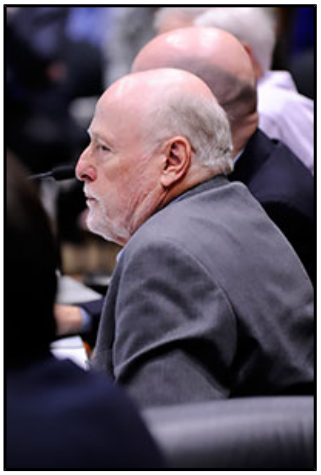
Peer review panel evaluates draft NTP technical reports

By Ernie Hood

Draft NTP technical reports evaluating the carcinogenicity and toxicity of two dietary supplements, a water disinfection byproduct, and a metalworking fluid were peer reviewed May 22 by an expert scientific panel. *(http://ntp.niehs.nih.gov/?objectid=BD2CA47D-F1F6-975E-74AA99197B7CB205)*

NTP, an interagency program, conducts rodent toxicity and cancer studies on agents of public health concern to identify potential human health hazards. The technical reports describe the methods, results, and NTP conclusions regarding levels of evidence for carcinogenic activity under the specific conditions of each study.



Hillary Carpenter III, Ph.D., a toxicologist retired from the Minnesota Department of Health, chaired the peer-review meeting. (Photo courtesy of Steve McCaw)

During the discussion of the draft NTP technical report on bromodichloroacetic acid, Robert Sills, D.V.M., Ph.D., chief of the Cellular and Molecular Pathology Branch, noted that brain tumors such as gliomas are rare in rodents, and that their contribution to the overall cancer burden is similar to humans, about 1-2 percent. (Photo courtesy of Steve McCaw)

Green tea extract

Green tea extract (GTE) is a commonly used dietary supplement in the U.S., marketed for its potential health benefits, such as increasing metabolism, fighting cancer, boosting the immune system, and promoting cardiovascular health. A component of GTE, epigallocatechin gallate, was originally nominated by the National Cancer Institute (NCI) for testing due to the lack of available chronic toxicity and carcinogenicity data. Ultimately, NTP chose to study GTE because there is more human exposure to the extract than to the nominated component. After analyzing several lots of commercially available GTE, NTP selected one GTE preparation for testing.

The panel accepted the draft NTP conclusions of no evidence of carcinogenic activity of GTE in male and female rats and in male mice. They also recommended a conclusion of no evidence of carcinogenic activity in female mice, instead of the draft NTP conclusion of equivocal evidence.

Indole-3-carbinole

Indole-3-carbinole is a dietary supplement sold alone or in combination with other herbals or vitamins. It is marketed as a cancer prevention agent, as well as for its health benefits, such as detoxifying the liver and boosting the immune system. NCI nominated indole-3-carbinole for study based on its occurrence in natural products such as cruciferous vegetables, including broccoli, Brussels sprouts, cauliflower, and kale, and its potential use as a breast cancer chemoprotective agent, to protect healthy tissue from the toxic effects of anticancer drugs.

The panel accepted the draft NTP conclusions of no evidence of carcinogenic activity in male rats and female mice, some evidence in female rats, and clear evidence in male mice.

Cimstar 3800

Cimstar 3800 is a semi-synthetic metalworking fluid used in machining automotive parts and other materials. The National Institute for Occupational Safety and Health nominated it for study based on a high potential for occupational exposures and the absence of toxicity or carcinogenicity studies.

The panel accepted the draft NTP conclusions of equivocal evidence in male and female rats, no evidence in male mice, and some evidence in female mice.

Bromodichloroacetic acid

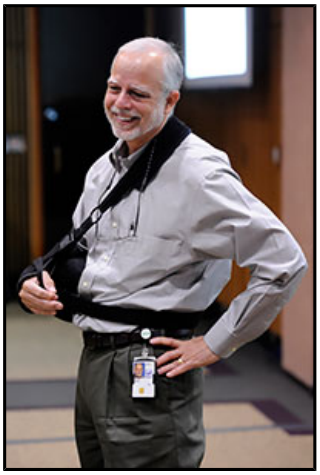
Bromodichloroacetic acid (BDCA) is a member of the haloacetic acid family of drinking water disinfection by-products, formed when disinfectants such as chlorine or ozone are used in water treatment plants. It was nominated for study by the U.S. Environmental Protection Agency and the American Water Works Association Research Foundation, based on widespread human exposure in drinking water and lack of toxicity and carcinogenicity studies.

The panel accepted the overall draft NTP conclusions of clear evidence of carcinogenic activity based upon a variety of neoplasms occurring in male and female rats and male and female mice.

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

Panel member Gary Perdew, Ph.D., of Penn State University, right, asked the NTP scientists many cogent questions during the discussions of the four draft NTP technical reports. (Photo courtesy of Steve McCaw)

For the benefit of those new to the NTP peer-review process, NTP toxicologist Chad Blystone, Ph.D., provided background information on the technical reports and the overall process, including the format of the peer review. (Photo courtesy of Steve McCaw)



NTP toxicologist Daniel Morgan, Ph.D., was the study scientist for the draft NTP technical report on Cimstar 3800. (Photo courtesy of Steve McCaw)

NTP pathologist Susan Elmore, D.V.M., explained the differences between the older and newer methods used by NTP pathologists to review uterine tissue sections. While the original transverse sectioning method remains in use, the newer residual longitudinal sectioning method has been used in six NTP studies so far, including three of the four studies being peer reviewed at the meeting - green tea extract, indole-3-carbinol, and Cimstar 3800. (Photo courtesy of Steve McCaw)

Panel member Jon Mirsalis, Ph.D., of SRI International in Menlo Park, California, concurred with the conclusions in one of the draft NTP technical reports. (Photo courtesy of Steve McCaw)

NTP toxicologist Michael Wyde, Ph.D., left, study scientist for the indole-3-carbinole study, and NTP pathologist Ronald Herbert, D.V.M., Ph.D., answered questions from the peer-review panel. (Photo courtesy of Steve McCaw)

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