

A History of Progress: NIEHS, The First 20 Years (1966 to 1986)

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This paper commemorates the twentieth anniversary of the founding of the Division of Environmental Health Sciences, November 1, 1966, which was elevated on January 12, 1969, to become the National Institute of Environmental Health Sciences (NIEHS). This is a brief historical overview of how the Institute has grown and developed into one of the preeminent toxicology research centers in the world.

Starting Out in 1966

In 1966, a handful of National Institutes of Health employees arrived in North Carolina and occupied leased office space on what was later to become the Institute's North Campus. Their assignment was to build a national biomedical research agency to investigate the health effects of environmental agents. This research was to be accomplished both by scientists at the site in North Carolina and by investigators who would receive research support from the Institute at colleges and universities across the U.S. The North Carolina location was on the countryside, not too far from three major universities—Duke University, North Carolina State University, and the University of North Carolina at Chapel Hill. The leased office space that the new arrivals occupied was in an area earmarked for careful development as Research Triangle Park, planned as a new national center for research and high technology development, and destined to gain international acclaim.

The prospects for the agency in those days seemed less than certain. In setting up the unit, originally designated the Division of Environmental Health Sciences, the Government had followed a Congressional mandate to locate all new agencies more than 50 miles from Washington, DC, which meant locating the new Institute far from its parent agency NIH which is headquartered in Bethesda, MD. Furthermore, the Research Triangle Park, while a brilliant idea with strong and dedicated backing, was not yet guaranteed to be a successful concept. Despite impressive plans, only a few large research facilities had located in the Park, and much of the terrain was as it had been for centuries—rocky

woodlands, pine forests, and farms—where livestock occasionally roamed onto the office building grounds and had to be herded away.

More Than a Success

Twenty years later, the Park still boasts of its country greenery, but the erstwhile Division has become the National Institute of Environmental Health Sciences, and the remaining early employees have witnessed a transformation from occupying the single story leased offices to construction and utilization of a magnificent multitowered laboratory and office building with 334,000 square feet of space. This monument to environmental health research is supported by a service center that provides its utilities and services. The 509-acre campus donated by the Research Triangle Foundation for the Institute facility is a showplace and focal point for scientific meetings attended by the top minds in toxicology from throughout the world. At the same time, the growth of Research Triangle Park has astonished even the optimists among its early supporters, bringing to the area dozens of research and high technology development organizations, which have in turn provided an economic and professional base for increasing numbers of businesses and other associated support activities. Visitors from around the world visit the Park to visualize how they might establish similar research parks in their own countries.

NIEHS itself, in cooperation with the U.S. Department of State, has international agreements with nations including Japan, the People's Republic of China, Taiwan, the U.S.S.R., Finland, India, Italy, Egypt, Sweden, and Yugoslavia, as well as an active participatory role with the World Health Organization (WHO), and the International Program on Chemical Safety. Through these agreements and activities, NIEHS shares its advances in environmental health sciences and benefits from knowledge of research conducted around the world.

Before the Institute: A Perceived Need

As early as 1958, the need for biomedical research on the effects of environmental agents had been visualized

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by authors of the Bayne-Jones Report, a study requested by the Congress, which addressed the advancement of medical research and education, and at the same time recommended the extension of research related to numerous environmental factors. In 1960, the study group on the Public Health Service (PHS) Mission and Organization, in their final report, stated that environmental health problems would require increased public and private effort, and predicted that a central laboratory facility would be needed. In 1961, PHS recommended the establishment of just such an environmental health center, and later the same year, the Committee on Environmental Health Problems reinforced the recommendation, suggesting that a national center be established to undertake integrated research and other activities related to environmental health. Congress authorized planning funds for a central environmental health research facility in 1964.

Promising Beginnings

The Surgeon General announced on January 7, 1965, that Research Triangle Park, North Carolina, would be the location of a national environmental health sciences center, following the recommendation of a site selection committee. The North Carolina Congressional delegation and other supporters of the Research Triangle Park had played an active role in encouraging the Federal Government to locate this new biomedical research facility in North Carolina. In April 1965, a group from the National Environmental Health Advisory Committee recommended to the Surgeon General that the proposed center be operated directly by the Public Health Service. The Surgeon General subsequently announced the establishment of the Division of Environmental Health Sciences within the National Institutes of Health (an agency of the Public Health Service), November 1, 1966. The deed for 509.25 acres in Research Triangle Park, to serve as a permanent site for the Division, was presented to the Surgeon General on September 26, 1967.

The staff of 31 employees on duty January 1, 1967, grew to 192 by June 30, 1968, and on January 12, 1969, the Secretary of what was then the Department of Health, Education, and Welfare, elevated the Division to an Institute. Paul Kotin, M.D., formerly Scientific Director for Etiology at the National Cancer Institute, became the first Director of the National Institute of Environmental Health Sciences. Dr. Kotin emphasized the need for excellence in scientific research in this emerging field and developed a strong cadre of scientists and administrators.

Dr. David P. Rall Assumes Directorship

At mid-career in 1971, David P. Rall, M.D., Ph.D., 44, then Associate Scientific Director for Experimental Therapeutics at the National Cancer Institute, sought a new direction in his work in which he could reach

beyond the treatment of chronic diseases to seek controllable, underlying causes in general populations, and through research learn how to prevent chronic diseases related to environmental agents. On March 1, 1971, he left the thriving, established world of research and clinical treatment at the National Institutes of Health at its main campus in Bethesda, MD, to accept the appointment as Director of the National Institute of Environmental Health Sciences, replacing Dr. Kotin.

With both a medical and a research degree from Northwestern University, and 17 years in the research community at NIH, Dr. Rall was intensely interested in building a research facility and a community of investigators that could meet the challenges posed by environmental health science questions. In the 15 years since his arrival, he has guided the Institute through ongoing phases of development that have made it one of the world's centers for toxicological research.

A Place To Do Research

When Dr. Rall arrived at NIEHS, the site donated to the Government for development of permanent research facilities was still without structures. Less than a half mile away, the Institute began its working life in a pleasant patchwork quilt of one story temporary and red brick buildings that make up its North Campus. In the short term, these had to be built and outfitted quickly to provide laboratories, offices, and support service areas for a rapidly expanding staff. At one point, with limited numbers of personnel and the rapid expansion of space, some energetic employees met at lunchtime for a quick round of square dancing, although the "dance floor" had to move from time to time to accommodate the workmen as they finished outfitting the buildings.

Soon planning money was allocated for the Institute's South Campus site, and many hours of planning sessions and interviews with scientists and administrators evolved into architects' plans and scale models of the proposed new buildings. Then in February 1977, the first construction contracts were let to begin work on a state-of-the-art laboratory, office facility, and support services center to provide services and utilities.

A Growing Scientific Program

The work of the Institute could not wait for the completion of new facilities. A vigorous Intramural Research Program rapidly evolved with a strong on-site team of investigators studying the biological effects of environmental chemicals, physical, and biological agents. In the early 1970s, Institute scientists conducted some of the important early studies of the environmental contaminants known as aromatic hydrocarbons, such as polychlorinated biphenyls (PCBs), polybrominated biphenyls (PBBs), dibenzodioxins, and dibenzofurans, among others. Major studies on heavy metals in the environment soon evolved, as did studies of specific target organs and how they were affected by

contaminants. Simultaneously, with the development of a strong Intramural Research Program, the Extramural Program developed the staff and expertise to administer an expanding portfolio of Public Health Service grants and awards in the environmental health sciences to researchers at colleges and universities throughout the U.S. As this program expanded it soon encompassed grants to environmental health sciences centers, marine and freshwater biomedical centers, training programs, and other career development programs.

The burgeoning of research results and the interrelationship of Institute research to that being performed at other research institutions around the U.S. and internationally can be charted to some degree in the pages of *Environmental Health Perspectives (EHP)*, the Institute's scientific journal. *EHP* appeared first in April 1972 and soon became an important scientific forum, presenting the proceedings of many scientific meetings and addressing special environmental issues, publishing papers presented on a single topic by prominent, often internationally recognized researchers.

The National Toxicology Program Initiated

In 1978, the Secretary of the Department of Health, Education, and Welfare (now the Department of Health and Human Services) designated NIEHS as the focal point for the establishment of the National Toxicology Program (NTP) to coordinate toxicology studies within the Department. Participating with NIEHS in coordinated studies under NTP were the National Center for Toxicological Research of the Food and Drug Administration; the National Institute for Occupational Safety and Health of the Centers for Disease Control; and certain components of the National Cancer Institute, which were eventually transferred to NIEHS. Dr. David P. Rall, NIEHS's Director, was given a separate simultaneous appointment as Director of the National Toxicology Program. In order to best serve the NTP, resources and personnel within NIEHS were organized into a new program, the Toxicology Research and Testing Program (TRTP), which is devoted to the fulfillment of the NTP mission.

At about the same time, a branch of NIEHS was redesignated as the Biometry and Risk Assessment Program (BRAP) which performs mathematical, statistical, and epidemiological research and provides expertise in these areas to the National Toxicology Program and all programs within NIEHS, giving consultation on experiment design, computer science, and data analysis.

Administrators from the regulatory agencies—the Environmental Protection Agency, the Food and Drug Administration, the Occupational Safety and Health Administration, and the Consumer Product Safety Commission—sit on the Executive committee of the NTP, so that all phases of NTP activities relate to the

needs of these agencies. On October 5, 1981, the National Toxicology Program was made a permanent activity of the Department of Health and Human Services.

A Beautiful New Headquarters

Gradually, the new buildings on South Campus took shape. One month, a visit to the site was little more than a tour of an excavation. Then only a few months later, there were floors and walls to view. As the main Building 101 neared completion, employees were outfitted with hardhats to walk through their future workplace. Now, visitors are often toured through the expansive open office areas and the laboratories with their entirely moveable inner walls, and engineers and architects frequently are shown the interstitial spaces—the floors between floors—in the laboratory modules that permit maintenance, repair, modification, and installation of utilities and services from above or below without disturbing the delicate instrumentation of experiments in progress.

The first group of NIEHS employees moved to the support services area of South Campus in October 1979. The first offices in Building 101, including the Office of the Director, were occupied April 1981, and a carefully phased-in move was coordinated to fully occupy the building over the months that followed. A gala dedication ceremony November 15, 1982, featuring the United States Marine Band, brought together officials from the Department of Health and Human Services, the National Institutes of Health, the North Carolina State Government, the United States Congressional delegation, the Research Triangle Foundation, and employees from agencies and institutions throughout the area, as well as NIEHS employees, to observe the formal dedication of this excellent new national research resource.

A Future Bright with Promise

Today, the National Institute of Environmental Health Sciences, now 20 years old, with a permanent staff close to 700, has reached a critical mass in terms of personnel numbers and expertise to carry out a broad-based program in environmental health sciences. NIEHS has the principal responsibility among Federal agencies for the support of research and the training of research manpower concerned with the effects of chemical, physical, and biological factors on human health. Laboratories focus on the specialties of reproductive and developmental toxicology, pulmonary pathobiology, molecular biophysics, pharmacology, genetics, and neurological and behavioral toxicology. The emphasis of research is to find the mechanisms of toxicity of environmental agents at the molecular and cellular levels. Each year, technology and science open new doors to the researchers who seek to elucidate the complex way the body maintains health or falls prey to disease following exposure to xenobiotic components.

Advances in technology, such as computer enhanced

nuclear magnetic resonance spectroscopy and imaging, the dazzling advances in the field of genetics, and the increasingly sophisticated application of X-ray and scanning electron microscopy, among many such examples, continually offer researchers new insights and opportunities. Since its inception, Institute investigators have published almost 4000 articles in the scientific literature making the results of their research known to the scientific community at large and adding greatly to the knowledge base about how environmental agents affect living organisms. This science base can then be used by the regulatory agencies, the medical community, and other concerned groups to develop and initiate appropriate standards for public health programs.

Research Today for a Healthier Tomorrow

Through a continually improved understanding of environmental agents, both those made by humans and those occurring naturally, and how they affect human health, better choices can be made about how we live and work. Also, through an expanded knowledge of environmental health sciences, better regulations, legislation, and public health policy can protect the air, water, soil, and food sources on which people and all other living things depend. Errors made decades in the past have proven to have a substantial effect in the present, so the research conducted today and the decisions made in the near future may well prove crucial to the health and happiness of our own old age and the futures of our grandchildren, greatgrandchildren, and subsequent generations.