Addendum to Trimellitic Summary Document

This addendum was developed by the Division to supplement and update the HEAC summary dated March 19, 2012

Uses and Volume

TMA is used in the synthesis of, or curing agent for, various plastic, alkyl and epoxy resins, plasticizers, polyimide resin paints, water soluble alkyd resins, dipping agents, polyester resins for powder coatings, wall and floor coverings, and insulation enamels for high temperature cable and wire applications.

According to a European analysis proposing the listing of TMA as a "substance of very high concern," TMA is used in synthesis of plasticizers that are later compounded with PVC to make flexible plastic products such as automotive dashboards and, as noted above, high temperature coatings for electrical wire and cable. According to the analysis, TMA in polyester resin products is used in military, industrial and aerospace applications. Epoxy resin and surface coating systems may contain 2-10% reacted TMA within the polymer. Polymers that coat the insides of tin cans used for food products may contain as much as .04% reacted TMA, according to the analysis.

World-wide production has been reported at 110,250 tons. Most of that world production is produced by the sole US TMA manufacturer, Flint Hills Resources, at a plant in Joliet, Illinois, although some TMA or TMA containing products may be imported. 65% of TMA produced is used to produce plasticizers for PVC resins. 30% is used as a reactant in wire and cable insulation enamels and in polyester powder coatings. When processed into any of these materials, TMA is fully consumed and not able to cause occupational exposure.

Cal/EPA California Environmental Reporting System (CERS) reports 12 California users of TMA. Six users are universities and three users are biotech companies. These nine use reports are for small quantities, and most likely TMA is used at these institutions in laboratory hoods. Two Lockheed Martin facilities in California report TMA use, but only as a minor constituent of a chemical mixture which likely means the TMA is not in a form available to cause occupational exposure. One company maintains between 175 to 350 pounds of TMA on site. At this company, the TMA is part of an epoxy resin coating of transformer cores. The resin is applied inside of a laboratory hood and then cured in a ventilated oven.

No California manufacturer has been identified that produces PVC resins that contain TMA. Similarly, no California manufacturer has been identified that produces wire insulation or powder coatings. Any such manufacturers utilizing TMA would be reporting that usage to CERS.

Recommended Workplace Controls

Laboratory hoods and ventilated ovens are capable of controlling exposures for TMA uses in California to the proposed levels. Any uses done outside local exhaust ventilation can be controlled to the proposed level by a full-face particle respirator type N100 (US) or type P3 (EN 143).

Economic Impact Analysis/Assessment

Due to the usage patterns described above there should be little economic impact from adopting the proposed PEL.

Measurement Feasibility

As noted at the May 31, 2012 HEAC meeting, the current analytical methods might not be adequate to measure at the proposed STEL due to the LOD of the method. The LOD is just adequate for the proposed PEL.

• OSHA air sampling method 98 (November 1992) specifically for trimellitic anhydride, indicates a reliable quantitation limit (ROQ) of 0.623 ug/M3 (0.299 ug/sample) in a 480 liter air sample collected on a coated glass fiber filter at 2 liters per minute, using high performance liquid chromatography (HPLC) for the analysis. The overall detection limit of the method is indicated to be 0.106 ug/sample.

• NIOSH sampling method 5036 has working range 0.048 to 0.24 mg/M3 for a 400 L sample. The recommended flow rate is 1.5 to 2 liters per minute. Also, the estimated limit of detection is 2 ug. If an air sample was collected at 2 liters per minute for 480 minutes, the estimated limit of detection is approximately 0.002 mg/M3.