

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE COMMUNICATION

January 26, 2016

TO: Stannous Octoate File (CAS # 1912-83-0)  
FROM: Mike Depa, Air Quality Division, Toxics Unit  
SUBJECT: Screening Level for Stannous Octoate

The Initial Threshold Screening Level (ITSL) for stannous octoate is  $3 \mu\text{g}/\text{m}^3$  with an 8-hr averaging time.

The ITSL was previously derived in 1993 (see attached memo by Gary Butterfield, dated May 11, 1993). The ITSL was and continues to be based on the American Conference of Governmental and Industrial Hygienists (ACGIH) Threshold Limit Value (TLV) of  $0.1 \text{ mg}/\text{m}^3$  for "Tin [7440-31-5], organic compounds, as Sn" (ACGIH, 2015). The symbol for tin is Sn. Pursuant to Rule 232(1)(c), the ITSL is equal to:

$$\begin{aligned} \text{ITSL} &= \text{OEL}/100 \\ \text{ITSL} &= 0.1 \text{ mg}/\text{m}^3/100 \times 1000\mu\text{g}/\text{mg} \\ \text{ITSL} &= 1 \mu\text{g}/\text{m}^3 \end{aligned}$$

Where the OEL is the occupational exposure limit; in this case, the TLV. However, the TLV is for the tin portion of stannous octoate. Therefore, a molecular weight ratio of the tin portion of the molecule to the whole organo-tin molecule is used to calculate the ITSL for stannous octoate, using these variables:

$$\begin{aligned} \text{Molecular weight of stannous octoate} &= 405.1 \text{ g} \\ \text{Atomic weight of tin} &= 118.7 \text{ g} \\ 1 \mu\text{g}/\text{m}^3 &= \text{TLV of Sn portion of organo-tin compound} \\ X &= \text{TLV of stannous octoate} \end{aligned}$$

The ITSL for stannous octoate is calculated as:

$$\begin{aligned} X &= 0.1 \mu\text{g}/\text{m}^3(405.1\text{g}/118.7\text{g}) \\ X &= 3.4 \mu\text{g}/\text{m}^3 \end{aligned}$$

Therefore, the ITSL for stannous octoate is  $3 \mu\text{g}/\text{m}^3$  (rounded to 1 significant figure).

**Reference**

ACGIH. 2015. Documentation of the Threshold Limit Values and Biological Exposure Indices, 7th Edition. Cincinnati, OH. TLV documentation for Sn was last updated in 1992.

**Attachment**

**MICHIGAN DEPARTMENT OF NATURAL RESOURCES**

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**INTEROFFICE COMMUNICATION**

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May 11, 1993

TO: Stannous Octoate File (CAS # 1912-83-0)

FROM: Gary Butterfield

SUBJECT: ITSL for Stannous Octoate

A February 2, 1993 CAS-on-line literature search found no published toxicity studies on stannous octoate. Further investigation did find several review documents on organotin compounds in general. Among those documents is ACGIH (1986), ATSDR (1990), and NIOSH (1976). The ACGIH (1986) and NIOSH (1976) identify occupational exposure limits, TLV and REL respectively, of 0.1 mg of tin/m<sup>3</sup>. NIOSH recognized the differences in toxicity between various organotin compounds. However, a lack of adequate toxicity or human health information on the individual compounds led NIOSH to recommend its REL of 0.1 mg tin/m<sup>3</sup> for the organotins.

Based on 1 % of the REL, the ITSL for stannous octoate can be calculated to be 1 µg of tin/m<sup>3</sup>, with an 8 hour averaging time.

**References:**

ACGIH. 1986. Documentation of Threshold Limit Values and biological exposure limits.

ATSDR. 1990. Draft - Toxicological profile on tin. NIOSH. 1976. Criteria for a recommended standard ... occupational exposure to organotin compounds.

NIOSH 77-115.

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