The number of entries in our system is not yet great enough to take full advantage of the speed of search provided by a computer. Under our present circumstances, computerization would slow down our search abilities because of the time lag in getting our questions into the computer in competition with other priority uses.

I am confident that the need for scientific and technical information services is going to continue to increase. The growth of such services will be a necessity to progress. The utilization of the best facilities that mechanization and electronics can provide will be required to meet the need. A great deal more can be done than is being done with systems presently practical, but the costs in dollars and in personnel are high.

Through the shared-time approach, computerization of relatively small activities can be brought within reasonable limits even now. Today, it would be possible to establish specialized information activities, such as ours in occupational health, with remote control consoles at various locations providing shared-time access to a centralized computer combining the memory banks of a number of systems. Perhaps the toxicology resource now growing at the National Library of Medicine may move in this direction. Today it is a possibility; time and progress will make it an actuality.

"Meanwhile back at the ranch," the Scientific Reference Service will continue to provide an information service within the limits of our resources and be prepared to grow and advance as we are able. Our services are without charge and we expect to continue this policy. Access to our information is open to all on reasonable requests and within legal limits of confidentiality of certain information. Our objective is that all possible information on occupational health—including toxicology—be brought to bear on the problems of providing a healthful and safe working environment to every occupation.

The Committee on Toxicology and the Advisory Center on Toxicology of the National Research Council*

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Received October 2, 1968

The origin and development of the Committee on Toxicology and the Advisory Center on Toxicology are reviewed briefly. The discussion is centered on how the Committee and the Center assist their sponsoring federal agencies. The interactions and mutual responsibilities of these three units are described. Information is also given on the literature holdings and indexing of the Center.

The Center is a part of the Division of Chemistry and Chemical Technology of the National Research Council which is the functional unit carrying out the detailed activities of the National Academies of Sciences and Engineering. The present chairman of the Chemistry Division is Dr. Theodore L. Cairns, Director of Basic Sciences, E. I. duPont de Nemours and Co., and the executive secretary is Dr. Martin A. Paul. Policy guidance for the Center comes from this Division with the advice of the Committee on Toxicology. Two other Divisions of the National Research Council are also consulted on policy matters, and they are Biology and Agriculture and Medical Sciences.

The Advisory Center on Toxicology was proposed in 1953 by Adm. C. J. Brown and was officially organized in 1956. It began operating in January, 1957, when Dr. Harry W. Hays took office as its first director, a position which he filled until July, 1966.

The Committee on Toxicology was organized in 1947 by Dr. W. Albert Noyes, Jr., who at that time was Chairman of the Division of Chemistry and Chemical Technology. The first members were Dr. H. H. Schrenk (chairman), Dr. L. T. Fairhall, Dr. D. O. Hamblin, Dr. D. D. Irish, Dr. J. H. Sterner, Major Gen. Alden H. Waitt, Dr. W. P. Yant, and Dr. H. C. Hodge. In 1949, Dr. A. J. Lehman and Col. John Wood were also appointed. The present members of the Committee, who are listed in Table I, comprise a balanced group of scientific specialties and come from diverse backgrounds of government, industry, and universities.

The Committee on Toxicology meets at least once a year with representatives of the sponsors for formal and informal discussion. It meets at other times as often as required by the problems presented, usually three to four times a year. Members are appointed for a definite term of office by the Chairman of the Division of Chemistry and Chemical Technology. They are chosen for their recognized professional ability, judgment, and integrity. They bring to the Committee's deliberations a technical competence and objectivity permitting a dignified and unbiased perusal of the problems presented. They serve with-

*Presented before the Division of Chemical Literature, Symposium on Toxicological Information Systems, 156th Meeting, Atlantic City, N. J., September 9, 1968.

Table I. Committee on Toxicology, National Research Council

William L. Sutton, M. D., Chairman
Seymour L. Friess, Ph.D., Vice Chairman
Bertram D. Dinman, M.D., D. Sc.
Arthur B. DuBois, M.D.
Arnold J. Lehman, Ph.D., M.D.
Verald K. Rowe, M.S.
Henry F. Smyth, Jr., Ph.D.
Herbert E. Stokinger, Ph.D.

Table II. Federal Sponsors of the Advisory Center on Toxicology

Department of the Army
Department of the Navy
Department of the Air Force
Atomic Energy Commission
National Aeronautics and Space Administration
Coast Guard, Department of Transportation
National Air Pollution Control Administration

Table III. Literature Coverage of the Advisory Center on Toxicology

Scientific journals (includes 11 abstract journals)	80–100
Reprints	11,000
Private communications	4,000
Compounds indexed	*ca.* 40,000
Textbooks	1,000

out compensation in response to a personal sense of patriotic and professional duty. They are reimbursed only for expenses incurred in conjunction with Committee activities.

Financial support of the Center is provided by annual grants from the sponsors following a review of its requirements by the Fiscal Sponsors Committee. Funds are administered through the Office of Naval Research.

The federal agencies who sponsor the Committee and the Center are shown in Table II. One needs little imagination to visualize the variety of toxicological problems presented by these sponsors or the importance of the problems to the nation.

Communication with the sponsors is carried out through liaison representatives who are designated annually to serve as a formal channel for the communication of official inquiries between the various operating units of the sponsor and the Center. These liaison representatives present their agency's requests to the Center and distribute the replies from the Committee and the Center. They arrange, wherever feasible, for automatic distribution to the Center of toxicological information developed within the agency and assist the Center when necessary in obtaining other pertinent data.

The responsibilities of the Advisory Center on Toxicology are basically those of providing a central source of information and technical staff to assist the Committee on Toxicology in advising the sponsors on questions relating to the health hazards for military and civilian personnel from the toxic properties of materials proposed for use by the sponsors. In some instances the Center is able to respond directly to requests from the sponsors.

In performing its share of these responsibilities the Advisory Center on Toxicology operates with a small, efficient staff of professional, technical, and clerical personnel. The Center maintains thorough coverage of the toxicological literature for input to its files by subscriptions and interlibrary loans. Similar study of toxicological information developed in governmental laboratories is accomplished by acquisition of the reports when issued. Information in private laboratories is solicited when needed. These sources are supplemented by personal contact through visits and participation in meetings whenever feasible. Close contacts are also maintained with the sponsoring agencies so that communications regarding their problems can be prompt and mutually understood.

The extent of the literature holdings is shown in Table III. The private communications are primarily from industry and frequently contain commercially discreet information. Great care is taken to assure that such information is properly protected and that it is used by the professional staff only as a basis for their advice to the sponsors.

The index includes about 40,000 individual chemical compounds. Primary indexing utilizes the *Chemical Abstracts* system. Access to the information on these materials is by means of a standard, hand-sorted, alphabetical library card file. This file contains approximately 170,000 cards, almost all of which are for specific chemicals with some general topic entries. There is extensive cross-indexing to provide quick access by chemical or common name. The number of citations per compound averages about five or six but varies from one to several hundred. Since the card file contains no abstracts but only source citations, it is necessary to read the actual literature in response to a question from the sponsor. This insures that the resulting report is custom tailored to the specific needs of the sponsor and that it is complete but has little or no irrelevant matter.

The ultimate output from the Center is a series of reports in response to requests for information and/or advice. These reports are usually in the form of letters and are thus privileged communications and are not part of the open literature. Occasionally the Committee on Toxicology will take action which justifies broad dissemination, in which case the report will appear as a publication of the National Research Council.

The following examples will serve to illustrate the type of problem dealt with by the Committee and the Center. For several years the Committee has recommended to the Navy concentrations of atmospheric contaminants which would be acceptable for up to 90 days in the closed environment of nuclear submarines. In recent years it has been recommending Emergency Exposure Limits for use in planning for accidental spills of such materials as rocket propellants and other highly hazardous chemicals. Assistance was given to the Army last year in evaluating the nature and extent of health hazard to crews of combat helicopters from the exhaust gases of their weapons. Numerous requests are handled every year relating to chemicals which will be used in construction or operation of equipment.

The Center does, on occasion, accept requests for assistance from other governmental agencies and private enterprises with the proviso that such services are complementary to the interests of the sponsors and do not interfere by an undue requirement of time with the Center's responsibilities as outlined above. The Center frequently finds that other federal agencies and private corporations are excellent sources of needed information and thus such cooperation is mutually beneficial to all concerned.

In summary, the Advisory Center on Toxicology of the National Research Council acts as the focal point for the collection, exchange, and interpretation of toxicological information between the federal government, the Committee on Toxicology, and industry.