

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE COMMUNICATION

TO: File for Dibutyl Phosphate (CAS No. 107-66-4)  
FROM: Cathy Simon, Air Quality Division  
DATE: January 29, 2013  
SUBJECT: Screening Level Update

Two initial threshold screening levels (ITSLs) for dibutyl phosphate were established by the Air Quality Division (AQD) in 2000. These included an ITSL of 86  $\mu\text{g}/\text{m}^3$  based on an 8-hour averaging time, and an ITSL of 170  $\mu\text{g}/\text{m}^3$  based on a 1-hour averaging time (MDEQ, 2000). The ITSL for dibutyl phosphate, based on an 8-hour averaging time, has been changed from 86  $\mu\text{g}/\text{m}^3$  to 50  $\mu\text{g}/\text{m}^3$ . In addition, the ITSL of 170  $\mu\text{g}/\text{m}^3$  (1-hour averaging time), has been withdrawn from the AQD's list of screening levels. These changes are being made as part of a project to update ITSLs that are derived from outdated occupational exposure levels. The evaluation of data being done as part of this project is limited to identifying the most recent occupational exposure level, and does not include a review of all the available scientific literature.

The original ITSL (8-hour averaging time) for dibutyl phosphate, established in 2000, was derived from the American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV) – time weighted average (TWA) of 8.6  $\text{mg}/\text{m}^3$ . This TLV-TWA of 8.6  $\text{mg}/\text{m}^3$  was first adopted by the ACGIH in 1968. The new ITSL is based upon the most recent TLV-TWA of 5  $\text{mg}/\text{m}^3$ , which was adopted by the ACGIH in 2009, and represents the most up to date and scientifically based TLV available from the ACGIH (ACGIH, 2009). The new ITSL was derived as follows:

$$ITSL = \frac{TLV}{100} = \frac{5 \text{ mg}/\text{m}^3}{100} = 0.05 \text{ mg}/\text{m}^3 = 50 \text{ }\mu\text{g}/\text{m}^3$$

The above ITSL of 50  $\mu\text{g}/\text{m}^3$  (8-hour averaging time) was derived pursuant to Rule 229(2)(b) of the Michigan Air Pollution Control Rules, and is consistent with the methodologies of Rules 232(1)(c) and 232(2)(a).

The original ITSL of 170  $\mu\text{g}/\text{m}^3$  (1-hour averaging time), established in 2000, was derived from the ACGIH TLV short term exposure level (STEL) of 2 ppm (17  $\text{mg}/\text{m}^3$ ) (MDEQ, 2000). More recently, the ACGIH has withdrawn the TLV-STEL for dibutyl phosphate, based on a finding that sufficient data are not available to recommend a TLV-STEL (ACGIH, 2009). While the National Institute of Occupational Safety and Health (NIOSH) still has a short term (ST) recommended exposure level (REL) of 2 ppm for dibutyl phosphate, it is based upon the ACGIH TLV-STEL that has now been withdrawn (NIOSH, 2013). Considering the basis for the original ITSL of 170  $\mu\text{g}/\text{m}^3$  (1-hour averaging time) no longer exists, this value has been withdrawn from the AQD list of screening levels.

## References

ACGIH. 2009. *Dibutyl Phosphate. Documentation of the Threshold Limit Values and Biological Exposure Indices*. 7<sup>th</sup> Edition. American Conference of Governmental Industrial Hygienists, Cincinnati, OH.

MDEQ. 2000. *Memo from Michael Depa to File for Dibutyl Phosphate (CAS # 107-66-4). Subject: Screening Level Determination*. September 12, 2000. Michigan Department of Environmental Quality, Air Quality Division.

NIOSH. 2013. *Dibutyl Phosphate. 1988 OSHA PEL Project Documentation*. National Institute of Occupational Safety and Health, U.S. Department of Health and Human Services. Accessed on 1/28/2013. <http://www.cdc.gov/niosh/pel88/107-66.html>

CS:lh