

NATIONAL TOXICOLOGY PROGRAM

CENTER FOR THE EVALUATION OF RISKS TO HUMAN REPRODUCTION EXPERT PANEL ON ACRYLAMIDE

Meeting Summary May 20, 2004

The National Toxicology Program (NTP) Center for the Evaluation of Risks to Human Reproduction (CERHR) convened an expert panel on May 17-19, 2004, in Alexandria, Virginia, to evaluate the scientific evidence regarding the potential reproductive and/or developmental toxicity associated with exposure to acrylamide.

Acrylamide was selected for expert panel evaluation because of recent public concern for human exposures through its presence in some prepared foods, especially starchy foods cooked at high temperatures, such as French fries and potato chips.

Acrylamide is used in the production of polyacrylamide, which is used in water treatment, pulp and paper production, and mineral processing. Polyacrylamide is also used in the synthesis of dyes, adhesives, contact lenses, soil conditioners, cosmetics and skin creams, food packaging materials, and permanent press fabrics. Acrylamide is a known health hazard. It has been shown to induce neurotoxicity in highly exposed workers and in cases of acute poisoning. In animal studies, exposure to acrylamide has been shown to cause cancer and adverse effects on reproduction and fetal development.

The expert panel, composed of 14 independent scientists, reviewed and evaluated the available scientific evidence on acrylamide in three primary areas: human exposure, reproductive toxicity and developmental toxicity. The panel considered the quality, quantity and the strength of the evidence in its deliberations about the potential for acrylamide exposure to cause adverse effects on human reproduction and/or prenatal or postnatal development. Based on their evaluation of these data, the expert panel reached the following conclusions.

Expert Panel Conclusions

1. Considering the low level of estimated human exposure to acrylamide derived from a variety of sources, the Expert Panel expressed **negligible concern** for adverse reproductive and developmental effects for exposures in the general population.
2. The Expert Panel expressed **minimal concern** for acrylamide-induced heritable effects in the general population. The Expert Panel recognizes that dose-response information for these effects is limited.

3. Recognizing the broad range of occupational exposure estimates for acrylamide, the occurrence of neurotoxicity in some occupational settings, and the concurrent expression of neurotoxicity and reproductive toxicity in some experimental animal studies, the Expert Panel expressed **some concern** for adverse reproductive and developmental effects, including heritable effects, for exposures in occupational settings.

Next Steps

The expert panel report from this evaluation of acrylamide will be posted on the CERHR web site (<http://cerhr.niehs.nih.gov>) and available in printed text from the CERHR in approximately 4-6 weeks. The CERHR will solicit public comments on the report through an announcement in the Federal Register. Following this comment period, the CERHR will prepare an NTP-CERHR monograph on acrylamide consisting of the NTP brief giving the NTP's opinion on acrylamide as a human reproductive and/or developmental hazard, the expert panel report, and all public comments on this report. The monograph will be available to the public and sent to appropriate federal health and regulatory agencies.

Background

The NTP is an interagency program of the Department of Health and Human Services headquartered at the National Institute of Environmental Health Sciences of the National Institutes of Health. The NTP serves as the focal point within the federal government for the testing and evaluation of chemical and physical agents of public health concern. Additional information about the NTP is available on its web site (<http://ntp-server.niehs.nih.gov>).

The NTP established the CERHR in 1998 as a public resource for providing scientifically based, uniform assessments of the potential for adverse effects on reproduction and/or development caused by man-made or naturally occurring chemicals or chemical mixtures to which humans are exposed. The CERHR convenes independent panels of scientific experts to conduct its evaluations. These evaluations are open to the public and the public is invited to nominate chemicals to the CERHR for evaluation and scientists to serve on the expert panels. NTP-CERHR monographs on other chemicals evaluated by CERHR include phthalates, methanol, 1-bromopropane, 2-bromopropane, ethylene glycol, propylene glycol, and fluoxetine (Prozac®), are available on its web site.

Questions about the expert panel review of acrylamide or the CERHR can be directed to Dr. Michael Shelby, CERHR Director, at 919-541-3455 or shelby@niehs.nih.gov.

