Michigan Department of Environmental Quality

Interoffice Communication

TO: File for Cobalt Tallate (CAS# 61789-52-4)

FROM: Doreen Lang, Toxics Unit, Air Quality Division

SUBJECT: Screening Level for Cobalt Tallate (CAS# 61789-52-4)

DATE: June 18, 2009

The screening level (ITSL) for cobalt tallate is 6 ug/m^3 based on an annual averaging time.

Cobalt tallate (also known as tall oil fatty acids, cobalt salts) is a very tacky red-purple solid and is derived from fractional distillation of crude tall oil which is a by-product from pulping of pine trees. Composition of cobalt tallate includes: oleic acid (48%), linoleic acid (35%), conjugated linoleic acid (7%), stearic acid (2%), palmitic acid (1%), and other acids and unsaponifiable matter (EPA, 2005). The function of this compound is to deliver cobalt ions into chemical reactions, and is used primarily in: ink and paint driers; hydrodesulfurization of unsaturated polyester resins in manufacturing; oxygen scavenger in plastic manufacturing; adhesion promoters between rubber and steel cords in tire manufacturing; and in making the insecticide DEET (diethyltoluamide).

A literature review was conducted to determine an initial threshold screening level (ITSL) for cobalt tallate. The following references and databases were searched to derive the above screening level: EPBCCD, IRIS, NIOSH, ACGIH TLV/BEI 2004 guide, DEQ library, NTP Study Database, IARC, Acute Database, CAS Online, NLM-online, EPA ACToR Database, Kirk-Othmer chemical encyclopedia, and Patty's Industrial Hygiene & Toxicology. RfC or RfD values were unavailable. There is no NIOSH recommended exposure limit data available or a threshold limit value from ACGIH. There are also no 7-day inhalation studies for cobalt tallate which would give a NOAEL or LOAEL and no acute inhalation studies which would give an LC50. However, there is an acute oral toxicity study which determined an LD50 for cobalt tallate at 2000 mg/kg in female Sprague-Dawley rats (EPA, 2005). Based on Rule 232 (1) (h) the ITSL is determined as follows:

$$ITSL = \frac{1}{500} \times \frac{1}{40} \times \frac{1}{100} \times \frac{LD50\ (mg/kg) \times W_A}{0.167 \times I_A}$$

Where W_A is the body weight of a female Sprague-Dawley rat in kilograms and I_A is the daily inhalation rate of a female Sprague-Dawley rat in cubic meters/day. The resultant equation with all values added becomes:

$$ITSL = \frac{1}{500} \times \frac{1}{40} \times \frac{1}{100} \times \frac{2000\ mg/kg \times 0.338\ kg}{0.167 \times 0.33\ m^3/d}$$

$$ITSL = 6\ \mu g/m^3$$

Based on Rule 232 (2) (c) the averaging time for this ITSL is annual.

Cobalt tallate was found to induce structural chromosome aberrations in Chinese hamster ovary cells at 20 µg/ml, a concentration which was also cytotoxic to the cells (EPA, 2005). After reviewing all available data, there are no long-term carcinogenicity studies, therefore no initial risk screening level has been derived.

Based on the above data, the ITSL for cobalt tallate is 6 $\mu g/m^3$ based on an annual averaging time.

References:

EPA. 2005. U.S. High Production Volume (HPV) Chemical Challenge Program. Robust Summaries & Test Plan: Category Development and Justification, and Proposed Test Plan for Cobalt Stearate (CAS# 13586-84-0) and Fatty Acids, Tall Oil, Cobalt Salts (CAS# 61789-52-4). Prepared by MorningStar Consulting, Inc. on behalf of The Metal Carboxylates Coalition: A SOCMA Affiliated Consortium, Specifically sponsored by OM Group, Inc., Shepard Chemical Co., September 2005. 201-16041A. Available online at: https://iaspub.epa.gov/oppthpv/document_api.download?FILE=c14172rt6.pdf

NREPA. 1994. Part 55, Air Pollution Control of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended.