

# MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

## INTEROFFICE COMMUNICATION

TO: File for Biphenyl (CAS No. 92-52-4)

FROM: Cathy Simon, Air Quality Division

DATE: December 17, 2012

SUBJECT: Screening Level for Biphenyl

The initial threshold screening level (ITSL) for biphenyl has been revised from 15  $\mu\text{g}/\text{m}^3$  (8-hour averaging time) to 13  $\mu\text{g}/\text{m}^3$  (8-hour averaging time). This change is being made to correct an error in the conversion of the concentration of biphenyl from units of ppm to units of  $\text{mg}/\text{m}^3$ . The original ITSL of 15  $\mu\text{g}/\text{m}^3$ , established in 2007, was derived from the American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV) for biphenyl of 0.2 ppm (MDEQ, 2007). A concentration of a gas reported in ppm can be converted to units of  $\text{mg}/\text{m}^3$  using the Ideal Gas Law. Based on this law, and assuming a temperature of 25 ° C, an atmospheric pressure of 760 mm, and a molecular weight of 154.2, a biphenyl concentration of 0.2 ppm is equivalent to 1.3  $\text{mg}/\text{m}^3$  as shown below:

$$\text{mg}/\text{m}^3 = (\text{ppm} \times \text{Molecular Weight})/24.45 = (0.2 \text{ ppm} \times 154.2)/24.45 = 1.3 \text{ mg}/\text{m}^3$$

A concentration of 1.3  $\text{mg}/\text{m}^3$  for the TLV of 0.2 ppm, is also consistent with the converted value reported by the ACGIH (2001). Utilizing this ACGIH TLV of 1.3  $\text{mg}/\text{m}^3$ , the ITSL for biphenyl can be derived according to the methodology in Rule 232(1)(c) of the Michigan Air Pollution Control Rules as follows:

$$\text{ITSL} = \frac{\text{TLV}}{100} = \frac{1.3 \text{ mg}/\text{m}^3}{100} = 0.013 \text{ mg}/\text{m}^3 = 13 \mu\text{g}/\text{m}^3$$

The above ITSL of 13  $\mu\text{g}/\text{m}^3$  is associated with an 8-hour averaging time, consistent with Rule 232(2)(a) of the Michigan Air Pollution Control Rules.

### **References**

ACGIH. 2001. Biphenyl. Documentation of the Threshold Limit Values and Biological Exposure Indices for Chemical Substances. 7<sup>th</sup> Edition. American Conference of Governmental Industrial Hygienists. Cincinnati, OH.

MDEQ. 2007. *Memo from Margaret M. Sadoff to File for Biphenyl (CAS# 92-52-4). Subject: Update of Interim Screening Level for Biphenyl.* February 5, 2007. Michigan Department of Environmental Quality, Air Quality Division.

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