

Webinar advances review of TCE

By Ernie Hood

The National Toxicology Program (NTP) sought input from the public March 17, as it prepared to write a draft monograph on its review of [trichloroethylene](http://ntp.niehs.nih.gov/?objectid=952759DA-F79A-C85F-A0582CDAC7169304) (<http://ntp.niehs.nih.gov/?objectid=952759DA-F79A-C85F-A0582CDAC7169304>) (TCE). Cheryl Siegel Scott, of the U.S. Environmental Protection Agency, moderated the four-hour webinar, which attracted more than 75 participants.

TCE was first listed as reasonably anticipated to be a human carcinogen in the 9th Report on Carcinogens (RoC), issued in 2000. A listing in the RoC does not, by itself, mean that a substance will cause cancer. Many factors, including the amount and duration of exposure, as well as an individual's susceptibility to a substance, play a role in whether a person will develop cancer or not.

New studies lead to reconsideration

TCE is a halogenated alkene used primarily as a metal degreaser, with both occupational and environmental exposures. "Since the last review in 2000, there have been several additional human cancer studies published, so we are going to rereview TCE for possible change in its RoC listing status," said Ruth Lunn, Dr.P.H., director of the Office of the Report on Carcinogens.

The specific purpose of the webinar was two-fold - to gain external scientific input on issues related to the assessment of information on exposure and cancer outcomes in epidemiologic studies of TCE, and to obtain public input on the protocol for preparing the draft RoC monograph on TCE.

Exposure assessment quality

Patricia Stewart, Ph.D., a consultant with Stewart Exposure Assessments LLC, in Arlington, Va., reported the results of her systematic evaluation of the quality of exposure assessments in TCE epidemiologic studies.

Stewart rated the cohort and case-control studies according to several criteria, including occupational measures, exposure assessment methods used, and types of exposure estimates and metrics employed. She also evaluated the studies in terms of likelihood and intensity of exposure.

Cancer outcome classification

Bernard Goldstein, M.D., from the University of Pittsburgh, spoke about methods used to classify cancer outcomes, specifically lymphohematopoietic cancers.

He cautioned that, particularly in the case of non-Hodgkin lymphoma (NHL), although recent advances and changes in classification of neoplasm subtypes enhance treatment choices, they complicate establishment of direct cause-and-effect relationships between specific chemicals and one of the subtypes of NHL.



Lunn provides scientific expertise for the overall evaluation of substances for their potential to cause cancer in humans. (Photo courtesy of Steve McCaw)



Stewart, shown here at a 2011 meeting of the Gulf Study Scientific Advisory Board, is a contractor to NCI and NIEHS. (Photo courtesy of Steve McCaw)

According to Goldstein, the classification of subtypes should not preclude grouping of subtypes in certain circumstances. "Is it appropriate to combine cancer incidence of different lymphoid tumors in an epidemiological study or meta-analysis?" he asked. "I happen to think it is."

TCE epidemiological studies

National Cancer Institute (NCI) researcher [Mark Purdue, Ph.D.](http://dceg.cancer.gov/about/staff-directory/biographies/K-N/purdue-mark), (<http://dceg.cancer.gov/about/staff-directory/biographies/K-N/purdue-mark>) reported on the use of exposure and outcome assessments in TCE epidemiologic studies. He described the various methods used in exposure assessment studies and provided his opinions about which were the best, largely based on how quantitative the measurements were. "When evaluating evidence from cohort and case-control studies of TCE, it's essential to consider the quality of exposure assessment," he noted.

According to Purdue, imperfect exposure sensitivity and specificity can introduce misclassification, which would generally bias toward the null, especially when measuring rare exposures such as TCE.

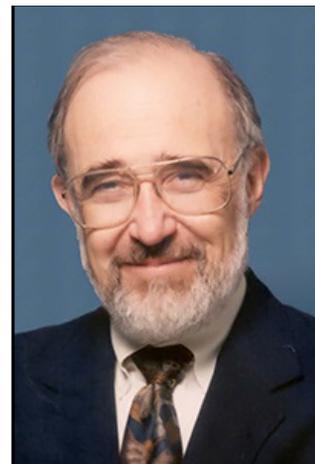
Public input

Following the three presentations, the speakers, NTP staff, and members of the public engaged in a discussion, providing further input on the scientific issues that were raised. Neela Guha, Ph.D., of the International Agency for Research on Cancer (IARC) led the discussion, posing a series of questions to the speakers in four specific areas - exposure metrics and surrogates, and coexposures; exposure levels and response; exposure misclassification and its effects on epidemiological observations; and disease classification of hematological cancers.

Next steps

Lunn noted that the webinar's proceedings would help her group write the cancer evaluation component of the draft monograph. "When that is finished," she said, "we will post it on our website for public comment, and then we plan to hold a peer review meeting for the draft monograph."

(Ernie Hood is a contract writer with the NIEHS Office of Communications and Public Liaison.)



Goldstein, professor emeritus and former dean of the University of Pittsburgh Graduate School of Public Health, is an environmental toxicologist whose research has focused largely on the concept of biological markers in the field of risk assessment. He is board-certified in both hematology and toxicology. (Photo courtesy of University of Pittsburgh Medical Center)



*Guha recently published a [study](http://ehp.niehs.nih.gov/1307055/) (<http://ehp.niehs.nih.gov/1307055/>) on tetrachloroethylene exposure and bladder cancer risk in the NIEHS journal *Environmental Health Perspectives*. (Photo courtesy of Neela Guha)*



Purdue is a researcher in the NCI Division of Cancer Epidemiology and Genetics Occupational and Environmental Epidemiology Branch. The potential relationship between TCE and human cancers is one of his lines of research. (Photo courtesy of NCI)

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