

Brian Magee, Ph.D. Comments on IRIS Benzo(a)pyrene Profile, March 4, 2015

Good afternoon. My name is Dr. Brian Magee, and I am speaking today on behalf of the American Petroleum Institute, Asphalt Institute, and Pavement Coatings Technology Council. Because I prepared many comments in 2013 that have not been addressed in EPA's Disposition, I will submit additional comments later. However, now I'd like to focus on two major issues regarding the proposed Dermal Slope Factor or DSF.

Thousands of people throughout the world have been exposed to coal tar ointments and shampoos throughout their lifetimes. The DSF predicts that most of them should have contracted skin cancer, but none of the over 20 studies of the people exposed to only coal tar has seen an increase in skin cancer. Some of these epidemiological studies have the usual limitations, but the DSF predicts a lifetime skin cancer risk of 86%. At least a hint of increased skin cancer risk should have been seen if the DSF were an accurate predictor of human risk. The DSF simply is not consistent with reality. These calculations were presented and have not been acknowledged. I hope that the Panel will study this issue, and I would be happy to provide detailed calculations for your consideration.

Another "real world" validation calculation was presented in 2013 concerning the DSF's prediction of skin cancer risk in the general population due to dermal contact with background soils. EPA's disposition states that they could not recreate the calculation because no details were provided, but every parameter and assumption was provided on pages 115-117. In my written comments submitted to you this week, I updated those calculations using the exact equation cited in Appendix G with some key modifications to correct several errors.

- EPA's default soil adherence rates for soil are 200 ug/cm² for children and 70 for adults, not the values used in Appendix G.
- Because BaP is the indicator PAH used to estimate risks for all potentially carcinogenic PAHs, the BaP-TE value in urban soil was assessed, not just BaP.
- The BaP-TE value in urban soil included all 25 PAHs that EPA will assess using the DSF for BaP.
- Urban background BaP-TE soil concentrations from the US were used, not soil data from other countries, such as Estonia and Spain.
- A total exposure time of 70 years was used, not 18 years.

The lifetime skin cancer risk from dermal exposure to background levels of PAHs in urban soils is $2.6E-2$, which is 26% of the lifetime cancer risk of the U.S. white population for the soil-exposed skin assumed by EPA and $>100\%$ for the black population. When only hands or feet are evaluated, the disconnect with reality increases. These calculations demonstrate that the DSF is fundamentally flawed because it predicts more than 160,000% of skin cancer in some cases and it contradicts the known role of ultraviolet radiation from the sun in the etiology of nonmelanoma skin cancer.