Hosch, James A - DNR

From: Henry Nehls-Lowe [NEHLSHL@dhfs.state.wi.us]
Sent: Wednesday, September 05, 2007 9:23 AM
To: Robinson, John H - DNR; Hosch, James A - DNR
Cc: Bob Egan
Subject: EPA Feedback on Guidance Use in the Koppers CMS HHRA Report

Jim & John,

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

Please contact me if you wish to discuss this further

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>>> <Mangino.Mario@epamail.epa.gov> 9/5/2007 8:58 AM >>>

HENRY:

The short answer is that the Region 5 RCRA program supports the use of the 2004 EPA RAGS Part E "Supplemental Guidance for Dermal Risk Assessment," and we require Responsible Parties to employ that guidance for risk assessments. Consequently, the Region 5 RCRA Program understands and supports the basic recommendation you want to make to WDNR about adhering to the 2004 EPA Dermal Guidance.

Regarding the chemical-specific issues cited by AMEC:

1) My understanding is that 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 (Kp) of PAHs in water, the Guidance recommended Kp values were calculated from an algorithm that depends on the octanol-water partition coefficient (Kow) and the molecular weight (MW) of a chemical. Additional analysis has shown that

there is a range of Kow and MW over which the calculated Kp 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 Kow 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 Kp for PAH chemicals. The Kp 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 Kp. Consequently, I'm not too surprised that AMEC would propose Kp values for PAHs that would be lower than the calculated default values.

(When Mark Johnson was with EPA, he participated in the workgroup that reviewed the Dermal Guidance, so he may have some additional ideas about the recommendations adopted in the Guidance.)

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"Henry Nehls-Lowe" <NEHLSHL@dhfs.state.wi.us>
08/30/2007 08:21 AM

To
Robert Egan/R5/USEPA/US@EPA, Mario Mangino/R5/USEPA/US@EPA

cc
Mark Johnson/R5/USEPA/US@EPA

Subject
Koppers CMS HHRA Report

Bob & Mario,

For the Human Health Risk Assessment for the Koppers facility in Superior, which was prepared by AMEC (see attached appendix A of the July 2007 CMS), when calculating dermal exposures to affected soils, they depart from the default absorption factor in the 2004 EPA RAGS Part E, Supplemental Guidance for Dermal Risk Assessment (http://www.epa.gov/oswer/riskassessment/ragse/index.htm) of 0.13 for polycyclic aromatic hydrocarbons to 0.02 for carcinogenic PAHs and 0.1 for noncarcinogenic PAHs. They also depart from the default AF of 0.25 for pentachlorophenol to 0.03.

When calculating dermal exposures to affected surface water they propose using their own lower dermal permeability constant (0.02 cm/hr) for PAHs other than the default value in the EPA guidance of 0.7 cm/hr, which AMEC states is flawed.

I am commenting to DNR that we are not in support of using dermal permeability constants and absportion factors for PAHs and PCP other than what is cited in the 2004 EPA guidance.

I am sending my agency's comments today to WDNR, but also am seeking EPA's feedback and, hopefully, support on this position.

Ironically, AMEC states that using these adjusted AFs and DPCs do not change the conclusions of the HHRA for on-site remediation, however I see this as setting the stage for decision making with the off-site conditions, where dermal exposure issues will certainly be the driving force for remediation and using these adjusted AFs could change the conclusions.

I look forward to discussing this with you.

Best Regards,

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[attachment "Koppers Focused Corrective Measures Study HHRA.pdf" deleted by Mario Mangino/R5/USEPA/US]