NATIONAL TOXICOLOGY PROGRAM
UPDATE
Headquartered at National Institute of Environmental Health Sciences • NIH

March 2002

NIEHS/NTP at 41st SOT

Visit the NTP at SOT - Booth #766

The National Toxicology Program (NTP) will exhibit at the 41st Society of Toxicology (SOT) ToxExpo being held March 18-20, 2002 at the Opryland Hotel in Nashville, TN. More than 6,000 scientists, researchers, business people and educators from around the world are anticipated to attend to learn about the latest advances in technology and services.

The National Institute of Environmental Health Sciences (NIEHS) and the *Environmental Health Perspectives* (EHP), the NIEHS scientific journal, will also have exhibits at the ToxExpo. Check out booths #768 (NIEHS) and #769 (EHP).

Environmental Influences on Childhood Asthma

A special session sponsored by the NIEHS entitled, "NIEHS Disease-Oriented Symposium: Environmental Influences on Childhood Asthma," will be presented at 8:30 a.m. on Thursday, March 21st at the Opryland Hotel, Presidential C. This workshop is part of a special NIEHS-sponsored series on disease-oriented topics presented annually at the SOT meeting. Childhood asthma is being highlighted because of its strong link to environmental exposures, the gene-environment interactions, and because it represents an example of how basic research can be translated into intervention and prevention programs. Childhood asthma is a chronic lung disorder of enormous public health importance that disproportionately affects minorities and persons of lower socioeconomic status. This workshop will include presentations that span research in epidemiology, molecular mechanisms, gene-environment interactions, environmental agents related to the disease, and intervention and prevention.

Conversation with NIEHS Deputy Director

The NIEHS believes that it is important to interact and receive feedback from the research communities affected by NIEHS policies. Dr. Samuel H. Wilson, NIEHS Deputy Director, and other key NIEHS staff will offer a brief presentation emphasizing the status of grant funding and new initiatives on Thursday, March 21st at 12:00 p.m. in the Opryland Hotel, Delta Ballroom C. An open question and answer period will follow.

Grantsmanship Forum

On Tuesday, March 19th at 2:00 p.m., Dr. Anne Sassaman, Director of the Division of Extramural Research and Training, NIEHS, will provide an overview of grant programs at the NIEHS and other NIH institutes and discuss how the NIH has responded to new science with new initiatives. This session will be held in the Opryland Hotel, Jackson D.

Contents

ADDRESS P.O.Box 12233, Maildrop A3-01, Research Triangle Park, NC 27709-2233 WEB SITE http://ntp-server.niehs.nih.gov/
NTP LIAISON & SCIENTIFIC REVIEW OFFICE 919-541-0530 E-MAIL liaison@starbase.niehs.nih.gov

Report on Carcinogens

Prepared by the NTP, the Report on Carcinogens (RoC) is an informational scientific and public health document that identifies and discusses agents, substances, mixtures, or exposure circumstances that may pose a carcinogenic hazard to human health. It serves as a meaningful and useful compilation of data on (1) the carcinogenicity, genotoxicity, and biologic mechanisms of the listings in humans and/or animals; (2) the potential for exposure to them, and (3) the regulations promulgated by federal agencies to limit exposures.

The revised 9th RoC that contains all addendum materials is available electronically on the NTP web site at http://ntp-server.niehs.nih.gov/NewHomeRoc/AboutRoC.html or by contacting Dr. C.W. Jameson, Head, Report on Carcinogens (for contact information see page 3).

10th Edition of the Report on Carcinogens

The scientific review of nominations to the 10th RoC is complete and publication is anticipated in 2002. This group of nominations includes the following:

- **2-Amino-3-methylimidazo[4,5-f]quinoline (IQ)** - found in cooked meat and fish.
- **Beryllium and beryllium compounds**, - used in fiber optics and cellular network communications systems, aerospace, defense and other industry applications. Reviewed for possible upgrading to a known human carcinogen in the 10th Report.
- **2,2-bis-(Bromomethyl)-1,3-propanediol** - used as a fire retardant in unsaturated polyester resins, in molded products, and in rigid polyurethane foam.
- **2,3-Dibromo-1-propanol** - used as a flame retardant, as an intermediate in the preparation of the flame retardant tris (2,3-dibromopropyl) phosphate, and as an intermediate in the manufacture of pesticides and pharmaceutical preparations.
- **Dyes metabolized to 3,3-dimethoxybenzidine (dimethoxybenzidine dyes as a class)** - formerly widely used for leather, paper, plastics, rubber, and textile industries.
- **Dyes metabolized to 3,3-dimethylbenzidine (dimethylbenzidine dyes as a class)** - formerly widely used for leather, paper, plastics, rubber, and textile industries.
- **Styrene-7,8-oxide** - used mainly in the preparation of fragrances and in some epoxy resin formulations.
- **Vinyl Bromide** - used commercially since 1968, primarily in the manufacture of flame retardant synthetic fibers.
- **Vinyl Fluoride** - used commercially since the 1960s, in the production of polyvinylfluoride that is used for plastics.
- **Broad-spectrum UV radiation, UVA, UVB, and UVC** - solar and artificial sources of ultraviolet radiation.
- **Chloramphenicol** - used widely as an antibiotic since the 1950s. Veterinary use of chloramphenicol has resulted in the occurrence of residues in animal-derived food.
- **Estrogens, steroidal** - widely used in oral contraceptives and in post-menopausal therapy for women.
- **Methyleugenol** - flavoring agent used in jellies, baked goods, nonalcoholic beverages, candy, and ice cream. Also used as a fragrance for many perfumes and soaps.
- **Nickel and nickel compounds** - widely used in commercial applications for over 100 years.
- **Trichloroethylene** - widely used as a solvent with 80-90% used worldwide for degreasing metals.
- **Wood dust** - estimated that at least two million people are routinely exposed occupationally to wood dust worldwide. Non-occupational exposure also occurs. The highest exposures have generally been reported in wood furniture and cabinet manufacture, especially during machine sanding and similar operations.

A table of the recommendations from the three scientific peer review committees for listing these nominations in the 10th RoC can be accessed through the NTP home page: http://ntp-server.niehs.nih.gov or by contacting Dr. C. W. Jameson at the address provided on page 3.

All public comments as well as the background documents provided to the review committees and the public are available on the web in PDF version through the NTP web site. Hard copies of these documents are also available upon request.

11th Edition of the Report on Carcinogens

The NTP has initiated scientific review of the nominations being considered for inclusion in the 11th edition of the RoC, which is scheduled for publication in 2004. This group of nominations includes the following:

- **1-Amino-2,4-dibromo-anthraquinone** - a vat dye used in the textile industry.
- **2-Amino-3,4-dimethylimidazo[4,5-f]quinoline (MeIQ)** - a substance formed in food during heating or cooking and found in cooked meat and fish.
- **2-Amino-3,8-dimethylimidazo[4,5-f]quinoxaline (MeIQx)** - a substance formed during heating or cooking of meat and fish.
- **Cobalt sulfate heptahydrate** - used in electroplating and electrochemical industries, as a coloring agent for ceramics, as a drying agent in inks, paints, varnishes and linoleum and as a mineral supplement in animal feed.
- **Diazoaminobenzene (DAAB)** - used to promote adhesion of natural rubber to steel, as a polymer additive and an intermediate in the production of a number of pesticides, dyes and other industrial chemicals.
- **Diethanolamine (DEA)** - used in machine oils and metal cutting fluids and in the preparation of liquid laundry and dishwashing detergents, cosmetics, shampoos and hair conditioners, as well as in textile processing and other industrial uses.
- **Hepatitis B virus (HBV)** - a small DNA-enveloped virus that is transmitted through contact with blood and blood products or other body fluids.
- **Hepatitis C virus (HCV)** - an RNA-enveloped virus mainly transmitted in blood as is HBV above.
- **High-risk human papillomaviruses (HPVs)** - small non-enveloped viruses that infect genital mucous membranes. HPV infections are common throughout the world.
- **Naphthalene** - used in making many industrial chemicals and as an ingredient in some mothballs and toilet bowl deodorants.
- **Neutrons** - may affect patients getting neutron radiotherapy and the passengers and crew of aircraft that are naturally bombarded by the particle.
- **Nitrobenzene** - used in the production of aniline, a major chemical intermediate in the production of dyes.
- **Nitromethane** - a stabilizer added to many halogenated solvents and aerosol propellants.
- **Occupational exposure to lead or lead compounds** - major occupational exposures are in the lead smelting and refining industries, battery-manufacturing plants, steel welding or cutting operations, construction, and firing ranges.
- **Phenylimidazopyridine (PhIP)** - like MeIQ is formed in food during heating and cooking and is found in cooked meat and fish.
- **4,4'-Thiodianiline** - an intermediate in the manufacture of several dyes.
- **X-radiation and gamma radiation** - used in medical diagnosis and treatment and produced in the use of atomic weapons.

The NTP continues to solicit public comment on this set on nominations. Comments should be directed to Dr. C. W. Jameson at the address listed below. Public comments received are posted on the NTP web site.

The listing criteria and a description of the RoC review process can be obtained through the NTP home page: http://ntp-server.niehs.nih.gov (see Report on Carcinogens) or by contacting Dr. Jameson (see below).

NTP Requests Nominations for Future Consideration for Listing/Delisting

The NTP solicits and encourages the broadest participation from interested individuals or groups in nominating agents, substances, mixtures, or exposure circumstances for listing in or delisting from the RoC. When possible, nominations should contain a rationale for the listing or delisting and appropriate supporting background information and relevant data (e.g., journal articles, NTP Technical Reports, IARC listings, exposure surveys, release inventories). Nominations should be directed to Dr. Jameson at the following address:

Dr. C.W. Jameson, Head, Report on Carcinogens, NIEHS/NIH, 79 Alexander Drive, Rm. 3118, P.O. Box 12233, MD EC-14, Research Triangle Park, NC 27709; T: 919-541-4096; jameson@niehs.nih.gov

NTP Testing Program

New Nominations Selected for Toxicology Studies

Thirteen new nominations for toxicology and/or carcinogenesis studies were reviewed in 2001. The NTP Interagency Committee for Chemical Evaluation and Coordination (ICCEC) makes testing recommendations on nominated substances and serves as the first level of review in the NTP's formal chemical nomination and selection process. The ICCEC evaluated this group of 13 substances in May 2001. Notice of this meeting, including a request for public comment on these nominations and the ICCEC's testing recommendations, was published in the Federal Register July 25, 2001 (66FR38717). The NTP Executive Committee approved the testing recommendations in December 2001, and the appropriate studies will be designed and implemented by the NTP as resources and time permits.

The 8 substances for which one or more types of toxicity studies were recommended are:

- **Bladderwrack** - a seaweed dietary supplement with potential for thyroid stimulation.
- **Cylindrospermopsin** - an acutely toxic blue-green algal toxin widely occurring in natural waters.
- **Epigallocatechin-3-gallate** - the major polyphenol in green tea and green tea extract dietary supplements with potential chemopreventive properties.
- **2-Ethylhexyl-*p*-dimethylaminobenzoic acid** - an industrial chemical also used in sunscreens and with potential for phototoxicity.
- **Grape seed and pine bark extracts** - widely used dietary supplements containing similar biologically active proanthocyanidin compounds.
- **Metalworking fluids** - a large class of industrial products with substantial occupational exposure.
- **Methyl tetrahydrofuran** - a component of a newly developed alternative fuel.
- **Polybrominated diphenyl ethers** - high production volume flame retardants known to bioaccumulate.

The 2 nominated substances for which a formal testing recommendation was deferred pending the receipt and consideration of additional information are:

- ***n*-Butyl bromide** - a high production volume industrial chemical structurally related to 1-bromopropane.
- **Methyl soyate** - a major component of certain biodiesel fuels.

The 3 nominated substances for which no testing was recommended at this time are:

- **Apigenin** - a naturally occurring flavonoid found in certain foods and herbs.
- **Dibenzofuran** - an environmental contaminant commonly associated with coal tar and creosote.
- **Diphenolic acid** - a low production volume industrial chemical.

Additional comments on any of these nominations and the recommended studies are welcome. Further information, including supporting documents for each nomination and public comments received, is available on the web at http://ntp-server.niehs.nih.gov/NomPage/2001Noms.html.

NTP Solicits Input and Nominations of Agents for Study

The NTP continually solicits nominations of chemicals and agents for study from sources including academia, industry, labor unions, federal and state agencies, and the general public. All nominations should be accompanied by a rationale for study (e.g. populations exposed, source of exposure, any known adverse health effects, etc.). When possible, nominations should also be accompanied by available information describing production and use, possible adverse effects associated with exposure, as well as a chemical name, structure and Chemical Abstract Service (CAS) number. Nominations and comments regarding nominations or testing initiatives should be addressed to Dr. Scott Masten, Office of Chemical Nomination and Selection, NIEHS, P.O. Box 12233, MD A3-01, Research Triangle Park, NC 27709; T: 919- 541-5710; masten@niehs.nih.gov.

Hexavalent Chromium

Based upon concern by a number of California legislators, the California Environmental Protection Agency, and the California Health and Human Services Agency, the NTP will study the carcinogenic potential of hexavalent chromium (CrVI) administered in drinking water. CrVI is an established human carcinogen in certain occupational settings, presumably as a result of inhalation exposure. There is uncertainty, however, regarding the long-term consequences of exposure to hexavalent chromium compounds in the water supply. The NTP studies will include both short- and long-term administration of CrVI as sodium dichromate dihydrate in drinking water to laboratory animals, as well as studies to characterize its tissue absorption. The NTP provided an update of this project at a public meeting hosted by Congressman Adam B. Schiff on January 14, 2002, in Glendale, CA.

Data from the toxicokinetic studies and outlines of the designs of all studies on CrVI are accessible on the NTP web site http://ntp-server.niehs.nih.gov.

NTP Study Protocols

The NTP conducts research on a broad range of high priority agents and issues of public health concern. Studies may be conducted for a variety of health-related effects, including but not limited to reproductive and developmental toxicities, genotoxicity, immunotoxicity, neurotoxicity, metabolism and disposition, and carcinogenicity. The NTP has developed a web page that provides general information about NTP protocols including the objectives and procedures for NTP studies. This information is located on the NTP web site at http://ntp-server.niehs.nih.gov/htdocs/overviews/genprotocolspg.html.

NTP Center for the Evaluation of Risks to Human Reproduction (CERHR)

The CERHR serves as an environmental health information resource. It provides timely and unbiased, scientifically sound evaluations of human and experimental evidence for adverse effects on reproduction, including development, which may be caused by agents to which humans are exposed.

Evaluation of Methanol

The CERHR Methanol Expert Panel met in Alexandria, VA on October 15-17, 2001, to conduct its evaluation of methanol. Methanol is a commercially important, high production volume chemical (10.54 billion pounds, US production, 1993) that has a potential for substantial occupational, consumer, and environmental exposure. This meeting was open to the public.

Further details about this evaluation are posted on the CERHR web site. Questions should be directed to Dr. Michael Shelby, Director CERHR (for contact information see page 6).

Evaluation of Bromopropanes

A 10-member expert panel composed of scientists from universities, industry, and state and federal government agencies conducted an evaluation of the reproductive and developmental toxicities of 1-bromopropane and 2-bromopropane in Herndon, VA on December 5-7, 2001. 1-Bromopropane is used as a solvent for fats, waxes, or resins and as an intermediate in the synthesis of pharmaceuticals, insecticides, quaternary ammonium compounds, flavors, or fragrances. It is also used as a vehicle in spray adhesives and as a cold bath degreaser. 2-Bromopropane is used as an intermediate in the synthesis of pharmaceuticals, dyes, and other compounds; the extent of these uses and associated human exposures is unknown. 2-Bromopropane is also present as a contaminant in 1-bromopropane. Bromopropanes are being considered as replacement chemicals for ozone-depleting chemicals such as hydrochlorofluorocarbons and chlorinated solvents.

Following the December meeting, the draft expert panel reports were revised to incorporate the panel's conclusions, and subsequently reviewed by the Bromopropanes Expert Panel, NTP scientists, and CERHR personnel. The *Expert Panel Report on the Developmental and Reproductive Toxicity of 1-Bromopropane* and the *Expert Panel Report on the Developmental and Reproductive Toxicity of 2-Bromopropane* are now available. They include the summaries and conclusions of the expert panel's evaluation of the scientific data for potential reproductive and/or developmental hazards associated with exposure to 1-bromopropane and 2-bromopropane. The two expert panel reports are available electronically on the CERHR web site http://cerhr.niehs.nih.gov. To request a printed copy of either report, please contact the CERHR at the address given below.

The CERHR invites public comments on the expert panel reports and input regarding any recent, relevant toxicology data or human exposure information for either chemical. The CERHR asks that all comments and other information be submitted to the CERHR by Tuesday, May 7, 2002.

Future Evaluation of Ethylene Glycol and Propylene Glycol

The CERHR plans to hold an expert panel evaluation of ethylene glycol and propylene glycol. The date for this expert panel meeting is not yet set, but is tentatively planned for fall 2002. This meeting will be open to the public. Additional details about the meeting, including the date and location, will be published in a future Federal Register notice.

Ethylene glycol is a high-production-volume chemical used chiefly in antifreeze for heating and cooling systems. There is widespread exposure to ethylene glycol due to its use as an automotive antifreeze and as a de-icer for aircraft. The toxicology database on ethylene glycol includes recent mechanistic data and occupational exposure information.

Propylene gylcol, similar in structure to ethylene glycol, is used as an antifreeze, de-icing solution, and in various paints and coatings. Unlike ethylene glycol, propylene glycol is approved for use in various food additives, drugs, and cosmetics.

The CERHR invites input from the public and other interested parties on ethylene glycol and propylene glycol, including toxicology information from completed and ongoing studies, information on planned studies, as well as information about current production levels, human exposure, use patterns, and environmental occurrence. Information and comments should be forwarded to the CERHR at the address provided below. Those received by May 6, 2002 will be made available to the CERHR staff and the expert panel for consideration in this evaluation.

Nominations Solicited

The CERHR conducts reviews on man-made or naturally occurring chemicals or chemical mixtures and welcomes the nomination of chemicals for future evaluations. Nominations are welcome from all interested individuals and groups. Nominations should include the chemical's name, Chemical Abstract Service registry (CAS) number (if known), and a justification for the nomination. As possible, information on the chemical and its potential reproductive or developmental toxicity is also requested.

Nominations can be submitted through the CERHR web site (choose Nominate a Chemical) or directly to: Dr. Michael Shelby, Director, CERHR, NIEHS, P.O. Box 12233, MD EC-32, Research Triangle Park, NC 27709; T: 919-541-3455; shelby@niehs.nih.gov.

NTP Interagency Center for the Evaluation of Alternative Toxicological Methods (NICEATM)

The NICEATM and the Interagency Coordinating Committee on the Validation of Alternative Methods (ICCVAM) collaborate to develop, validate, and achieve regulatory acceptance of new and improved test methods, including methods that will reduce, refine, and replace animal use. The ICCVAM coordinates cross-agency issues on the development, validation, acceptance, and national/international harmonization of toxicological test methods. The ICCVAM Authorization Act of 2000 (Public Law 106-545) formally designated the ICCVAM as a permanent interagency coordinating committee under the NICEATM.

ICCVAM Annual Report

In accordance with requirements of the ICCVAM Authorization Act of 2000, the report entitled "Annual Progress Report of the Interagency Coordinating Committee on the Validation of Alternative Methods (ICCVAM)" has been prepared and is publicly available. The report provides a description of the activities carried out by the ICCVAM and the NICEATM in 2001. It is available on the ICCVAM/NICEATM web site at http://iccvam.niehs.nih.gov or in hard copy by contacting NICEATM (for contact information see page 8).

SACATM

The Scientific Advisory Committee on Alternative Toxicological Methods (SACATM) was chartered in January 2002 to fulfill requirements specified in the ICCVAM Authorization Act of 2000 for providing advice regarding ICCVAM activities. The SACATM will advise the Director of the NIEHS, the ICCVAM, and the NICEATM on priorities and directives related to the development, validation, scientific review, and regulatory acceptance of new or revised toxicological test methods and on ways to foster partnerships and communication with interested parties. The SACATM replaces the Advisory Committee on Alternative Toxicological Methods that previously provided external input to the NTP on these issues. The SACATM will meet two to three times each year, and all meetings will be open to the public. Notices of SACATM meetings will be posted on the NTP web site and published in the Federal Register. Additional information is available on the ICCVAM/NICEATM web site.

Endocrine Disruptors Screening Methods

ICCVAM and NICEATM are planning an expert panel meeting to assess the status of several *in vitro* assays proposed for use in the U.S. EPA's Endocrine Disruptor Screening Program (EDSP). Chemical substances may alter natural endocrine processes in the body by binding with estrogen and/or androgen receptors and either initiating or inhibiting sex hormone dependent gene activation. Because of increased concern about the presence of such substances in food and water, screening assays are being developed to identify substances that may have the potential to disrupt endocrine-dependent processes and that should therefore undergo further definitive testing to determine dose-related effects. The proposed estrogen and androgen receptor binding and transcriptional activation assays are relevant for screening purposes because they are relatively sensitive, rapid, and inexpensive.

NICEATM is preparing background review documents on estrogen receptor and androgen receptor binding and transcriptional activation assays. The documents will provide comprehensive reviews of available data and related information necessary to evaluate the status of these assays. A request for data on *in vitro* endocrine disruptor screening methods was announced previously in a Federal Register notice (Vol. 66, No. 57, pp. 16278-16279, March 23, 2001; http://iccvam.niehs.nih.gov/methods/endocrine.htm.

An expert panel meeting is scheduled for May 21-22, 2002, in Durham, NC. Details will be announced in an upcoming Federal Register notice and posted on the ICCVAM/NICEATM web site http://iccvam.niehs.nih.gov/methods/endocrine.htm.

Acute Toxicity Workshop

ICCVAM and NICEATM, in partnership with the U.S. Environmental Protection (EPA) and International Life Sciences Institute (ILSI), held a training workshop on acute toxicity testing methods February 19-21, 2002, at the NIH Natcher Conference Center in Bethesda, MD. The workshop provided practical information and case studies to facilitate the understanding and implementation of the Up-and-Down Procedure (UDP) and other *in vivo* and *in vitro* alternative methods for acute toxicity.

UDP Reports

The report entitled, "The Revised Up-and-Down Procedure: A Test Method for Determining the Acute Oral Toxicity of Chemicals" NIH Publication 02-4501, is now available. The report contains the results of an independent scientific peer review evaluation of the Revised UDP, a recommended test guideline for the Revised UDP, and the final ICCVAM test recommendations on this method. Public comments on the reports are welcome, and should be submitted to the NICEATM by March 25, 2002. Following receipt of public comments, the report will be forwarded to US Federal agencies for regulatory acceptance consideration.

The report is available electronically (PDF and HTML) on the ICCVAM/ NICEATM web site. A limited number of printed reports are available from NICEATM.

For further information on ICCVAM and NICEATM please visit the web site at http://iccvam.niehs.nih.gov or contact: Dr. William S. Stokes, Director, NICEATM, P.O. Box 12233, MD EC-17, Research Triangle Park, NC 27709; T: 919-541-; niceatm@niehs.nih.gov.

NTP Center for Phototoxicology (NCP)

The NCP conducts mechanistic-based research and phototoxicology and photocarcinogenesis studies on substances nominated to the NTP. Many of these compounds are of regulatory importance to the FDA. Research in this area is very important due to the public's increasing exposure to ultraviolet radiation or sunlight through more frequent use of tanning booths and more leisure time spent in outdoor activities.

Phototoxicology studies are in progress for topically applied chemoexfoliating acids (alpha- and beta-hydroxy acid) and aloe vera. The alpha- and beta-hydroxy acids and portions of the aloe vera plant are included in many cosmetics and the impact on skin cancer from their continuous use in combination with exposure to sunlight is not known. Studies are also being designed to evaluate the phototoxicity and photocarcinogenicity of topically applied retinyl palmitate (a Vitamin A derivative), tattoo ink chemicals, and fluorescein-based dyes.

The NCP web site will be available soon at http://www.fda.gov/nctr/science/phototox.htm. For questions about the NCP contact Dr. Paul C. Howard, Director, NCP, National Center for Toxicological Research,
HFT-110, 3900 NCTR Road, Jefferson, AR, 72079; PHoward@nctr.fda.gov

NTP Workshops

Carcinogenesis Bioassays and Protecting Public Health

Long-term experimental carcinogenesis studies are the cornerstone for protection of human health and for risk assessment of drugs and chemicals. Over the past 30 years, the NTP and Professor Cesare Maltoni at the European Foundation of Oncology and Environmental Sciences "B. Ramazzini" in Italy have actively conducted numerous bioassay studies. On the first anniversary of Professor Maltoni's death, the Collegium Ramazzini, the Ramazzini Foundation and the NTP/NIEHS, together with the New York Academy of Sciences, are hosting this symposium to honor Professor Maltoni and to celebrate the work of many others in advancing carcinogenesis bioassays. Presentations at the conference will include a review of previously unreported findings and discussion of the continued utility of such studies for the protection of public health. The meeting will be held April 29-20, 2002, at Mount Sinai School of Medicine, New York, NY.

Additional details are available on the web at http://www.nyas.org/scitech/contents/carcinogenesis/cf~index.html. This conference is part of an ongoing effort to foster collaborations between the NIEHS and the Ramazzini Foundation.

Applying New Biotechnology to the Study of Occupational Cancer

The National Institute for Occupational Safety and Health (NIOSH), the National Cancer Institute, the NIEHS, and the American Chemistry Council are sponsoring a workshop May 8-9, 2002, at the Omni Shoreham Hotel in Washington, DC. This workshop will bring together researchers who study worker populations and those who develop/validate new biotechnologies in order to foster collaboration and promote the effective application of new methodologies for assessing occupational cancer. Additional details are available on the NIOSH web site at http://www.cdc.gov/niosh/exhibits.html or by contacting Connie Kidd (513-533-8434 or ckidd@cdc.gov).

Techniques in Toxicologic Pathology

The NTP/NIEHS and the Experimental Pathology Laboratories, Inc. are sponsoring a Society of Toxicologic Pathologists satellite symposium June 1, 2002, at the Adams Mark Hotel in Denver, CO. This symposium will focus on the presentation of techniques that can supplement the light microscope as a pathologist's tool. For additional details contact amotley@epl-inc.com.

Assessment of the Potential Allergenicity of Genetically Modified Foods

This conference, organized and sponsored by the NTP, the U.S. Environmental Protection Agency, the U.S. Food and Drug Administration, and the NIH, was held December 10-12 2001, in Chapel Hill, NC. Topics covered were: (1) the clinical aspects and clinical investigation of food allergy; (2) toxicological evaluation of novel proteins; (3) regulatory considerations; (4) risk communication - biotechnology and how the public perceives it, and (5) toxicological methods of safety assessment. After presentations by invited speakers, attendees participated in breakout sessions that discussed the following: (1) the use of human clinical data for risk assessment; (2) animal models to assess food allergy; (3) biomarkers of exposure and effect; (4) sensitive populations; (5) models of dose response, and (6) post-market surveillance. The conference closed with summary presentations and recommendations from each breakout group.

Genetically modified (GM) foods are products of plants engineered by biotechnology. GM crops have genes from other species (bacterium, animal, or other plant), or synthesized genes (constructed in the laboratory and not found in nature) that confer some advantage such as pest resistance, herbicide tolerance, longer shelf life in the supermarket, or increased nutritional value. Although there are clear benefits in the use of this technology, there is a growing concern among the general public about the safety of recombining DNA from widely different organisms. Consumption of GM foods may introduce proteins that the human body has not

been exposed to, or that have been encountered in a different context.

The meeting proceedings will be published in the NIEHS journal, *Environmental Health Perspectives*, as a mini monograph that addresses the current issues in this area and the research needs as documented in the meeting. When available, this report will be posted on the meeting's web page located on the NTP web site: http://ntp-server.niehs.nih.gov/htdocs/Liason/GMFoodPg.html. If you would like to be notified when this report becomes available, please send your contact information to: liaison@starbase.niehs.nih.gov or call 919-541-0530.

United States-Vietnam Scientific Conference

The NIEHS is pleased to report on the excellent US-Vietnam scientific conference on Human Health and Environmental Effects of Agent Orange/Dioxin held March 3-6 in Hanoi and the strengthening of the cooperative efforts between the US and Vietnam. As a result of this conference and further discussions, Dr. Anne Sassaman, Director of the NIEHS Division of Extramural Research and Training and Dr. Nguyen Ngoc Sinh, General Director of The National Environmental Agency of Vietnam signed a document outlining the framework for research on human health and the environmental effects of Agent Orange/dioxin. The memorandum of understanding specifies activities that will guide our future joint research collaborations. Joint discussions will continue to further establish the process and the guidelines that will facilitate the continuing exchange.

"This agreement and the scientific conference that preceded it mark a new step forward in our relations with Vietnam. It is too soon to predict what the eventual benefits will be, but it is certain that Americans and Vietnamese working together in pursuit of a common interest can achieve a great deal, as we have shown once again today. The scientists from both countries who hammered out this agreement deserve a great deal of credit for keeping their common goal clearly in focus as they worked to craft a document in which they can all take pride," said US Ambassador to Vietnam, Raymond Burghardt.

The press release and agreement document are available on-line at http://www.niehs.nih.gov/oc/news/orange3.htm.

The NIEHS has been the lead US government agency in establishing a cooperative research program on Agent Orange/dioxin with the Vietnamese government agencies. Dr. Christopher Portier, Director of NIEHS Environmental Toxicology Program, chaired the US organizing committee for the March 3-6 joint scientific conference. This conference was one of two projects agreed upon at the last US-Vietnamese government meeting in Hanoi in July 2001.

Background information on the US-Vietnam Cooperative Research Program can be found at: http://www.niehs.nih.gov/external/usvcrp/home.htm

The NTP Update is issued approximately four times each year. To subscribe to the "list-server" and receive the NTP Update as well as other NTP news and announcements electronically, register online at http://ntp-server.niehs.nih.gov, send email to ntpmail-request@list.niehs.nih.gov with the word "subscribe" as the body of the message, or contact the NTP Office of Liaison and Scientific Review (919-541-0530 or liaison@starbase.niehs.nih.gov).

Additional information about the NTP along with announcements of meetings, publications, study results and its centers is available on the Internet at http://ntp-server.niehs.nih.gov.

The Environmental Health Perspectives (EHP) maintains the library of NTP Technical Reports and NTP Toxicity Reports and adds new reports as available. To gain access to these reports, contact EHP online at: http://ehponline.org or call 1-800-315-3010 or 919-541-3841.