

### Second International Congress of Toxicology

The Second International Congress of Toxicology was held in Brussels, Belgium, July 6–11, 1980. There were about 1,300 participants representing 42 countries. Clinical and academic practice, industry, and commercial testing laboratories were well represented. The main themes of the congress were mechanisms of toxicity and hazard evaluation, topics which are now of considerable interest to many anesthesiologists. The scientific schedule was divided into six symposia with invited speakers, eighteen platform sessions, seven poster sessions, and one round-table discussion.

Most of the symposia dealt with topics relevant to the toxicity of anesthetics. The first, entitled, "Recent Developments in Mechanisms of Neurotoxicity," was particularly significant in light of the recent report that the incidence of general neurological disease is increased in dentists and chairside assistants exposed to nitrous oxide. Dr. P. Spencer (New York, USA) noted the importance of determining the exact anatomical site of a chemically-induced neurotoxic reaction. Dr. Droz (Gif-sur-Yvette, France) discussed the relevance of axonal flow of macromolecules to neurotoxicity. He suggested that fast and slow, as well as orthograde and retrograde transport of molecules may be differentially affected by different chemicals. Dr. Johnson (Carshalton, England) and Dr. Bischoff (Berne, Switzerland) discussed the specific neurotoxicity of a variety of compounds.

Another symposium relevant to anesthetic practice concerned long-term exposure to occupational intoxicants. Dr. Hernberg (Helsinki, Finland) reported on epidemiological studies of health hazards to workers chronically exposed to organic solvents. Exposed workers regularly reported excessive dizziness, nausea, headaches, somnolence, irritability and fatigue, symptoms which are reminiscent of those reported by anesthesiologists working in unscavenged operating rooms. Dr. Tamburro (Louisville, USA) discussed human toxicity and carcinogenicity of ethylene derivatives. Using a prospective medical surveillance system, he identified job-related causative agents from among 22 different aliphatic, halogenated hydrocarbons and related chemicals. The surveillance system could be used without significant interference with worker function at an initial set-up cost of only \$30.00/worker, and a long-term follow-up cost of \$5.00/worker/year. Such a system might be of interest to those concerned with long-term hazards reputed to be associated with working in the operating suite. Dr. Bardodej (Prague, Czechoslovakia) gave an overview of biological monitoring

of chemical contaminants. He discussed many areas of research including the fate of pollutants in the body, mechanisms of toxic activity, and dose-response relationships.

The final symposium of the congress dealt with the legislative, scientific, and socioeconomic considerations underlying toxicological testing of chemicals. Dr. Davies (Washington DC, USA) noted that efforts to control toxic substances has led to the passage of several laws, the most relevant of which is the Toxic Substances Control Act (TOSCA). This act requires that the Environmental Protection Agency (EPA) be notified within 90 days of manufacture of all new chemicals. Dr. Gysin (Basle, Switzerland) reported on efforts to eliminate the substantial differences in testing requirements among different countries. To this end, the Organization for Economic Cooperation and Development (OECD) is preparing a testing program and a special surveillance program for chemicals. Its proposals are now complete and will soon be put to the OECD council for adoption, and later for implementation by member countries. Since the United States is a member of OECD, the recommendations are likely to have important implications in this country for the testing of all occupational pollutants, including anesthetics.

There were 211 free papers and 262 poster presentations with many of particular relevance to anesthesiologists. Dr. Sipes (Tucson, Arizona) presented a paper on *in vitro* bioactivation of aliphatic halogenated hydrocarbons, including halothane. Microsomes from phenobarbital-treated rats enhanced binding of halothane to proteins and lipids. Halothane and several other chemicals, including carbon tetrachloride, bound preferentially in the presence of nitrogen, while other chemicals bound preferentially in the presence of oxygen. Significantly, halothane did not bind to any great extent to exogenous DNA, a finding consistent with the inability in laboratory experiments to demonstrate mutagenicity and carcinogenicity with this agent.

Dr. Pill and his colleagues (Heidelberg, Germany) displayed a poster showing results of a study in which two antidotes to sodium nitroprusside (SNP)-induced cyanide poisoning were compared in both mice and rabbits. After infusions of toxic doses of SNP, bolus administration of hydroxycobalamin was more effective in restoring acid-base balance parameters, *i.e.*, pH,  $P_{CO_2}$ , and base excess to normal than sodium thiosulfate. In contrast, when both agents were infused simultaneously with a toxic dose of SNP, sodium thiosulfate proved superior to hydroxycobalamin in preventing both metabolic acidosis and death. The investigators concluded that hydroxycobalamin may be the better antidote for treating acute poisoning with

SNP, whereas sodium thiosulfate was preferable for prevention of the development of SNP toxicity. They also suggested that for clinical purposes, coadministration of SNP and sodium thiosulfate may be desirable.

In a poster session devoted to metabolism and toxicity, Dr. Smith and his colleagues (Nashville, Tennessee) reported results of studies aimed at determining the role of glutathione (GSH) in halothane-induced liver injury in the hyperthyroid rat. Their study was prompted by previous findings that triiodothyronine-treated rats are susceptible to halothane-induced liver injury and also have reduced levels of hepatic GSH and glutathione transferase. However, after a series of experiments in which GSH was further decreased by treatment with either diethylmaleate or cysteamine, the investigators found no correlation between GSH levels and halothane-induced hepatotoxicity.

The Second International Congress of Toxicology, with

its excellent scientific and social program, provided an exciting forum for discussion among workers in the rapidly expanding field of toxicology. Abstracts of all presentations were published in a special issue of *Toxicology Letters*, S.1. No. 1, July 1980. The full proceedings of the congress will be published under the title, "Mechanisms of Toxicity and Hazard Evaluation" by Elsevier/North-Holland, Amsterdam (The Netherlands).

JEFFREY M. BADEN, M.D.  
*Assistant Professor of Anesthesia*  
*Stanford University School of Medicine*  
*Stanford, California*  
*and*  
*Veterans Administration Medical Center*  
*Palo Alto, California*