NTP Studies:
Focusing on the Future

The National Toxicology Program (NTP) was established by the Department of Health and Human Services in 1978 to coordinate toxicological testing programs within the department, strengthen the science base in toxicology, and provide information about potentially toxic chemicals to health regulatory and research agencies, the scientific and medical communities, and the public. With more than 80,000 chemicals registered for commercial use in the United States and an estimated 2,000 new ones introduced annually for use in products used every day, the NTP has its work cut out for it—prioritization is crucial for the program to meet the challenge of studying the compounds and chemicals of the most concern to the most consumers.

The NTP continuously solicits and reviews nominations for toxicological studies to be undertaken on substances of potential human health concern. Nominations are accepted from academia, federal and state regulatory and health agencies, industry, labor unions, environmental groups, and the general public. Substances are generally studied for reproductive and developmental toxicity, genotoxicity, immunotoxicity, metabolism and disposition, and carcinogenicity.

At the 24 May 2000 meeting of the program's Board of Scientific Counselors, participants endorsed five areas of ongoing NTP study that are expected to receive even more attention in coming years. Although identified as focus areas, NTP studies are not restricted to these five areas; instead, their "focus" status merely reflects the growing importance and presence of the chemical exposures involved in these areas in the daily lives of large segments of the population.

Open communication and dialogue with federal and state agencies, industry, stakeholders, academia, and the public are crucial for the success of NTP projects. NTP conferences and workshops give researchers, regulators, policy makers, and the public the chance to examine issues together, exchange information, and reach some agreement on future directions for toxicology and risk assessment. NTP testing and research results, program plans, and other publications are distributed through mailings, *Federal Register* announcements, an e-mail mailing list, and the NTP home page at http://ntp-server.niehs.nih.gov/. In addition, online searchable access and printed copies of NTP publications including the *Report on Carcinogens*, NTP technical reports, NTP toxicity studies, and other NTP documents are available through the Environmental Health Information Service at http://ehis.niehs.nih.gov/.

Individuals or organizations who wish to nominate chemicals for NTP study should contact the NTP Nominations Faculty, National Toxicology Program/NIEHS, MD B3-10, PO Box 12233, Research Triangle Park, North Carolina 27709 USA, e-mail: NTPNomin@niehs.nih.gov.

DNA-Based Products

Although DNA-based products ("gene therapy") offer great promise in treating many different human diseases, they pose a risk of interacting with the host genome or disrupting normal cellular processes in unexpected and unpredictable ways, with potentially adverse consequences. The NTP is collaborating with the Food and Drug Administration (FDA) to study the safety of DNA-based products that will address the questions of life-long risk presented by their use, the potential for reproductive toxicity or transmission of altered genetic material to subsequent generations, and the potential for DNA-based products to cause autoimmune disease and immune dysfunction.

Phototoxicology Studies

A new phototoxicology research and testing laboratory, a joint endeavor between the NIEHS and the FDA, has been established and named the NTP Center for Phototoxicology. The laboratory will test the health effects of drugs, cosmetic ingredients, sun block additives, tanning enhancers, skin colorants, tattoo inks, and other agents upon interaction with ultraviolet radiation. The new center will yield valuable scientific data regarding the risk of health problems resulting from the combination of drugs or other chemicals and sunlight [see *EHP* 108:A212–A213 (2000)].

Medicinal Herbs

There has been a huge surge in the use of medicinal herbs in recent years: approximately one-third of the U.S. population is believed to use some form of alternative medicine, including herbal remedies. However, under the 1994 Dietary Supplement Health and Education Act, proof of herbal products' safety is not required prior to their being marketed. So, even though approximately 1,500 such products are sold as dietary supplements or ethnic traditional medicines, herbal formulations are not subject to FDA premarket toxicity testing to ensure their safety or efficacy. The NTP is planning and conducting research on several medicinal herbs compounds found in herbs that will focus on reproductive toxicity, neurotoxicity, immunotoxicity, and effects associated with acute high-dose exposures and chronic exposures to lower doses [see *EHP* 107:A604–A605 (1999)].

Occupational Health Exposures

The National Institute for Occupational Safety and Health (NIOSH) is planning a national survey to be conducted in coordination with the NTP and other federal agencies to better characterize worker exposures to chemical, physical, and biological agents. The information gathered will be used for worker education, to identify occupational health research gaps, and to help target areas where research can most likely reduce workplace illness. The NTP is currently coordinating an effort between NIOSH and the NIEHS to evaluate two specific worker exposures: cellulose insulation during installation and asphalt fumes resulting from paving operations. Although cellulose insulation has been nominated to the NTP for general toxicologic evaluation, there are currently little data regarding actual worker practices, exposures, and possible health effects caused by its use. Asphalt fumes generated during road paving have been linked with acute irritation of both mucous membranes and skin, but no cancer risk has been established to date.

Safe Drinking Water

It is estimated that more than 200 million Americans use treated drinking water, so the availability of safe drinking water is a fundamental public health concern. Although chlorination of water is considered one of the major public health advances of the twentieth century, chemical disinfection by-products (DBPs) of the chlorination process may cause their own problems, such as cancer. To assist in the setting of more protective water quality standards, the NTP is collaborating with the U.S. Environmental Protection Agency on a research program to assess the potential risks from human exposure to the major DBPs. The program includes a systematic, mechanism-based toxicologic evaluation of DBPs focusing on reproductive toxicity, immunotoxicity, neurotoxicity, and carcinogenicity [see *EHP* 108:A64–A66 (2000)].