

Peer Review Summary Document

(3/28/2016)

Peer Review Plan

https://www.usgs.gov/atom/73839aquatic_life.pdf [18 KB PDF].

Title and Authorship of Information Product Disseminated

Coal-Tar-Based Sealcoat: Potential Concerns for Human Health and Aquatic Life, By Barbara J. Mahler, Michael D. Woodside, and Peter C. Van Metre.

Peer Reviewers Expertise and Credentials

Reviewer #1: Holds undergraduate, master of science, and doctoral degrees from Rutgers University, where research focused on sources and transport of contaminants in urban runoff to streams. During a 38-year career at the U.S. Geological Survey (USGS), the reviewer has developed, coordinated, and managed activities of the USGS National Water Quality Assessment (NAWQA) Program, provided technical oversight and direction of water-quality studies and facilitated external coordination and release of NAWQA Program information.

Reviewer #2: Holds an undergraduate degree from the University of California-Davis and a doctoral degree from Pennsylvania State University. With the USGS since 1991, the reviewer has 25 years of experience conducting and overseeing water-quality studies and assessments at local to regional to national scales as well as coordinating and managing surface-water quality, groundwater quality, and aquatic ecosystem studies that evaluated a comprehensive suite of contaminants in water, sediment, and fish tissue. The reviewer has also developed, coordinated, and managed activities of the NAWQA Program in the Central United States and overseen technical direction, external coordination, and release of NAWQA Program information. The reviewer has 25 years of experience conducting and overseeing water-quality studies and assessments at local to regional to national scales.

Reviewer #3: Holds an undergraduate degree and a master's degree from the University of Texas at Austin. Since joining the USGS in 2007, the reviewer has led field-based studies of surface water quality, with a focus on the occurrence and toxicity of organic contaminants, including polycyclic aromatic hydrocarbons (PAHs), in streams and streambed sediment, and currently is leading a study on PAH source identification and toxicity.

Reviewer #4: Holds an undergraduate degree in biochemistry from the University of California, Los Angeles, and a doctoral degree in environmental toxicology from the University of California, Riverside. The reviewer is an environmental/physical scientist at the U.S. Environmental Protection Agency (EPA). The reviewer's expertise includes bioaccumulation of pollutants in fish, human toxicity, and human pollutant exposure issues via water and fish ingestion routes. The reviewer also has experience with quantification of volatile and particulate toxic air pollutants and human exposures to these pollutants.

Reviewer #5: Holds an undergraduate degree in zoology and biology and a master of science degree in zoology (environmental toxicology) from the University of Wisconsin. With

the EPA since 2004, the reviewer's area of expertise is human health and ecological risk assessments for pesticides, industrial chemicals, and emerging contaminants.

Reviewer #6: Holds a doctoral degree in marine science from the College of William and Mary's Virginia Institute of Marine Science and conducted postdoctoral research at the National Institute of Environmental Health Sciences. The reviewer's graduate and postgraduate research respectively focused on the occurrence and effects of organic chemicals in aquatic systems, and comparative aquatic and mammalian toxicology. Currently, the reviewer is leading a team of scientists at the EPA in developing aquatic life Ambient Water Quality Criteria.

Reviewer #7: Holds a master of science degree in civil engineering and a doctoral degree in environmental science from Rutgers University. The reviewer's research focuses on the processes controlling fate and transport of organic contaminants (including PAHs) in the atmosphere and their effects on aquatic systems and human health, including source apportionment, gas-particle partitioning, air-water and air-terrestrial exchange, and on fate and transport of organic contaminants in the waters of the Great Lakes. Since 2006, the reviewer has been on the faculty of the Division of Environmental Health Sciences, School of Public Health, University of Minnesota. The reviewer has published 38 documents in peer-reviewed scientific literature, has an h-index of 18, and has received an Excellence in Review Award from *Environmental Science and Technology*.

Reviewer #8: Holds an undergraduate degree in chemical engineering from the Indian Institute of Technology, and master of science and doctoral degrees in civil and environmental engineering from the State University of New York. The reviewer did post-doctoral work at Carnegie Mellon University, and was an Engineering Research Associate and Lecturer at Stanford University. Since 2002, the reviewer has been on the faculty of the Department of Civil and Environmental Engineering, University of Maryland. The reviewer currently leads a research group that focuses on the fate, effects, and remediation of toxic pollutants, including PAHs, in the environment. In particular, the reviewer's research explores fundamental process mechanisms that control organic contaminant fate in soils, sediments, and aquatic environments, and uses multidisciplinary tools to investigate exposure and bioavailability of organic contaminants to organisms. The reviewer has published 67 documents in peer-reviewed scientific literature, and has an h-index of 23.

Charge Submitted to Peer Reviewers

The reviewers were asked to make an objective evaluation of the manuscript, with particular emphasis on whether it accurately summarized the information in the foundational publications, and whether the information was communicated in a manner appropriate for the intended audience. The reviewers were notified that the subject matter could receive attention on a nationwide scale and be scrutinized at a high level of detail.

Summary of Peer Reviewers Comments

Reviewer #1: This reviewer reviewed an early, 4-page version of the manuscript. The reviewer recommended that the manuscript include more quantitative information concerning time and concentrations to provide context. The reviewer also suggested that one topic addressed was tangential to the subject matter of the manuscript and therefore be removed herein and considered for a later publication.

Reviewer #2: This reviewer reviewed an early, 4-page version of the manuscript as well as a subsequent revised 6-page version. For the 4-page version, the reviewer recommended the following: adding citations to non-USGS research on adverse effects of PAHs and coal-tar sealants providing be more quantitative information; deleting thumbnail photos from the cover page that were also illustrated later in the manuscript; and revising a header to use a more formal tone. The reviewer also requested a clear definition of some terms. This reviewer also suggested that one topic addressed was tangential to the subject matter of the manuscript and therefore that it be removed herein and considered for a later publication. For the 6-page version, the reviewer suggested that the order of some text be rearranged; that more specifics regarding units, species, and other quantitative items be provided; and that technical information in two paragraphs be better explained for clarity.

Reviewer #3: This reviewer reviewed an early, 4-page version of the manuscript. The reviewer thought the manuscript effectively distilled the key points from the foundational publications, and that the writing was clear and accessible for the intended audience. The reviewer had minor technical and editorial suggestions. These included the addition of a header to the first page and providing additional information on PAH occurrence.

Reviewer #4: Commented that the manuscript presented the cited research in an understandable manner. The reviewer suggested alternative placement of some text, more specifics be provided in some sections, and that the technical information in two paragraphs be better explained for clarity. The reviewer also suggested an alternative page order.

Reviewer #5: Found this to be an excellent manuscript on the topic addressed. The reviewer suggested adding a link, alternatives for some text and one photograph, and that technical information in one paragraph be better explained for clarity. The reviewer also suggested the same page order as Reviewer #4.

Reviewer #6: Stated that the manuscript was well-written, and that the communication, graphics, and science were clear. The reviewer suggested a few clarifications and additional specifics, and that some non-USGS references on adverse effects of PAHs be included.

Reviewer #7: The reviewer "really liked" the manuscript, and stated that overall it "looked very good". The reviewer suggested the same page order as Reviewers #4 and 5. The reviewer also suggested some alternative text.

Reviewer #8: Found that the manuscript is clearly written in a style that should be easily understood by a lay audience. The reviewer stated that the foundational publications on which the manuscript is based are of high quality and that the manuscript accurately reflects current knowledge on the topic. The reviewer's overall opinion was that this is an excellent manuscript that is an appropriate communication tool. The reviewer suggested some alternative text and that the discussion of PAHs be extended.

Summary of USGS Response to Peer Reviewer Comments

Most of the editorial revisions suggested by the reviewers were incorporated into the manuscript, which strengthened the overall clarity. In response to comments of Reviewers #1–3 on the earlier 4-page version of the manuscript, page 1 was reformatted to add a header and remove thumbnail photographs, and a paragraph deemed tangential to the topic was deleted. In response to these early reviews, the manuscript was expanded to the 6-page version, which was subsequently commented on by Reviewers #4-8. Expanding the manuscript allowed for the inclusion of additional quantitative specificity (e.g., durations, species) and additional definitions of terms as requested by several reviewers. Two

paragraphs on technical topics were reworded for clarity as suggested by three reviewers. The alternative page order recommended by three reviewers was adopted. In response to comments from Reviewers #2 and #6, two non-USGS references were added. In response to a comment from Reviewer #5, an additional link was included.

The Dissemination

The published information product will be released as a USGS Fact Sheet series publication and will be available at <http://pubs.er.usgs.gov/>.