

## State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

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September 20, 2007

Ms. Jane Patarcity  
Beazer East, Inc.  
One Oxford Centre, Suite 3000  
Pittsburgh, PA 15219-6401

Subject: Soil Dermal Absorption Factors  
Koppers Inc., Superior, Wisconsin Facility  
BRRTs: 02-16-000484

Dear Ms. Patarcity:

This letter is in follow-up to comments regarding the July 2007 revision of the document titled, Focused Corrective Measures Study. Included in the Appendices is the AMEC document titled Post-Remediation Human Health Risk Assessment. Areas of capping are selected based upon risk criteria derived from this document. Henry Nehls-Lowe of the Wisconsin's Department of Health and Family Services consulted with an EPA Region V toxicologist and senior staff at the Agency for Toxic Substances and Disease Registry (ATSDR).

The AMEC-authored risk assessment departs from the default absorption factors (AF) provided in the 2004 U.S. EPA Risk Assessment Guidance for Superfund, Part E, Supplemental Guidance for Dermal Risk

Assessment (<http://www.epa.gov/oswer/riskassessment/ragse/index.htm>) when calculating health risks associated with dermal exposures to impacted soils. This EPA guidance established an AF of 0.13 for polycyclic aromatic hydrocarbons (PAHs), and the HHRA used an adjusted AF of 0.02 for carcinogenic PAHs and 0.1 for noncarcinogenic PAHs. For pentachlorophenol, the U.S. EPA guidance also the set default AF at 0.25, while the HHRA used an adjusted AF of 0.03.

Henry sought Mario Mangino's comments regarding the 2004 EPA Guidance for Dermal Risk Assessment related to the recent Kopper's on-site Human Health Risk Assessment, particularly AMEC's points of departure from the guidance. As a toxicologist with EPA, Mario supports the recommendation that the HHRA use the default PAH and pentachlorophenol dermal absorption factors and default PAH dermal permeability coefficient factor cited in the EPA guidance. The Region 5 RCRA program supports the use of the 2004 EPA RAGS Part E "Supplemental Guidance for Dermal Risk Assessment," and requires Responsible Parties to employ that guidance for risk assessments.

Henry also discussed this with Mark Johnson, previously an EPA toxicologist and currently senior staff in the ATSDR Region V office. Mark participated on the workgroup that reviewed this guidance and also supported this above recommendation.

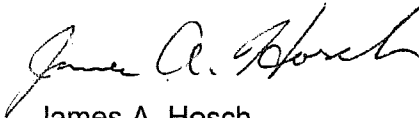
Regarding the chemical-specific issues cited by AMEC:

1) It is our understanding the recommended soil dermal absorption factors for PAHs and Pentachlorophenol were derived from published peer reviewed studies on dermal absorption in appropriate laboratory model systems. Consequently, there is adequate support for the values adopted in the Guidance.

2) For the dermal permeability coefficient ( $K_p$ ) of PAHs in water, the Guidance recommended  $K_p$  values were calculated from an algorithm that depends on the octanol-water partition coefficient ( $K_{ow}$ ) and the molecular weight (MW) of a chemical. Additional analysis has shown that there is a range of  $K_{ow}$  and MW over which the calculated  $K_p$  value could be expected to be reliable. Chemicals for which the algorithm is reliable are said to fall within the "Effective Prediction Domain"(EPD). Appendix A.1 which discusses the dermal absorption of organic chemicals shows that several common PAHs have a  $K_{ow}$  value high enough to place them outside of the EPD. Hence, there would be uncertainty (perhaps considerable) associated with using the algorithm to predict the  $K_p$  for PAH chemicals. The  $K_p$  value predicted from the algorithm should be conservative (i.e., would likely overestimate the actual PAH absorption rate). Unfortunately, the Guidance does not make any straightforward recommendations for how to handle chemicals that fall outside the EPD, and recommends using the unadjusted algorithm calculated values as the default values for  $K_p$ .

Thank you for opportunity to provide these additional comments regarding the Soil Dermal Absorption Factors. If you have any questions, please feel free to call me at (715)-392-0802.

Sincerely,



James A. Hosch  
Hydrogeologist

cc: John Robinson – Rhinelander  
Mark Gordon – RR/3  
Jeff Holden- BBL  
Henry Nehls-Lowe - DHFS  
Bob Egan - EPA Region 5  
Brian Magee – AMEC  
Vicki Drake – Douglas County