

Response to EPA’s Hazard Characterization of the Asphalt Category
The American Petroleum Institute Petroleum HPV Testing Group
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The following comments are in response to EPA’s Hazard Characterization (HC) for the Asphalt Category (U.S. EPA, 2011). This Category was sponsored by the American Petroleum Institute (API) Petroleum HPV Testing Group (Testing Group) as part of EPA’s HPV Chemical Challenge Program (www.petroleumhpv.org).

Below is EPA’s generic table of content for all the HPV Hazard Characterizations they have prepared, including the Asphalt Category. The Testing Group’s comments are found on the page numbers indicated below.

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Summary

1. The EPA hazard characterization for several Petroleum HPV Categories including the Asphalt Category, refers to the category members as complex mixtures when in fact they are Class 2 UVCB substances. (HC pages 3, 5, 6, 7, 15, 18, 26, 27, 35 and Tables 1, 2, 3, 7, 9, 11)

Substances on the US TSCA Inventory are divided into two classes for ease of identification (EPA 1995). Class 1 substances are those single compounds composed of molecules with particular atoms arranged in a definite, known structure. However, many commercial substances that are subject to TSCA are not Class 1 substances, because they have unknown or variable compositions or are composed of a complex combination of different molecules. These are designated Class 2 substances. Class 2 includes substances that have no definite molecular formula representation and either partial structural diagrams or no structural diagrams. These are the "UVCB" substances (Unknown or Variable compositions, Complex reaction products and Biological materials). An example of this kind of substance is given below.

CAS Number: 64742-85-4

CAS Name: Residues (petroleum), hydrodesulfurized vacuum

CAS Definition: A complex combination of hydrocarbons obtained by treating a vacuum residuum with hydrogen in the presence of a catalyst under conditions primarily to remove organic sulfur compounds. It consists of hydrocarbons having carbon numbers predominantly greater than C34 and boiling above approximately 495°C (923°F).

Petroleum substances are subject to nomenclature rules developed jointly by the U.S. EPA and the American Petroleum Institute (EPA, 1995b). In that guidance document, EPA adopts the definitions of petroleum process stream terms provided in API's published reference document Petroleum Stream Terms Included in the Chemical Substance Inventory under TSCA (1983, reprinted in 1985). The Stream Terms definitions include the CAS definition and registry number, the source of the substance and process (i.e., last refining step), short name, indication of carbon number, and indication of distillation range (or other appropriate characteristic). Therefore all members of the Asphalt Category are UVCB substances, not mixtures, under EPA's nomenclature guidance.

Genetic Toxicity - Gene Mutation

EPA include the following information in their HC for "**Asphalt Fume Condensates (No CASRN, supporting chemical)**" on page 21; "The National Toxicology Program (NTP) provides results and data tables for seven different genotoxicity tests with various strains of *Salmonella typhimurium*. Unfortunately, the information on the website does not describe how the test materials were derived; nor does it provide any details beyond the data tables."

The Testing Group believes this data is from a 1988 NIOSH study (Niemeier et al, 1988) and should not be included in the HC. The fume samples generated in that study are not characteristic of real-world asphalt fume (Kriech et al., 1999) and therefore the Ames test data are irrelevant to this Category's hazard characterization.

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References cited in this response to EPA's HC for the Asphalt Category

Kriech, A.J., Kurek, J.T., Wissel, H. L. (1999). Effects of Mode of Generation on the Composition of Asphalt Fumes. Polycyclic Aromatic Compounds, Volume 14, Issue 1-4.

Niemeier, R.W., Thayer, P.S., Menzies, K.T., et al. 1988. A comparison of the skin carcinogenicity of condensed roofing asphalt and coal tar pitch fumes. In: Cooke, M., Dennis, A.J., eds., Polynuclear Aromatic Hydrocarbons: A decade of progress. 10th International Symposium on Polynuclear Aromatic Hydrocarbons. Battelle Press, Columbus, OH pp 609-647.

Toxic Substances Control Act Inventory Representation for Chemical Substances of Unknown or Variable Composition, Complex Reaction Products and Biological Materials: UVCB Substances (March 29, 1995a); available from <http://www.epa.gov/oppt/newchems/pubs/uvcb.txt>

Toxic Substances Control Act Inventory Representation for Certain Chemical Substances containing Varying Carbon Chain Lengths (Alkyl Ranges Using the Cx-y Notation) (March 29, 1995b); available from: <http://www.epa.gov/oppt/newchems/pubs/alkyl-rg.txt>

U. S. EPA (2011). Screening Level Hazard Characterization of High Production Volume Chemicals; Asphalt Category. http://www.epa.gov/chemrtk/hpvis/hazchar/Category_Asphalts_March_2011.pdf