SIRC Styrene Information & Research Center

NEWS & INFORMATION

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Report says mode of action relevant to chemical assessments

Independent panel recommends further study

Washington, D.C., Jan. 7, 2014 – A report recently issued by a panel of independent scientists says a proposed mode of action for the formation of lung tumors in mice from exposure to three industrial chemicals is relevant to risk assessments. The independent report was based on outcomes of a workshop held Sept. 17, 2013 and organized by the Styrene Information & Research Center.

"With a focus on styrene, ethylbenzene and naphthalene, the workshop highlighted recent research in order to provide a better understanding of the mode of action of mouse-lung tumors and the relevance for human hazard assessment," says Jack Snyder, SIRC executive director. "In the case of styrene, for which the collective data show an absence of cancer effects in humans and rats, understanding the relevance of tumors seen in mice is critical to accurately assess styrene's human carcinogenic potential. Our hope is the report will fulfill its intention of helping to inform the evaluation of styrene's safety and future research."

Mode of action refers to the key events that occur at the cellular level that lead to tumor formation resulting from exposure to a chemical. Recent research on styrene, ethylbenzene, and naphthalene indicates the mode of action for lung tumors in mice is well established and does not operate to a meaningful extent in rats or humans. Therefore, this conclusion means that tumors observed in the lungs of mice following exposure to one of these chemicals do not necessarily equate to a toxic or cancerous exposure for humans (or rats).

SIRC invited four independent experts to participate in the workshop's panel discussion and issue a report to: 1) evaluate data for consistency, quality, and relevance to the mode of action (MOA); 2) critique the MOA hypothesis; and 3) identify issues for additional research.

The panel members were: Dr. Michael L. Dourson, Toxicology Excellence for Risk Assessment; Dr. William Farland, Colorado State University; Dr. David R. Mattie, Air Force Research Laboratory; and Dr. M.E. (Bette) Meek, University of Ottawa.

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"The panel's report summarizes the workshop discussion and the group's collective and individual opinions," Snyder adds. "The panel agreed there is a good level of support for the mode of action proposed for mouse lung toxicity and tumors, and additional evaluation and presentation of the data will enhance confidence in this MOA."

Four other scientists engaged in research on the mode of action and toxicity of styrene, ethylbenzene and/or naphthalene were asked to present information and research findings to the panel: Dr. George Cruzan, Dr. Laura Van Winkle, Dr. B. Bhaskar Gollapudi, and Dr. James Bus. The workshop was free and open to the public, and attendees were invited to ask questions and comment throughout the event.

The final report (and appendices including all presentation slides) can be accessed and downloaded at: http://styrene.org/2013-mode-of-action-workshop/.

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About SIRC

The Styrene Information & Research Center (SIRC) serves as a liaison between industry, federal and state governments, and international agencies on health-related issues involving styrene. Find out more by visiting www.styrene.org.