not adequate to classify bromomethane as a carcinogen.

The ITSL is equivalent to the RfC of 5E-3 mg/cu.m. (5 $\mu g/cu.m.$), with an averaging time of 24 hours.

REFERENCES:

ACGIH. 1986. Documentation of the Threshold Limit Values and Biological Exposure Indices. 5th Edition.

Anonymous. 1984. No evidence of methyl bromide carcinogenicity found by NTP panel. Pesticide and Toxic Chemical News 13(3):9-10.

Boorman, G.A., et al. 1986. Regression of methylbromide-induced forestomach lesions in the rat. Toxicol - Applied Pharmacol. 86:131-139.

Boorman, G.A. 1988. Personal communication from Dr. G.A. Boorman, NTP, to Robert Sills, MDNR.

Danse, L.H.J., et al. 1984. Methylbromide: carcinogenic effects in the rat forestomach. Toxicol - Applied Pharmacol. 72:262-271.

EPA. 1992. Integrated Risk Information System (IRIS database). Chemical file for bromomethane (74-83-9). Last revised 7/1/91 (RfD) and 8/1/90 (carcinogenicity).

IARC. 1986. IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans. Volume 41.

NIOSH. 1990. NIOSH Pocket Guide to Chemical Hazards. U.S. DHHS.

NTP. 1992. Toxicology and Carcinogenesis Studies of Methyl Bromide in B6C3F1 Mice. NTPTR 385.

Reuzel, P.G.J., et al. 1987. Chronic (29 month) inhalation toxicity and carcinogenicity study of methyl bromide in rats. Report No. V86.469/-221044. EPA/OTS Document No. 86-8700001202. As cited in EPA (1992).

Reuzel, P.G.J., et al. 1991. Chronic inhalation toxicity and carcinogenicity study of methyl bromide in Wistar rats. Fd. Chem. Toxic. 29(1):31-39.

RTECS. 1993. Registry of Toxic Effects of Chemical Substances. NIOSH. January 1993 issue.

RS:ma