

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE COMMUNICATION

April 12, 2004

TO: File for malic acid (6915-15-7)  
FROM: Marco Bianchi  
SUBJECT: Initial Threshold Screening Level

The initial threshold screening level (ITSL) for malic acid is  $5 \mu\text{g}/\text{m}^3$  based on an annual averaging time.

The following references or databases were searched to identify data to determine the ITSL: IRIS online, HEAST, NTP Management Status Report online, RTECS, EPBCCD, EPB library, CAS-online, NLM-online, IARC online, NIOSH Pocket Guide, and ACGIH Guide.

A complete reference check was conducted for malic acid, but only an RTECS  $\text{LD}_{50}$  (1600 mg/kg) with its reference citation was available for review. This citation listed an Eastman Kodak internal report number. A Kodak toxicologist confirmed the report number and provided additional information about the  $\text{LD}_{50}$  study. In this study, 5 rats were singly dosed with test material at concentrations of 200, 400, 800, 1600, or 3200 mg/kg, and then observed over a subsequent 14-day period. Weakness and anemia were observed in test animals. The  $\text{LD}_{50}$  was calculated to be 1600 mg/kg.

The ITSL was derived as follows:

$$\text{ITSL} = \frac{1}{500} \times \frac{1}{40} \times \frac{1}{100} \times \frac{1600}{0.167 \times 0.945} = 0.005 \text{ mg}/\text{m}^3$$

$$0.005 \text{ mg}/\text{m}^3 \times 1000 = 5 \text{ ug}/\text{m}^3 \text{ based on annual averaging.}$$

**The ITSL for malic acid =  $5 \mu\text{g}/\text{m}^3$  based an annual averaging.**

References:

1. Personal Communication, 2004, Eastman Kodak Environmental Services (1-585-722-5151).  $\text{LD}_{50}$  rat study report #82-0458. Verification of  $\text{LD}_{50}$  and acquire minimum data reporting requirements for  $\text{LD}_{50}$ .