NIOSH

DIVISION OF SURVEILLANCE, HAZARD EVALUATIONS AND FIELD STUDIES

ANNUAL REPORT

FY 1983

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Centers for Disease Control
National Institute for Occupational Safety and Health

ANNUAL REPORT
FY'83

Division of Surveillance, Hazard Evaluations
and Field Studies
National Institute for Occupational Safety and Health
Centers for Disease Control
Public Health Service
Department of Health and Human Services

Contents

INTRODUCTION

The purpose of this Annual Report is to briefly describe the FY'83 accomplishments of the Division of Surveillance, Hazard Evaluations and Field Studies (DSHEFS), National Institute for Occupational Safety and Health (NIOSH). For information purposes NIOSH's Mission Statement and organizational structure are presented on pages 3 and 4. DSHEFS' organizational structure and management contacts are presented on page 5. In FY'83, DSHEFS expenditures amounted to approximately nine million dollars. In addition, approximately 193 person-years (including 18 person years from the Centers for Disease Control's EIS Program) of effort were expended by DSHEFS staff in conducting the Division's research projects. The professional staff consists of physician and non-physician epidemiologists, statisticians, industrial hygienist engineers, and computer programmers.

DSHEFS has three major responsibilities into which the Annual Report is divided:

Surveillance Program - The objective of this program area is to develop and maintain a surveillance system of the Nation's work force and its environs and to make an early detection and continuous assessment of the magnitude and extent of job related illness, exposures, and hazardous agents. Expenditures for this Program amounted to 2.5 million dollars, and accounted for 41 person-years of DSHEFS research.

Industrywide Studies Program - The objective of this program area is to conduct industrywide studies, through record studies and clinical/environmental field studies (a) to identify the occupational causes of disease in the working population and their offspring, (b) to determine the incidence and prevalence of acute and chronic effects from work related exposures to toxic and hazardous substances, and (c) to provide information needed to develop recommended standards for the control of occupational health hazards. This Program is conducted pursuant to Section 20(a)(7) of the Occupational Safety and Health Act and Section 501 of the Federal Mine Safety and Health Act. Expenditures for this Program amounted to 3.8 million dollars and 76 person-years of effort.

Health Hazard Evaluation Program - The purpose of this program area is to respond to general industry requests (i.e. excluding mining and milling activities) for assistance from employers, employees, employee representatives, other Federal agencies and state and local agencies. These requests result in (a) an evaluation of whether or not chemical, biological, or physical agents are hazardous as used or found in the workplace, and (b) recommendations for control procedures, improved work practices, and medical screening to reduce exposure levels and subsequent health effects. This Program is conducted pursuant to Section 20(a)(6) of the Occupational Safety and Health Act. Expenditures for this Program amounted to 2.7 million dollars and accounted for 76 person-years of research effort.

The research and technical assistance projects conducted in these three program areas are supported by our medical, computer and statistical services groups. Their FY'83 activities also are described in this Annual Report under the heading Support Services Program.

The Annual Report is further subdivided into sections on highlights; project summaries; and publications and speeches for each Program area mentioned above. In addition, the Annual Report briefly discusses how DSHEFS has responded and initiated projects and activities to coincide with the Department of Health and Human Services' 1990 Prevention Objectives for the Nation, and NIOSH's list of the ten leading work-related diseases and injuries. (The 1990 Prevention Objectives and top ten list are part of NIOSH's dynamic approach to program planning and research priority setting.)

NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH

"In the future the worksite should draw more and more attention as the most logical setting for our prevention efforts."

Richard S. Schweiker
Secretary of Health and Human Services
Conference on Alcohol, Drug Abuse, and Mental Health Promotion/Prevention at the Workplace
June 17, 1981

A striking similarity in the names of the National Institute for Occupational Safety and Health (NIOSH) and its parent agency, the Centers for Disease Control (CDC), is the simple preposition "for." This preposition implies that CDC and NIOSH not only study public health problems, but also do something about these problems. The policy of the U.S. Public Health Service (PHS) and the Department of Health and Human Services is to prevent disease and injury through health protection, health promotion, and the delivery of appropriate preventive health services. Among other activities, CDC and NIOSH protect the public health by recommending sound policies for intervention. To assure that these recommendations are scientifically sound in the area of occupational safety and health, NIOSH conducts a program of directed research. NIOSH has an overall management strategy for protecting worker safety and health that incorporates four points.

First, NIOSH planning addresses the "1990 Objectives for the Nation." These objectives of the PHS were developed by the public health community. In addition, the NIOSH plan will incorporate the objectives of the PHS National Toxicology Program. The objectives for occupational safety and health specify areas in which deaths, injuries, and illness can be reduced and eventually eliminated.

Second, NIOSH plans are integrated with the CDC's strategy for preventing premature mortality, reducing unnecessary morbidity, and improving the quality of life. In addressing occupational disease and injury, NIOSH will seek to work with the public health structure of the Nation, as CDC has done to combat preventable disease. This structure includes State and local health departments, schools of public health and medicine, occupational safety and health professionals, and private and public health practitioners, voluntary agencies, and other health workers.

Third, NIOSH planning reflects requests to us from client agencies in the Department of Labor (DOL): the Occupational Safety and Health Administration, the Mine Safety and Health Administration, and the Employment Standards Administration. The organization that compiles these requests from our clients is called the NIOSH Planning Group.

Fourth, the strategies of NIOSH are organized into five major tactical programs with corresponding goals, constituting a system for defining and solving occupational safety and health problems. These programs enable NIOSH to --

1. Identify occupational safety and health problems so as to detect and define epidemiologically significant changes in the status of occupational safety and health.

2. Evaluate occupational safety and health problems and occupational hazards so as to understand their causes and to detect their vulnerabilities to prevention.

3. Control occupational safety and health problems through discovering, assessing, and improving measures to reduce occupational hazards, especially through control technology, protective equipment, work practices, and hazard-detection devices.

4. Disseminate scientific findings and appropriate recommendations to all organizations and individuals with the need to know to assist them in acting to reduce occupationally related health problems; training and developing personnel for the field are essential elements of this program.

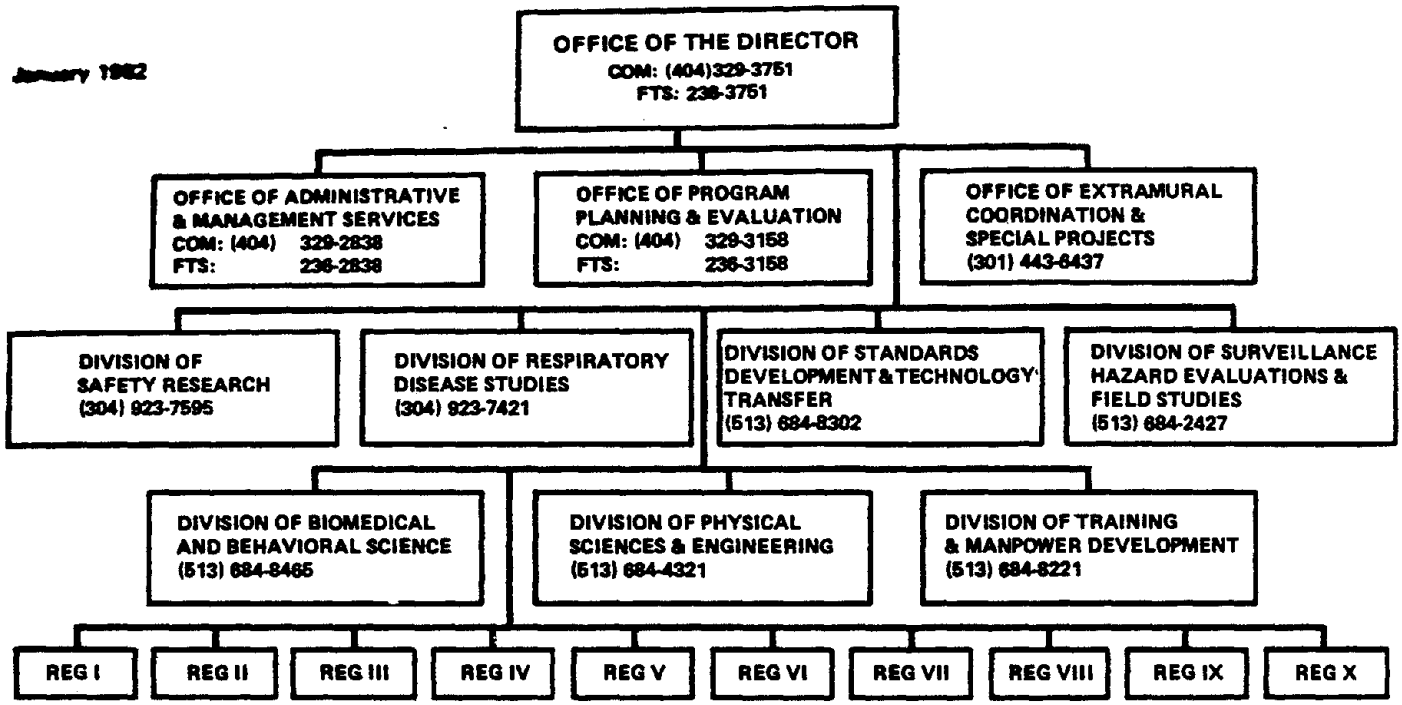
5. Administer these programs with a sense of total commitment to the highest principles of public stewardship.

Our strategy to prevent work-related illness and injury is based on the policies of the Department, PHS, and CDC; incorporates the awareness of the needs of our client agencies; provides a framework in which problems are identified and understood; assesses methods for controlling the causes of problems; and disseminates the results to those capable of acting to protect the worker.

J. Donald Millar, M.D.
Assistant Surgeon General
Director, National Institute for Occupational Safety and Health

NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH

January 1982



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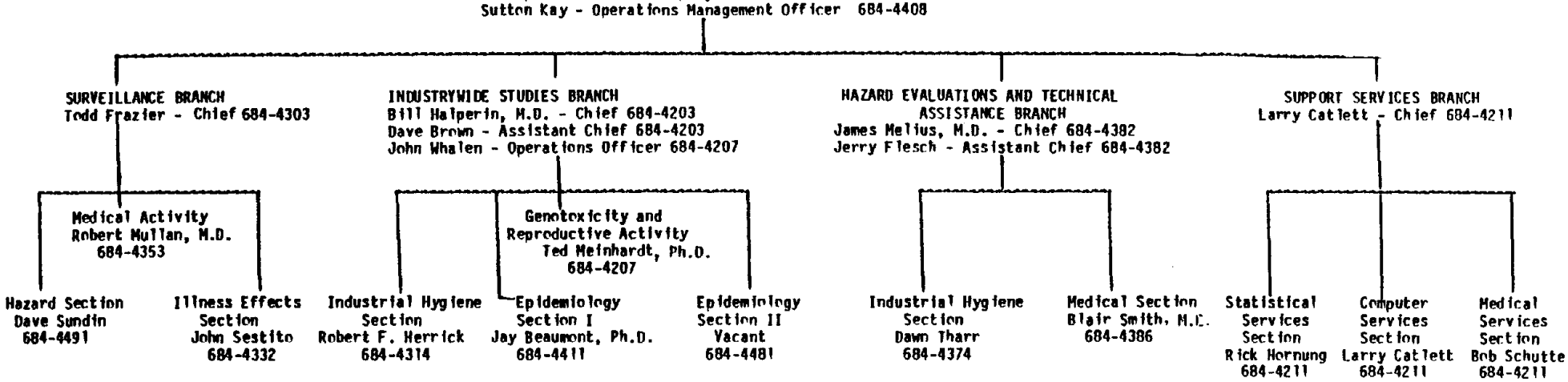

SURVEILLANCE PROGRAM

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SURVEILLANCE PROGRAM
HIGHLIGHTS - FY'83

The objective of this program area is to develop and maintain a surveillance system of the Nation's work force and its environs and to make an early detection and continuous assessment of the magnitude and extent of job related illness, exposures, and hazardous agents. Expenditures for this Program amounted to 2.5 million dollars, and accounted for 41 person-years of DSHEFS research. The five topics highlighted below serve as the base of the Surveillance Program. These activities and other surveillance projects are summarized in the project summary section.

1. National Occupational Hazard Survey/Exposure Survey (NOHS/NOES)

Large-scale periodic probability samples of potential exposures in American workplaces, the exposure surveys known as NOHS (conducted during 1972-74) and NOES (underway since 1980), constitute the centerpiece of the hazard surveillance research program. All hazard surveillance projects are linked to the main survey effort in various ways. Trade name product ingredient clarification, for example, is required in order to acquire information on products noted as potential exposure agents. The project which provides users with access to the NOHS data, base answers several hundred requests to a wide variety of government and non-government users each year. The acquisition of the Dun & Bradstreet file of U.S. industries permits the development of a probability sample of facilities for use in NOES. This list of facilities also provides the demographic information required for mapping NOHS data at the county, state and Standard Economic Area level for the entire nation. The Material Locator System project makes use of trade name product ingredient information for alerting worker groups to the nature of chemical hazards in their working environment.

In regard to the NOES, a sampling strategy has been implemented, and facilities have been selected for inclusion in the survey. Surveyors have been recruited, trained in observational survey techniques, and deployed to the survey sites. Data editing software has been developed, and error correction on incoming survey data is proceeding. A total of 4,500 facilities employing 1,800,000 workers had been surveyed by the end of FY'83.

2. Surveillance Cooperative Agreements Between NIOSH and States (SCANS)

The two year pilot demonstration programs in Maine, New York, Rhode Island, and Utah ended. Final reports from each of the four cooperative agreement awardees were received, and are being reviewed for possible publication in a NIOSH report series. Data submissions from each of the awardees were received and edited. Preliminary analysis and information dissemination efforts are planned for FY'84.

A second round of cooperative agreement applications was solicited and reviewed by NIOSH and the Occupational Safety and Health Study Section. Twenty-seven applications were received, fourteen of which were approved

and ranked by the secondary review group. Five states received awards during FY'83 (Maine, New York, Rhode Island, North Carolina, and Pennsylvania).

Consistent with the January 20, 1982, evaluation of the demonstration program, these awardees are undertaking activities consonant with the respiratory disease and safety interests of NIOSH's Division of Respiratory Disease Studies and Division of Safety Research, respectively.

3. Sentinel Health Events (Occupational)

The sentinel health event (occupational) [SHE(O)] project extends the sentinel health event concept to the field of occupational health. This list of diseases and conditions was recently published (American Journal of Public Health 1983; 73:1054-1062). The list enhances our ability to engage in state-based occupational health surveillance. As adapted for SCANS and other state-related program activites, the SHE(O) provides a framework for:

--Routine monitoring of occupationally related morbidity and mortality
--Selected epidemiologic studies of unusual SHE(O) patterns
--Case studies of specific SHE(O) conditions

In addition, the list serves as a compendium of recognized occupational diseases and will serve as the basis for future projects to increase physician awareness of occupational health issues.

4. NIOSH's List of the Ten Leading Work-Related Diseases and Injuries

During FY'82, at the request of the Director, NIOSH, the documentation for the leading work-related diseases and injuries was compiled by staff of the DSHEFS Surveillance Program. These ten problem areas include: lung disease (including lung cancer); musculoskeletal injuries; cancer (other than lung); traumatic deaths, amputations, fractures and eye losses; cardiovascular diseases; reproductive problems; neurotoxic illness; noise-induced hearing loss; dermatologic problems; and psychological disorders. This framework has been and will be used extensively in NIOSH's program planning. Several background articles on individual areas were prepared by DSHEFS Surveillance Program staff for MMWR publication.

5. Computer Generated Maps

The principal objectives of this project are (1) to demonstrate the feasibility of using computer-generated maps to generate hypotheses, establish baseline measures, and monitor disease changes, and (2) to evaluate the utility of computer generated maps to NIOSH and other agencies or organizations interested in occupational health and safety.

Project activities, to implement mapping on a production basis, are on schedule. Collaborative activities with SCANS/State representatives are being pursued in parallel with in-house efforts. Dissemination of

information on the project is illustrated by (1) publication of a paper presented at the Finnish/NIOSH Symposium, "Uses of Computer-Generated Maps in Occupational Hazard and Mortality Surveillance", and (2) an upcoming presentation at the November 1983 Convention of the American Public Health Association, "Geographic Patterns of Occupationally-Related Chronic Obstructive Pulmonary Disease".

A summary of the Surveillance Program's major accomplishments in FY'83 is as follows:

1. Obtained data from the four original SCANS states and initated analyses.

2. Expanded SCANS states to five (Maine, Rhode Island, New York, North Carolina, Pennsylvania).

3. In addition to writing several of the articles for the ongoing Top Ten/MMWR series, scheduled and coordinated the overall plan for this series.

4. Completed the field survey portion of NOES (final number of facilities in sample is 4,490, covering 1.9 million employees). Data editing and entry is 95% complete.

5. Completed Federal Reports Act package for trade name clarification process.

6. In collaboration with the Division of Respiratory Disease Studies, initiated process with the Conference of State and Territorial Epidemiologists to have silicosis as the first reportable, non-infectious occupational disease.

7. Vital statistics personnel from fifteen states (Arkansas, Georgia, Kansas, Kentucky, Maine, Massachusetts, Missouri, Nevada, Nebraska, New Hampshire, New York, Oklahoma, Rhode Island, South Carolina, and Wisconsin) received training in January 1983 at the NIOSH-sponsored Industry and Occupation Problem Referral Coding Course. A basic training course was held in Cincinnati the week of July 25-29, 1983. Twenty coders were in attendance. An additional six states (Alabama, California, Colorado, Illinois, New Mexico, and Ohio) will be added to those presently having industry and occupation coding capabilities. Also, the publication "Guidelines for Reporting Occupation and Indusstry on Death Certificates" was released by NCHS for circulation in June 1983. This publication was prepared under contract to the National Center for Health Statistics with funding support from NIOSH. The purpose of the guidelines is to serve as an aid to funeral directors in obtaining information and completing the occupation and industry items on death certificates.

8. Completed a preliminary analysis of data from the 1980 National Natality/Fetal Mortality Survey. A descriptive analysis of maternal employment characteristics during pregnancy was completed by NCHS and our Surveillance Program staff. These are incorporated in an article which will become part of the 1983 "Health U.S.." published by NCHS.

9. A final report by the Committee to Coordinate Environmental and Related Programs/Occupational Cancer Risk Subcommittee is out for final review by all subcommittee members and consultants. A 20-minute briefing on the recommendations will be given to the CCERP in early FY'84.

10. Completed Sentinel Health Event (Occupation) listing and have had it published in the American Journal of Public Health (AJPH 1983; 73:1054-1062).

11. Occupational Mortality reports were completed in the states of Washington and Massachusetts. The Washington State analysis examines all causes of death by occupation for the period 1950-1979. The Massachusetts analysis examines cancer mortality for the period 1971-1973. Both reports are undergoing publication clearance, and are projected for publication in early FY'84.

12. A list of 10 hypotheses suggested by analyses of our surveillance data sets was generated; first on the list of high risk groups was hospital workers. As a result, a Hospital Task Force was established that is now compiling further information on occupational safety and health issues in the hospital setting. This effort will probably result in a number of project concept memos for FY'85. A second suggested hypothesis concerning stress disorders resulted in DSHEFS/DBBS (Division of Biomedical and Behavioral Sciences) collaboration for FY'84. A joint project ("Occupational Incidence of Stress Disorders") has been approved.

One of the Surveillance Program's major goals is, of course, to provide basic data for the Department's newly developed 1990 Prevention Objectives. This goal includes the development of standardized disease reporting systems and strong working relationships with state health departments. Active consideration of this continued in FY'83. In FY'83, the Surveillance Program also began to take special cognizance of the diseases that have been identified for elimination in the 1990 Prevention Objectives (i.e., dermatitis, lung diseases, and heavy metal poisoning). Also, the Surveillance Program will continue to provide surveillance data for the reproductive hazards initiative that was started by NIOSH in 1980, and which also is identified in the 1990 Objectives.

Also, in FY'83 seven surveillance reports were published; four MMWR articles were published, five reports were approved for publication; two final reports were prepared for internal use but not published elsewhere; and eight speeches were given as part of DSHEFS' active research dissemination effort. These reports and speeches are presented following the Surveillance Program Project Summaries.

SURVEILLANCE PROGRAM
PROJECT SUMMARIES FY'83

PROJECT TITLE: Access to NOHS Data Base - Profile Development

The National Occupational Hazard Survey (NOHS) data base continues to provide important information to a wide spectrum of data users. It functions as a locator file for scientists and other occupational health professionals interested in identifying occupational groups at risk due to potential exposure to health hazards. It also can be used to produce national estimates of numbers of workers potentially exposed to any of the more than 9,000 chemical and physical agents observed during the 1972-74 survey. It thus has important applications in priority-setting activities in NIOSH and other Federal agencies.

This project supports the development of information profiles from the data base for selected chemicals, occupations, and industries.

There were over 200 separate requests for information from NOHS in FY'83, resulting in over 5,000 different reports. The requests originated from a wide variety of users, in almost every sector.

PROJECT TITLE: Computer Generated Maps

Project activities, to implement mapping on a production basis, are on schedule. Collaborative activities with SCANS/State representatives are being pursued in parallel with in-house efforts. Dissemination of information on the project is illustrated by (1) publication of a paper presented at the Finnish/NIOSH Symposium, "Uses of Computer-Generated Maps in Occupational Hazard and Mortality Surveillance," and (2) an upcoming presentation at the November 1983 Convention of the American Public Health Association, "Geographic Patterns of Occupationally-Related Chronic Obstructive Pulmonary Disease."

PROJECT TITLE: Development of Trade Name Ingredient Data Base

The file of ingredient information on trade name products, which was developed during the first National Occupational Hazard Survey, has emerged as a powerful resource for hazard surveillance. Approximately 70,000 products have been successfully resolved to date, and ingredient information from other secondary sources has been assembled into a user-oriented product name pointer file; permitting access to ingredient information on more than 150,000 products.

As estimated 100,000 trade name products will be identified during the field phase of the Second National Occupational Exposure Survey, which is currently underway.

An improved trade name product ingredient clarification system has been designed; this system will utilize, to the extent possible, the file of ingredient information compiled during NOHS, and will be supported by enhanced hardware. The OMB submission under the Federal Reports Act was received in OMB on August 15, 1983.

PROJECT TITLE: Disability Surveillance of Occupation and Industry

The principal objective of this project is to obtain and analyze on an annual basis data on occupation, industry, and permanent disabling conditions. These data are obtained through an interagency agreement between the Illness Effects Section and the Division of Disability Studies of the Social Security Administration.

Two reports were completed during FY'83, and are presently undergoing review within the Institute: "Causes of Disability in Employees of the Mining Industry" and "Industrial Characteristics of Disabled Workers 1975-1976." Selected results contained in the first report were presented at the Annual Meeting of the Society for Epidemiologic Research.

PROJECT TITLE: Estimation of Occupationally Related Mortality and Morbidity

As previously planned, two disease rubrics (bladder cancer and acute myocardial infarction) are being reviewed in depth. Also under review are the available methodologies for occupational morbidity estimation. The methodological literature review is 75% complete and the review of literature for the specific diseases is 50% complete. Analysis of available data on incidence/prevalence is complete for bladder cancer and acute myocardial infarction. Documents are being developed which will present illustrative estimates based on various methods using available data systems; supportive literature will also be provided. Expert panels will then be convened for review of the methods to see if one is appropriate and if there are data of sufficient quality for input into the method chosen. A decision will then be made whether to pursue estimation of other causes of occupational morbidity and mortality.

PROJECT TITLE: Fetal Mortality Study

The principal objectives of this project are to compare and contrast the distribution of parental employment characteristics with respect to (1) fetal outcomes, including low birth weight and congenital malformations; (2) prenatal health practices, such as maternal drug and tobacco usage; and (3) other parental characteristics, such as education and ethnic background. These analytic activities are based on data obtained from the 1980 National Fetal Mortality and 1980 National Natality Survey.

FY'83 was the last project year for funding this activity. Pursuant to interagency agreements between NIOSH and the National Center for Health Statistics (NCHS), final data tabulations and analysis tapes were prepared for NIOSH. To enhance analytic activities of the various PHS agencies supporting the National Fetal Mortality and Natality Survey, NCHS coordinates a data tape users group. The Illness Effects Section, through the project officer, participates in data tape user group meetings.

A final report, "Employment Characteristics of Mothers During Pregnancy," was completed and approved for publication as a chapter in the NCHS Publication, "Health: United States 1983." A second report is being prepared. A presentation based on this report will be given at the November 1983 American Public Health Association Conference. The presentation is entitled "Maternal Occupation and Industry, and Pregnancy Outcome in the United States, 1983."

PROJECT TITLE: The Material Locator System for Unions

While hazard surveillance puts considerable emphasis on periodic large-scale observational surveys conducted in a statistical sample of facilities as a means of identifying nationwide patterns of worker exposures, there are a number of other techniques for identifying occupational groups exposed to potential hazards.

Several of the major international unions (notably OCAW and ICWU) have begun to implement programs to encourage their local members to request from employers comprehensive lists of the chemicals with which they work. The courts have largely upheld the right of the unions to access this information in order to bargain intelligently. In most cases, however, plant management supplies the information to local union officials in a form which is difficult to use; long lists of trade named products, incomplete or inadequate material safety data sheets, or a confusing assortment of non-standard chemical nomenclature.

Since the surveillance program has developed a substantial degree of experience and expertise in clarifying chemical nomenclature and penetrating the trade name barrier by virtue of working with National Occupational Hazard Survey file and the associated trade name product file, we are able to help the unions organize these data in a form which they are able to use. Our initial efforts have focused on developing a pointer file for use by OCAW and ICWU which permits them to identify local plants with exposure to agents of interest. Conversely, it is possible to sort the file so that a given plant's lists of exposure agents can be displayed.

The NIOSH Trade Name Ingredient File can be linked to the Material Locator System, thereby providing the capability to supply ingredient information for products in the Material Locator System whose composition is not proprietary.

Total file size is now approximately 60,000 entries.

PROJECT TITLE: Mortality Surveillance of Occupation and Industry

The principal objectives of this project during FY'83 were three-fold: (1) Support State Health Department in obtaining basic and referralist training for industry and occupation coding of decedent employment characteristics; (2) support the National Center for Health Statistics (NCHS) in developing handbook supplements for physicians, funeral home directors, and medical examiners that will allow consistent coding of decedent industry and occupations; and (3) complete a report on mortality data analysis strategies.

Two training sessions were conducted during FY'83. In January, the Census Bureau conducted a referralist training course for coders from Arkansas, Georgia, Kansas, Kentucky, Maine, Massachusetts, Missouri, Nebraska, Nevada, New Hampshire, New York, Oklahoma, Rhode Island, South Carolina, and Wisconsin. In July, the Illness Effects Section conducted a basic coding training course for coders from Alabama, Colorado, Georgia, Idaho, Illinois, Kentucky, Nevada, Ohio, and Pennsylvania.

Educational media were disseminated to funeral home directors, through State Vital Statistics Offices. A prototype educational handbook, "Guidelines for Reporting Occupations and Industry on Death Certificates," prepared pursuant to NIOSH-NCHS collaborative activities, was disseminated in June 1983. Similiar handbooks will be prepared for physicians and medical examiners.

Related dissemination activities were directed to the statistical community. A paper, "Using the Census Bureau's Occupation and Industry Coding System for Coding Death Certificates," was presented at the 1983 Joint Statistical Meetings in Toronto, Canada. Publication of this paper in an appropriate American Statistical Association series is expected later this year.

PROJECT TITLE: National Occupational Exposure Survey

NIOSH's first National Occupational Hazard Survey (NOHS), which began in 1972, has provided a foundation of experience in sampling statistics, data editing and analysis, resolution of trade name products into ingredients, and managing a field survey team which is being used to guide the second National Occupational Exposure Survey (NOES).

A sampling strategy has been implemented, and facilities have been selected for inclusion in the survey. Surveyors have been recruited, trained in observational survey techniques, and deployed to the survey sites. Data editing software has been developed, and error correction on incoming survey data is proceeding. A total of 4,500 facilities employing 1,800,000 workers had been surveyed by the end of FY'83.

PROJECT TITLE: Registration of Disease and Exposure Cohorts

The principal objective of this project is to support the maintenance of occupational disease (angiosarcoma of the liver, berylliosis) and exposure (Kepone, DBCP) registers.

DBCP register files were edited and updated. Two letters-to-the-editor were published (see references), based in part on the two disease registers: "Beryllium Disease-Necessity for Continuing Surveillance" and "Angiosarcoma as a Model for Comparative Carcinogenesis." A cluster of suspect berylliosis cases was reported in Hazleton, Pennsylvania. Patient medical records are now being collected to assess the extent of this problem and register the cases in the Beryllium Case Register (BCR). In addition, an MMWR article described three cases of berylliosis among aerospace workers who were recently entered into the BCR.

PROJECT TITLE: Sentinel Health Events (Occupational)

The sentinel health event (occupational) [SHE(O)] paper was published in the American Journal of Public Health (Rutstein DD, Mullan RJ, Frazier TM, Halperin WE, Melius JM, Sestito JP. Sentinel health events (occupational): a basis for physician recognition and public health surveillance. Am J Public Health 1983; 73(9):1054-1062). Efforts are now underway to widely disseminate this paper thoughout the medical community; in collaboration with the Division of Training and Manpower Development, the SHE(O) paper is being adapted for use in medical training. At the request of the Pan American Health Organization (WHO), we are jointly exploring the feasibility of adapting this paper for use in Latin America. SCANS data tapes were not available in time to complete the planned SHE(O) analyses. It is expected that these analyses will be completed early in FY'84. Literature review continues so that the list may be updated as new sentinel events become recognized.

PROJECT TITLE: Surveillance Cooperative Agreements Between NIOSH and States (SCANS)

The two year pilot demonstration programs in Maine, New York, Rhode Island, and Utah ended. Final reports from each of the four cooperative agreement awardees were received, and are being reviewed for possible publication in a NIOSH report series. Data submissions from each of the awardees were received and edited by Illness Effects Section staff. Preliminary analysis and information dissemination efforts are planned for FY'84.

A second round of cooperative agreement applications was solicited and reviewed by NIOSH and the Occupational Safety and Health Study Section. Twenty-seven applications were received, fourteen of which are being ranked by the secondary review group. Five states received awards during FY'83 (Maine, New York, Rhode Island, North Carolina, and Pennsylvania).

PROJECT TITLE: Surveillance of Parental Employment and Spontaneous Abortion

The principal objective of this project was to examine the relationship between spontaneous abortions and the parental employment characteristics of the aborted fetus. The final report was completed by the contractor. Overall, the results suggest that parental employment was seldom a strong factor on the type of spontaneous abortion. Two associations between employment and karyotype appeared to persist, after controlling for confounding factors: (1) maternal employment in a cleaning service occupation was associated with chromosomally normal abortions, and (2) parental employment in hospital or nursing facilities was associated with monosomy X. These findings, and other aspects of the study, are reported in a paper submitted to the American Journal of Epidemiology, "Maternal Employment and the Chromosomal Characteristics of Spontaneously Aborted Conceptions." The final contract report is being submitted for publication as a NIOSH research report.

PROJECT TITLE: Utilization of Full File for Survey/Sampling Decisions

A master file of basic demographic information on the nearly five million establishments in the U.S. is essential for many Surveillance programs and other NIOSH activities. This project permits the annual acquisition and use of the Dun & Bradstreet master facility file.

The availability of workplace descriptors from this file, e.g., SIC codes, geographic location, number of employees, etc., provides data needed for computer generated maps and forms the basis for the sampling frame for the National Occupational Exposure Survey.

Approximately 200 requests for information from this file were serviced in FY'83.

SURVEILLANCE PROGRAM PUBLICATIONS AND SPEECHES FY'83

PUBLISHED ARTICLES

Eisenbud, M., and Lisson, J.
Epidemiological Aspects of Beryllium-Induced Non-Malignant Lung Disease: A 30-Year Update. J. of Occ. Med. 25(3):196-202, March 1983.

Frazier, T. and Coleman, P.
Surveillance Report - Job Injuries Among Loggers. DSHEFS (NIOSH) 83-104, 14 pages, January 1983.

Frazier, T., Lalich, N. and Pedersen, D.
Uses of Computer-Generated Maps in Occupational Hazard and Mortality Surveillance. Scand. J. of Work, Env. and Health. 9:148-154, 1983.

Hills, B., and Venable, H.
The Interaction of Ethyl Alochol and Industrial Chemicals. Am. J. of Indust. Medicine 3(3):321-333, 1982.

Rutstein, D., Mullan, R., Frazier, T., Halperin, W., Melius, J. and Sestito, J.
Sentinel Health Events (Occupational): A Basis for Physician Recognition and Public Health Surveillance. Am. J. of Public Health 73(9):1054-1062, September 1983.

Spirtas, R., Beebe, G., Baxter, P., Dacey, E., Faber, M., Falk, H., Van Kaick, G., and Stafford, J.
Angiosarcoma as a Model for Comparative Carcinogenesis. (Letter-to-the-Editor). Lancet, 456, August 20, 1983.

Tanaka, S., Smith, A., Halperin, W., Mullan, R. and Johnson, N.
Beryllium Disease - Necessity for Continuing Surveillance. (Letter-to-the-Editor). Chest 84:312, September 1983.

CDC MORBIDITY AND MORTALITY WEEKLY REPORT

Beryllium Disease Among Workers in a Spacecraft-Manufacturing Plant - California. MMWR 32(32):419-425, 1983.

Leading Work-Related Diseases and Injuries - United States. MMWR 32(2):24-26, 32, 1983.

Leading Work-Related Diseases and Injuries - United States. MMWR 32(14):189-191, 1983.

Results of Blood Lead Determinations Among Workers Potentially Exposed to Lead - United States. MMWR 32(16):216-219, 1983.

COMPLETED REPORTS SUBMITTED TO NIOSHTIC AND NTIS - NOT PUBLISHED ELSEWHERE

Lisson, J.
The Chronic Trauma of Repetitive Motion: An Analysis of Social Security Disability Awards, 1969-1973 (DSHEFS Internal Report). 40 pages, December 1982.

Salg, J., Wey, S., and Lalich, N.
Maternal Occupation and Industry Characteristics, Fetal Death, and Congenital Malformation: New York City Vital Records, 1979 (DSHEFS Internal Report). 28 pages, December 1982.

APPROVED FOR PUBLICATION (IN PRESS)

Dubrow, R., and Wegman, D.H.
Occupational Characteristics of White Male Cancer Victims in Massachusetts, 1971-1973 (NIOSH Technical Report).

Frazier, T.
NIOSH Occupational Health and Hazard Surveillance Systems. Proc: Exposure Assessment Conference.

Milham, S.
Occupational Mortality in Washington State, 1950-1979 (NIOSH Technical Report).

Makuc, D., and Lalich, N.
Employment Characteristics of Mothers During Pregnancy. NCHS Publication - Health: United States 1983.

Venable, H., Floyd, L. and Parke, J.
A Predictive Toxicology System. Journal of Fundamental and Applied Toxicology.

SPEECHES

Crouse, W.
Using the Census Bureau's Occupation and Industry Coding System for Coding Death Certificates. 1983 Joint Statistical Meetings, Toronto, Canada, August 1983.

Fischbach, T.
Use of Employee Interviews to Estimate Worker Populations: Comparison of Multiple Recapture Methods. 1983 Joint Statistical Meetings, Toronto, Canada, August 1983.

Frazier, T.
A Setting for Occupational Health Reserch: Determinants of Organizational Structure. Scientific Meeting of the Australian and New Zealand Society of Occupational Medicine, Melbourne, Australia, September 1983.

Frazier, T.
The Development of National Occupational Health Surveillance Systems in the United States. Scientific Meeting of the Australian and New Zealand Society of Occupational Medicine, Melbourne, Australia, September 1983.

Frazier, T.
Occupational Health Reporting Systems in the U.S. NIOSH Workshop on the Chronic Effects of Repeated Trauma to the Skin. Cincinnati, Ohio, April 1983.

Frazier, T.
Use of Employee Interviews to Estimate Worker Populations: Comparison of Multiple Recapture Methods. 1983 Joint Statistical Meetings, Toronto, Canada, August 1983.

Mullan, R.
Sentinel Health Events (Occupational): A Basis for Physician Recognition and Public Health Surveillance. APHA Conference, Montreal, Canada, November 1982.

Osborne, R.
The Causes of Disability in Employees in the Mining Industry. Society for Epidemiologic Research, Winnepeg, Canada, June 1983.

Pedersen, D.
A Model for the Identification of High Risk Occupational Groups Using RTECS/NOHS Data. USPHS Professional Meeting, Washington, D.C., May 1983.

INDUSTRYWIDE STUDIES PROGRAM

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INDUSTRYWIDE STUDIES PROGRAM
HIGHLIGHTS - FY'83

The objective of this program area is to conduct industrywide studies, through record studies and clinical/environmental field studies (a) to identify the occupationally related causes of disease in the working population and their offspring, (b) to determine the incidence and prevalence of acute and chronic effects from work related exposures to toxic and hazardous substances, and (c) to provide information needed to develop recommended standards for the control of occupational health hazards. This program is conducted pursuant to Section 20(a)(7) of the Occupational Safety and Health Act and Section 501 of the Federal Mine Safety and Health Act. Expenditures for this Program amounted to 3.8 million dollars and 76 person-years of effort.

During FY'83, The Industrywide Studies Program participated in 29 planned projects (project summaries* follow in a later section). In addition to these established projects, there were also 37 projects where a feasibility assessment was initiated. All of these research projects are related to epidemiologic and industrial hygiene efforts designed to determine the relationship between occupational exposures and disease outcome. The goal of this research is to provide information which will help in making industrywide recommendations regarding safe levels of exposure in the workplace. The types of epidemiologic studies conducted include retrospective cohort, case-control, proportionate mortality, and cross-sectional morbidity (including reproductive). These studies almost always include an industrial hygiene component to characterize the exposures experienced (past and present) by the study population. Other "extent of exposure surveys" also are conducted in the absence of a companion epidemiologic study in order to estimate the potential numbers of workers and their approximate level of exposure to a particular agent. This type of information is useful in determining the need and feasibility of conducting an epidemiologic study and provides data for overall risk assessment.

* Those Industrywide Studies projects that will provide input to NIOSH's research on the ten leading occupational safety and health problems are coded as follows:

Lung Disease (including cancer) - L
Reproductive Problems - R
Neurotoxic Illness - N
Cardiovascular Diseases - CV

Several major studies that were ongoing during FY'83 that deserve mention include:

1. A study of garment workers exposed to formaldehyde (L) - This study of garment workers includes three permanent press shirt manufacturing plants where there has been continuous low level exposure to formaldehyde for approximately 24 years. The hypothesis that is being tested is whether exposure to formaldehyde is associated with an increased risk of mortality due to respiratory cancer. A companion industrial hygiene study is being conducted that will document the current personal and area exposure levels to formaldehyde and estimate past exposure levels.

2. A study of workers exposed to dioxin (C) - A registry of U.S. production workers potentially exposed to dioxins during the synthesis or formulation of substances (trichlorophenol; 2,4,5-trichlorophenoxy acetic acid; and pentachlorophenol) contaminated with dioxins, is being assembled. The registry will include 12 plants and approximately 6,000 workers. The workers included in the registry will be examined in several different ways. Since dioxin has been shown to be a potent carcinogen in laboratory animals, and there are several case reports indicating that it may be associated with the development of soft tissue sarcomas, the first study being conducted involves a mortality analysis to address the hypothesis of an association between dioxin exposure and subsequent development of soft tissue sarcoma and cancer in general. We also have proposed to study the incidence of disease and reproductive effects in these workers.

3. A study of workers from a large chemical manufacturing plant (C) - This study was initiated to assess the mortality experience of workers exposed to ethylene oxide. In addition to this assessment, the study population (N = 44,000) includes workers who have had exposure to other agents of concern. Therefore, this study will encompass an assessment of a variety of chemicals and is unique because questions regarding the effects of many chemicals can be addressed as single exposures and as a combination of exposures.

4. A mortality study of workers exposed to ethylene oxide (C) - Ethylene oxide is used to sterilize hospital equipment by industrial companies which sell hospital supplies. In this study, the mortality experience of individuals who have been exposed while sterilizing will be examined. From two animal and two human studies, it appears that ethylene oxide is a leukemogen. Excess mortality in one human study was found for leukemia, stomach cancer, all cancers, and cardiovascular disease. However, all human studies done so far are flawed by small sample size and mixed exposures, problems which we hope to overcome in our study. In FY'83, a feasibility assessment was completed. Based on this assessment, a number of suitable plants have been identified for inclusion in the study. In FY'84, data collection and coding will be initiated.

5. A study of workers exposed to ethylene dibromide - An estimated 108,000 American workers are potentially exposed to ethylene dibromide (EDB) in manufacturing, formulation and agricultural application (this estimate does not include those exposed to low levels due to the use of EDB in gasoline). EDB has been shown to be a mutagen, a carcinogen and a spermtotoxin in animals. Very few studies have been conducted to address the effects of EDB exposure in humans. Those which have been conducted to date have been inconclusive.

   This project will address EDB's ability to produce cytogenetic effects and to influence the reproductive system. The study will be conducted on individuals occupationally exposed to EDB while it is being used to fumigate papaya. Individuals working in this industry are exposed to EDB levels which range from 0.06 to 0.13 ppm measured as an 8-hour TWA. During FY'83, arrangements were made to begin this study during FY'84. In addition, a small group of workers from the Colorado Forestry Service exposed to EDB, while spraying for pine beetles, were included in a reproductive/cytogenetic study conducted in FY'83. Semen and blood samples were collected and a questionnaire was administered. The results of this small study will be available in FY'84.

Feasibility assessments that have been completed and/or have initiated projects include:

Lead Chromate Paints (mortality/industrial hygiene) - L
Ethylene Dibromide (cytogenetics/reproductive effects) - R, C
Ethylene Oxide (mortality)
Methylene Dianiline (extent of exposure/biological monitoring) - C
Acrylamide (extent of exposure/feasibility) - C
MOCA (extent of exposure/biological monitoring) - C
Organotins (reproductive effects) - R
Hydrazines (extent of exposure/feasibility) - C
Newsprint (characterization of exposure) - L, C
Azo Dyes (biological monitoring) - C
Halowax (mortality) - L, C
Diesel Exhaust of Truck Drivers (mortality/industrial hygiene) - LD
Toluene Diisocyanates (mortality/industrial hygiene)
VDT's (reproductive effects) - R
Dioxin (morbidity/reproductive effects) - C
Blue Collar Comparison Rate File (methodology)

The Industrywide Studies Branch was responsible for conducting eight health hazard evaluations during FY'83. Two of these evaluations were completed; (1) an investigation of a reported excess of lung cancer among workers in an automobile manufacturing plant, and (2) an investigation of reproductive effects among refinery workers. Other evaluations either have interim results (reports) or are still ongoing.

Thirteen major industrywide studies were completed during FY'83. (General dissemination of research results is being accomplished via technical journal articles, MMWR articles, NIOSHTIC (NTIS), etc. These studies are listed below:

Cadmium (mortality) -L
Carbon Disulfide (medical/industrial hygiene/reproductive effects) - R
Clay Fibers (mortality/industrial hygiene) - L
Goldminers (mortality/industrial hygiene) - L
Lead (reproductive) - R
Lead (mortality) - C
Nitroglycerin (mortality/industrial hygiene) - CV
Phosphate (mortality/industrial hygiene) - L, C
Brain Tumors in Texas City (mortality) - C
Jewelry Manufacturers (extent of exposure)
Pharmaceutical Workers (reproductive effects) - R
Formaldehyde (proportionate mortality) - L
Di-2-Ethy Hexyl Phthalate (DEHP) (extent of exposure)

During FY'83, the Industrywide Studies Program included other related areas of occupational health research. An expertise in cytogenetic research has been developed and a study examining the effects on chromosomes from low level ethylene oxide exposure has been partially completed. This type of research provides important information on effects from exposures that can not be studied using the traditional epidemiologic methods that examine mortality or morbidity. This is still a developing area of research and the association between chromosomal changes and eventual disease outcome such as cancer, is not known. However, these studies provide information on the toxic properties of the agents being studied and serve as a data base to assess future disease outcome in a prospective manner. A second cytogenetic study involving occupational exposure to ethylene dibromide was initiated in FY'83 and will be conducted during FY'84.

A biological monitoring project was pursued further during FY'83. This project will continue and will draw upon and collaborate with the expertise from other Branches in DSHEFS, as well as from other Divisions. It is anticipated that biological monitoring will become an important new initiative for the Institute, where the Industrywide Studies Program will play a key role.

The Industrywide Studies Program has been involved in a number of activities related to the development of new methodologies:

1. The staff has proposed several techniques to address the problem of smoking as a confounder in occupational epidemiologic studies. When appropriate, these techniques will be implemented in future studies. The subject of how to handle smoking in occupational health research will be a major topic of discussion with NCI during FY'84 and at the next NCI/EPA/NIOSH Interagency Conference planned for March 20-22, 1984.

2. The NIOSH Life Table Analysis System (LTAS) developed by the Industrywide Studies Program has been requested by numerous outside organizations (42 copies of the documentation and 27 copies of the computer programs have been distributed). Many of these requests

resulted from an article about the LTAS which appeared in the Journal of Occupational Medicine. A new version of the LTAS has been developed that provides substantial improvements. The availability of this version will be announced during FY'84.

3. Alternate methods of analyzing mortality data were explored during FY'83. These methods include direct, rather than indirect standardization, and the use of mathematical models such as multiple logistic regression.

4. A new system for storing and retrieving data on the computer was completed during FY 83, which employs a data base management system on the Parklawn computer known as Model 204. The system will be more flexible for adding new data elements, it will improve our ability to obtain summary reports of the data, and it will make it possible to view and update the data "on-line". An effort to convert our masterfiles from the old "PVC format" system to the new data base system will occur in FY'84.

5. The use of city directories to document historical work histories (occupations) was explored in a case-control study that is examining the association between bladder cancers identified in a county and specific occupations. If this methodology proves to be successful, it may serve as a good technique to identify industries and/or occupations related to disease excess in other counties.

The Industrywide Studies Program has developed a set of principles for medical screening of workers with hazardous exposures. These principles can be utilized in NIOSH criteria documents, CIB's, etc. and by OSHA and MSHA in their standard setting activities. To follow-up on these principles and improve upon them, a national conference is scheduled for June 1984.

An Interagency Agreement (IAG) with the EPA-TSCA was successful during FY'83. This IAG provides funds to the Industrywide Studies Program to conduct extent of exposure and epidemiologic feasibility assessments on agents of concern to both EPA and NIOSH. During the year we actively worked on surveys of diethylhexylphthalate (DEHP), methylene dianiline (MDA) and MOCA. We are also considering surveys on several other agents including acrylamide, 1,3 butadiene, ethylene oxide (reproductive effects), and methyl chloride.

We also began the process of negotiating another IAG with EPA through its Environmental Epidemiology Program. They are interested in supporting and collaborating with the Industrywide Studies Program in occupational epidemiology research.

In toto, in FY'82, 26 industrywide study reports were published; 1 MMWR article was published; 18 reports were approved for publication; 10 final reports were completed for internal use but were not published elsewhere; and 47 speeches were given as part of DSHEFS' active research dissemination effort. These reports and speeches are presented following the Industrywide Studies project summaries.

The Industrywide Studies Program also provides basic epidemiologic research information for the Department's 1990 Prevention Objectives. This information is utilized to evaluate the incidence and prevalence of diseases so that necessary control measures and standards can be defined to subsequently aid in the elimination of the diseases.

INDUSTRYWIDE STUDIES PROGRAM
PROJECT SUMMARIES - FY'83

PROJECT TITLE: An Assessment of Worker Exposure in the Newsprint Industry (C)

Historically, the printing occupation, particularly newsprint pressroom workers, have experienced high rates of cancer of the respiratory tract. A recent NIOSH sponsored mortality study by Nicholson et al. (1981) demonstrated a 2.5- to 3-fold increase in buccal and pharyngeal cancer with a slight increase in lung cancer in this occupation. This confirmed an earlier study by Lloyd (1977) who found an increased proportion of upper respiratory cancer deaths among pressmen. Additional studies in the printing trade tend to support these findings. Toxicological studies have shown that newsprint inks contain PAHs which may be responsible for the high rate of respirable tract malignancy. It has been established by Bingham et al. (1980) that petroleum and asphalt pitch, components of newsprint ink, are highly carcinogenic in mice. Other studies by Steinbreck (1929) and later by Carter et al. (1969) demonstrated that certain inks caused tumors in mice.

NIOSH is currently testing bulk samples of various newsprint inks and their components for identification and concentration of PAHs. The Industrywide Studies Branch plans to investigate the extent of exposures that newspaper pressmen have to PAHs. This will be accomplished by characterizing the size distributions of the ink mist aerosol in the pressroom to determine what fraction of the total aerosol mist is actually deposited in the respiratory tract. The various size distributions will then be analyzed for PAHs content in order to estimate exposure levels.

PROJECT TITLE: Beryllium Retrospective Cohort Investigation (C)

This investigation will examine the mortality experience of workers exposed to beryllium. Although the nonmalignant respiratory effects of beryllium are well recognized and beryllium has been demonstrated to be an animal carcinogen, further investigation is needed to evaluate the potential carcinogenicity of beryllium exposure in humans. To date, several epidemiologic studies of beryllium exposure have been completed, although none have sufficiently resolved this issue.

The proposed study will be conducted in two phases; a retrospective cohort mortality study, and if warranted, nested case-control studies for lung cancer and nonmalignant respiratory disease. The cohort will include approximately 6,400 males who worked at any of seven different plants between January 1, 1940, and December 31, 1969. Personnel records will be used as the source of both demographic and work history information. The completeness of the personnel records will be assessed using the SSA Quarterly Earnings Reports. Vital status will be ascertained through December 31, 1980.

The cohort will be analyzed using a modified life table technique. The primary focus will be lung cancer with secondary interest in nonmalignant respiratory disease and cardiovascular disease.

The data from all seven plants have been collected and the contract for data coding and vital status follow-up has been awarded. Anticipated study completion is FY'86.

PROJECT TITLE: Case-Control Study of Bladder Cancer in Hamilton County (C)

This study attempts to use a new methodology, the use of city directories, to ascertain occupation. We have collected over 700 cases of bladder cancer deaths in Hamilton County, Ohio, over the years 1960-82. These cases have been matched on age, race, and year of death with more than 1,400 controls who have died in Hamilton County. City directories should provide a complete occupational history for most of our cases and controls. Results using the city directories will be compared with the results using a more traditional source of occupational information, the statement of occupation and industry on the death certificate itself. Historically, Hamilton County has had excessively high rates of bladder cancer mortality.

All data were collected, coded, and computerized in fiscal 1983. In fiscal 1984 we will plan on analyzing the results of the data.

PROJECT TITLE: Case-Control Study of Renal Disease and Occupational Exposures

Metals, solvents, and silica have been shown to be acutely toxic to the kidney when absorbed in large doses in occupational settings. It is not known whether low-level exposure to these agents over a long period of time contributes to the development of end-stage renal disease. There has been little epidemiology of chronic renal disease, and no studies have adequately studied possible occupational risk factors. Yet, over 50,000 patients in the U.S. are victims of this disease, at a cost of about $2 billion a year. The U.S. government pays the cost of dialysis or transplants, which are beyond the cost of an individual, yet are the only treatment for kidney failure.

This project is a case-control study of end-stage renal patients. In the Metropolitan Detroit area, 400 living male cases will be identified from the Michigan Kidney Registry. Cases will exclude patients who have diabetic, congenital, or obstructive kidney disease. Four hundred controls matched for sex, age, race, and neighborhood will be chosen via random-digit dialing. Cases and controls will then be interviewed by phone. The interviews will collect information on demographics, medical history, and work history. The analysis will be focused on the work histories, controlling for potential confounders. Odds ratios will be calculated for occupational exposures to kidney toxins. Currently, we are awaiting OMB approval before initiating data collection.

PROJECT TITLE: Cytogenetic Assays and Analysis of Occupational Populations (R)

The purpose of this project is to evaluate the potential of a chemical or physical agent, known or suspected of being a carcinogen, to produce chromosomal changes in occupationally exposed populations. These changes are used as an indication of biologic activity which can be translated to a dose-response curve over the range of occupational exposures. Two different assays, chromosomal aberrations (CA) and sister chromatid exchanges (SCE) will be used to conduct these evaluations. Other genotoxicity assays have been developed and may find application for field studies in the future. These assays would include the following: micronucleus test, sperm morphology test, and DNA alkylation test.

Currently, the cytogenetic effects (as measured by CA and SCE) of exposure to ethylene oxide (EtO) are being investigated based on a hazard evaluation request from the Oil, Chemical and Atomic Workers Union. EtO has been shown to be mutagenic in submammalia test systems, carcinogenic in animal bioassays and a potential human carcinogen in two, weak epidemiologic studies and to produce cytogenetic changes at higher levels of exposure.

Two separate occupational populations exposed to EDB are currently the subject of proposed studies. The feasibility of genotoxicity studies on other worker populations exposed to suspected carcinogenic agents is currently being addressed. The suspected carcinogenic agents being considered include depleted uranium, butadiene, organophosphates, benzene, styrene and the raw materials or the by-products in the following industrial settings: rubber manufacturing, electroplating and welding.

PROJECT TITLE: The Effects of PCB on Reproductive Outcome (R)

There is good evidence from animal studies that polychlorinated biphenyls (PCBs) are fetotoxic. Evidence is also present for teratogenic effects in animals, though it is less convincing. The effects of PCBs on pregnancy outcome in humans is unknown.

Personnel records collected in 1975 for a mortality study of workers in a capacitor plant exposed to PCB contain a code for pregnancy leave. A preliminary record search into the live births of women in this cohort between 1958 and 1975 was initiated for evidence of low birthweight infants and neonatal deaths. Records of 430 live births are being matched with county controls by age, parity, race, and year of birth.

A contract was awarded in FY'81 in order to expand the preliminary evaluation into an interview of the cases and controls. Such an evaluation is consistent with the NIOSH initiative in reproductive effects and will allow examination of such potentially confounding factors such as tobacco, alcohol and drug use, past medical history, and occupational history. Also, information on other adverse reproductive outcomes including miscarriages, stillbirths, and congenital defects has been collected. Analysis was initiated in FY'83 and the final report will be completed in FY'84.

The original contract called for completion of interviewing and ascertainment of pregnancy outcomes by checking birth certificates by the end of FY'82. Analysis of the data and completion of the final report was expected to take until December 1983. Currently, the project is slightly ahead of schedule, and those goals are expected to be met. We anticipate a request for a no-cost extension to December 1983, to allow for analysis and writing.

PROJECT TITLE: Epidemiologic and Industrial Hygiene Support of TSCA - EPA

The Health and Environmental Review Division (HERD) of the Environmental Protection Agency (EPA) is responsible for assessing the health effects of toxic substances in support of the Office of Toxic Substances' regulatory program activities. Frequently, lack of health effect information in humans precludes adequate assessment. In order to identify cause and effect relationships in humans relating to toxic substances exposure, epidemiology studies are needed. This project will help fulfill some of the short and long term extramural needs of the Health and Environmental Review Division in support of implementing Sections 4, 6, and 8 of the Toxic Substances Control Act (TSCA).

Through an interagency agreement (IAG), this project will provide a working relationship between EPA and NIOSH, by NIOSH supplementing EPA's available in-house resources and facilities. In collaboration, EPA and NIOSH will determine the feasibility of conducting epidemiologic studies, and in those cases where EPA chooses to conduct a study, this project will provide a mechanism for carrying out these studies.

During FY'83, a feasibility assessment for studying DEHP was completed, and several other agents were suggested by NIOSH for feasibility assessments. Potential agents for study under this IAG include ethylene oxide (reproductive effects), MDA (mortality), and butadiene.

PROJECT TITLE: Epidemiologic Investigations of United Auto Workers Cohorts (C)

Exposures to known or suspected carcinogens (e.g. asbestos, chromate pigments, cutting fluids, etc.) have been documented for workers in the automobile and related industries such as metal working. Studies have indicated increased risks of cancer deaths among workers in these industries. Most of these studies have been of a preliminary nature and additional investigation is required to define any hazards which may exist.

A contract was awarded to the United Auto Workers Union in late FY'81. UAW represents one and one-half million workers and retirees from approximately 3,100 workplaces. The contract requires UAW to establish a surveillance system to identify hazardous substances, processes, occupations or disease clusters within the automobile or related industries. Once a potential hazard has been identified, appropriate epidemiological studies will be conducted. In addition, it is hoped that this project will serve as a model for self-analysis by other large labor unions or industries.

To date, the surveillance system has revealed 31 potential exposures or occupations needing further study. Six of the thirty-one have been accepted as subjects for epidemiologic investigations and work is continuing.

The project has been successful in providing the UAW with a means by which to conduct its own epidemiologic investigations. It is advantageous to the health and safety of the workers to continue this project for an additional two years to investigate other potential hazards revealed by the surveillance system. Two additional epidemiologic studies will be required each year along with the continuation of the surveillance system.

PROJECT TITLE: Epidemiologic Methods Development

The purpose of this project is to maintain and continue the development of epidemiologic methods used for NIOSH occupational health research. The major elements of the project are as follows:

1. Development of a distribution package for the NIOSH Life Table Analysis System (LTAS) for mortality studies. This is in response to the many requests that continue to be received from industry, labor organizations, academia, and other government agencies.

2. Enhancement of the capabilities of the LTAS for analysis of mortality patterns in industrial groups. This includes completion of the Proportionate Mortality Ratio capability, the ability to analyze up to 99 causes of death, and the ability to use state, county, or other rates as a standard (only U.S. rates can currently be used).

3. To study alternative methods of analyzing occupational mortality data. Currently, only the Standardized Mortality Ratio (SMR) and Proportionate Mortality Ration (PMR) methods are being used at NIOSH. Multivariate regression methods that allow simultaneous examination of many variables will be tested and compared to existing methods.

4. Completion of an improved data management system for NIOSH data files of industrial populations.

5. Determination of the feasibility of creating "blue collar workers" comparison death rates as an alternative to U.S. death rates. This is to resolve issues of noncomparability due to smoking habits and the "healthy worker effect" selection bias.

PROJECT TITLE: Ethylene Oxide Mortality Study (C)

Ethylene oxide is used to sterilize hospital equipment by industrial companies which sell hospital supplies. We propose to study the mortality experience of individuals who have been exposed while sterilizing. From two animal and two human studies, it appears that ethylene oxide is a leukemogen. Excess mortality in one human study was found for leukemia, stomach cancer, all cancers, and cardiovascular disease. However, all human studies done so far are flawed by small sample size and mixed exposures, problems which we hope to overcome in our study. In FY'83, a feasibility assessment was completed. Based on this assessment, a number of suitable plants have been identified for inclusion in the study. In FY'84, data collection and coding will be initiated.

PROJECT TITLE: Industrial Hygiene Characterization of Petroleum Refinery Turnarounds (C)

The petroleum refining industry is one of the most complex industries in the U.S., although not necessarily one of the most technically up-to-date industries. Only three new grassroots petroleum refineries have been constructed in the U.S. since 1971. To insure that unit operations within these refineries remain on-line, regular on-line maintenance is programmed. However, unit operations must periodically be taken off-line (closed down) to perform a complete overhaul or major maintenance. In the refining industry this would be defined as a "turnaround". Most of the turnaround work is done by outside contract firms. Current literature reviews and contacts within the petroleum industry indicate that very little is known regarding the injury and illness associated with these turnaround activities. Depending on the unit operation on which the turnaround is being performed, the workers will be potentially exposed to a vast number of toxic and carcinogenic chemicals.

The purpose of the project is to identify and quantify worker exposures in petroleum refineries during turnaround activities at catalytic cracker units. The industrial hygiene characterization of these units would complement the project, "Industrial Hygiene Characterization of Petroleum Refineries" which is documenting worker exposure to selected carcinogens during normal on-line operations of these same three refinery units.

A literature review has been completed; industrial hygiene information concerning turnarounds was not found. Turnaround scheduling information has been collected. A preliminary survey protocol has been drafted.

An in-depth industrial hygiene survey at a turnaround of TCCU has been completed and a preliminary report has been finalized. Contact has been made by telephone and letter with a refinery to arrange for the conduction of the final survey at a FCCU.

PROJECT TITLE: Industrial Hygiene Study of New Agents IV

New suspected hazardous agents are continually emerging. This project is designed to gather preliminary information, conduct preliminary and complete industrial hygiene surveys, and to initiate epidemiological studies when possible. The industrial hygiene component will be contracted out for study of these new agents. Epidemiological evaluations, if feasible, will be conducted by in-house personnel. The essentials of the study will be in three phases: (1) develop protocol and review literature, (2) schedule and conduct initial field surveys, and (3) schedule and conduct detailed industrial hygiene studies. Under the proposed contract two agent categories are assigned to the contractor for literature evaluations and recommendations as to specific agents for study.

An RFP was submitted in FY'81 and the contract was awarded July 1, 1982. The two agents selected for study under this contract are hydrazines (as a group), and organotins. The agents to be studied are responsive to the NTP screening program, as well as NIOSH gap-filling research needs. The effort on hydrazines has been completed and the Phase I (literature review) on organotins has been started. During FY'84, the organotins effort will be completed.

PROJECT TITLE: Inventory of Union Records Systems

Many unions have established plans and/or trust agreements which take the form of insurance programs (pension funds, benefit plans, etc.) These programs contain a wealth of information that could be used to identify potential populations for epidemiological studies and to help set priorities for the study of potentially hazardous agents. However, no attempt has ever been made to fully document and categorize these programs in relation to the available data that could be useful for epidemiologic research. As an example of existing data relevant to this proposal, the International Foundation of Employee Benefit Plans has a membership in excess of 4,000 plans, the majority of which are sponsored by the AFL-CIO.

It is the intent of this contract to develop an inventory of union-derived data that would be useful to NIOSH and others interested in occupational epidemiology.

PROJECT TITLE: Investigation of Workers Exposed to MOCA (C)

4,4' methylenebis (2-chloroaniline) (MOCA) has been shown to be a potent carcinogen in animal studies and is structurally similar to aromatic amines, such as benzidine, known to cause bladder cancer in occupationally exposed workers. No adequate epidemiologic studies have examined MOCA's carcinogenicity in humans. At present, there is no OSHA standard for MOCA, which is used as a curing agent for isocyanate-containing polymers. As many as 33,000 U.S. workers are currently exposed, most in workplaces where 10 or fewer employees work directly with the substance.

We have proposed to establish a registry of workers exposed to MOCA at the two U.S. production facilities: the Anderson Development Company (ADC) in Adrian, Michigan and E. I. duPont de Nemours and Company in Deepwater, New Jersey. The registry will be used for prospective surveillance of cancer incidence and mortality. Cancer incidence will be determined by notification of the cohort and mail questionnaire. In addition, the 10% of ADC workers who were employed for the longest time will be offered a screening examination which will utilize conventional (Papanicolou staining) and experimental techniques to examine urine samples for abnormalities indicative of bladder cancer.

PROJECT TITLE: Medical, Biometric and Industrial Hygiene Study of Emerging Problems

Newly suspected hazardous occupational environments are continually being identified. This program is designed to quickly gather information about these environments and to initiate industrywide epidemiological studies, where warranted. This project also provides a mechanism through which to respond to requests for assistance that are related to Industrywide Studies Branch study areas.

The approach of this project generally will be to conduct literature searches and field surveys to collect information to determine if epidemiological studies (environmental, morbidity, and/or mortality) are feasible, and when feasible, to develop study protocols to carry them out. Requested assistance will be provided as required.

PROJECT TITLE: Medical Screening in the Workplace - A Symposium

Medical screening, part of the continuum of modalities (substitution, engineering controls, environmental monitoring, biological monitoring, medical screening, epidemiologic surveillance) is commonly practiced in industry and recommended by OSHA and/or NIOSH for workers exposed to hundreds of chemical agents. At best, screening may be of real benefit to workers; at worst, it may be a sink for resources that would be better spent on more effective means of prevention.

We propose holding a state-of-the-art conference on medical screening that would address the following areas:

1. A characterization of what kind and how much screening in what type of industry.

2. An analyses of forces encouraging screening (economic, legal, regulatory, workers' compensation, etc.).

3. An analyses of the goals and underlying tenets of screening programs.

4. Critical reviews of screening tests in use in industry (radiography for chest and low back, cytology for sputum and urine, liver function testing, neurological testing, multiphasic testing, and biological monitoring).

5. An analysis of the untoward consequences of screening.

The contract to conduct the symposium was awarded in FY'83. The time and location is yet to be determined.

PROJECT TITLE: Mortality and Industrial Hygiene Study of Formaldehyde (L)

This study was initiated in FY'80 as an emerging problem in view of the findings reported by the Chemical Industry Institute of Toxicology that low levels of formaldehyde were carcinogenic in rats. Cohorts evaluated for the mortality study included formaldehyde producers, mushroom growers, and textile and garment manufacturers. The garment industry was chosen for the study because of the continuous levels of exposure, the large number of exposed workers, the quality of their record systems, and the lack of potentially confounding exposures. Three shirt manufacturing facilities have been selected for inclusion in this study. Approximately 18,000 workers have been identified as having worked at these facilities, since formaldehyde-treated cloths were introduced in the late 1950's. Personnel records for the three facilities have been microfilmed and in-depth industrial hygiene surveys are being planned for FY'84. Completion of the study is anticipated by FY'85.

PROJECT TITLE: Mortality and Industrial Hygiene Study of Leather Industry Workers (C)

Several studies have indicated that individuals employed in the leather tanning industry (Standard Industrial Classification - 3111) may experience an increased risk of developing bladder cancer.

Leather workers are potentially exposed to chromates, benzidine-based azo dyes, tannins, arsenic compounds, cadmium and numerous other potential carcinogens. In addition, NIOSH has recently detected N-dimethylnitrosamines, a potent carcinogen, in a leather tannery. This finding has prompted the present study.

The current investigation examines two leather plants; one having levels of dimethylamine sulfate (DMAS), a potential precursor and contaminant of N-dimethylnitrosamines, the other not. This will allow for a comparison of the two plants.

The population at risk consists of about 10,000 past and current leather workers, some employed as early as 1930, and many who have worked 10-15 years and longer. This will allow for an examination of latency as well as exposure.

For one plant, the study is in the analysis stage; for the other plant, follow-up for vital status ascertainment is continuing.

PROJECT TITLE: Mortality and Industrial Hygiene Study of the Painting Trades (L)

Awarded in October 1977 to the Johns Hopkins University, the painting study was begun to assess the mortality experience of workers engaged in the application of paints and coatings. Additional objectives included the characterization of the types of substances used by industrial painters and the condition of work environments of painters within 10 U.S. industries.

In FY'78 and FY'79, 50 walk-through surveys were completed in 9 different industries, and recommendations for further in-depth studies were made. In FY'81, industrial hygiene studies at 10 sites were begun, and 6 surveys were completed. In May, 1981, a new contract was awarded to the Johns Hopkins University to complete a retrospective cohort mortality study and a case-control study using existing records of the International Brotherhood of Painters and Allied Trades (IBPAT). In FY'82 and FY'83, data were collected, organized, and edited, and follow-up and vital status ascertainment were completed. These studies are in the analysis phase and completion is expected in FY'84.

PROJECT TITLE: Mortality and Industrial Hygiene Study of Wood Die and Model Makers (C)

A previous PMR study by NIOSH, as well as studies by the Memorial Sloan-Kettering Cancer Center and the Michigan Cancer Foundation, indicated excess morbidity and mortality among automotive wood workers due to colo-rectal cancer, leukemia and other cancers. To further investigate these findings, a retrospective cohort mortality study and an environmental assessment were begun on about 2,500 automotive wood die & model makers who were ever employed at one facility each of Chrysler, Ford or General Motors, 1940-78. For causes of excess death identified in this and previous studies, nested case-control analyses will be conducted to identify the occupational exposures responsible for the excesses. The occupational exposures of interest include wood, metal and plastic dusts, glues, epoxy resins and solvents. The industrial hygiene characterization of the model shops was completed in FY'82 and the report has been distributed; no further environmental assessments are planned. In FY'83, vital status follow-up and acquisition of death certificates were completed for the cohort mortality analysis. Also in FY'83, the cases and controls for the intra-company case-control analyses were selected. The final report is targeted for completion in the third quarter of FY'84. NIOSH's priority on identifying occupational cancers subsumes this project. It is of substantial interest to the three automakers and the two unions involved (U.A.W. and Patternmakers' League of North America). In addition, many wood workers in the U.S. would be affected, including those in U.S. Navy and railroad wood model shops.

PROJECT TITLE: Mortality and Industrial Hygiene Study of Workers Exposed to Carbon Monoxide (CV)

Carbon monoxide is a commonly encountered industrial asphyxiant. The effects of acute exposure have been fairly well documented. Although little is known about the chronic exposure in man, it is generally believed that adverse cardiovascular effects may result if carboxyhemoglobin levels reach 5%; therefore, the carbon monoxide standard for an 8-hour day has been set at 50 ppm. The NIOSH recommended CO standard is 35 ppm.

In an attempt to gain additional insight between the effects of chronic carbon monoxide exposure and cardiovascular disease, NIOSH previously conducted a study of motor vehicle inspections with chronic exposures to CO of 15 ppm with equivocal results. Another study has been deemed necessary to obtain more conclusive results.

A previous cross-sectional medical study by Dr. Stephen Ayres has shown that toll collectors of the Triborough Bridge and Tunnel Authority (TBTA) occupationally exposed to carbon monoxide at levels averaging 63 ppm, have an increased risk of bonchitis among other diseases. Based on his analysis, Ayres predicted that these workers would have a life expectancy 5-10 years less because of their occupational exposure.

A retrospective cohort mortality study is being conducted on all persons employed by the TBTA between January 1952 and February 1981 to verify Ayres' conclusion (about 6,000 individuals). Many of the individuals who have worked for the TBTA have been employed for 10-15 years. This will allow analysis based upon length, as well as amount of exposure. Demographic and work history information is 100% complete and vital status ascertainment is about 90% complete. Current environmental personal and area sampling will be conducted to assess carbon monoxide, as well as other potentially hazardous agents in automotive exhaust.

PROJECT TITLE: Mortality and Industrial Hygiene Study of Workers Exposed to Lead Chromate Paints (C)

To evaluate the long-term health effects, in particular mortality from lung and other respiratory cancers, of exposure to paints containing lead chromate pigments, the National Institute for Occupational Safety and Health is proposing to conduct retrospective cohort mortality and retrospective industrial hygiene studies at three Midwest farm implement construction facilities. The mortality study will include a cohort of approximately 2,200 painters employed at the three plants from 1940-1982. Historical exposures of painters to lead chromate will be estimated based on industrial hygiene records, engineering drawings, histories of paint usage, and the collective memories of long-term employees as outlined in the protocol. To the extent feasible, the information will be used to analyze health outcomes in sub-groups within the overall cohort, and develop dose-response information. It is proposed that the mortality study be conducted under contract, while the exposure assessments be carried out in-house.

PROJECT TITLE: Mortality and Industrial Hygiene Study of Workers Exposed to Sulfuric Acid (L)

This project is a historical prospective mortality study of workers exposed to sulfuric acid mist. Although the acute dangers of sulfuric acid are well recognized, (orneal injuries and mucous membrane irritation), the only chronic effects documented to date are corrosion of tooth enamel and possibly laryngeal cancer. There have been very few epidemiological studies of sulfuric acid exposed workers, however, despite the fact that about 30 million tons are produced annually in the U.S. and that about 970,000 workers have potential for exposure. The public also is exposed because sulfur dioxide, a common air pollutant, partially oxidizes in the atmosphere and in respiratory tissues converts to sulfuric acid.

Pulp facilities, sulfuric acid plants, copper sulfate processes, fertilizer plants, titianium dioxide manufacturing, cellophane manufacturing, battery plants, and pickling operations in the steel industry have all been considered for study, and it has been concluded that pickling offers the best combination of number of workers and substantive (and relatively pure) exposure. Data collection has been conducted at three steel manufacturing plants by the project contractor, Enviro Control, Inc. Industrial hygiene aspects may be conducted by NIOSH at the one plant still using sulfuric acid.

PROJECT TITLE: Mortality and Industrial Hygiene Study of Workers Exposed to Tetraethyl Lead (C)

A report of three cases of multiple myeloma among male workers involved in the production of tetraethyl lead (TEL) prompted the conduct of a retrospective cohort mortality study of all employees at a single TEL manufacturing unit in Houston, Texas. TEL has been manufactured since the early part of the 20th century; its acute affects are well known, yet, its chronic affects are little known. The cohort study will evaluate the mortality experience of 2,200 male workers, employed for one year between 1952 and 1977, who were potentially exposed to TEL during their employment. Of the 195 deaths, 95% of the death certificates have been ascertained and preliminary data analysis has begun. In FY'83, the project will be concluded and the final report will be submitted to the Director, NIOSH.

PROJECT TITLE: Mortality and Industrial Hygiene Study of Workers Exposed to Toluene (C)

Recently toluene has received much attention for its potential long-term health effects due to occupational exposure. TSCA (Toxic Substances Control Act) and CIIT (Chemical Industry Institute for Toxicology) have listed toluene as a first priority for study.

Toluene is a chemical of major use in industry today. In 1970, it was estimated that 694 million gallons of toluene were produced and approximately 100,000 workers were exposed. Toluene has become a major substitute for benzene in many industrial processes.

The current federal standard is 200 ppm as an 8-hour TWA, however, controlled exposures to human subjects of 200 ppm for 8 hours produce mild fatigue, weakness, confusion, and paresthesia.

Two shoe plants (SIC-3144 - Women's Shoes) have been chosen for study with a combined total of about 10,000 workers. Demographic and work history data have been coded and follow-up to ascertain vital status of cohort members is underway and almost complete.

PROJECT TITLE: Mortality Study of Chemical Plants in Kanawha Valley, WV (C)

In 1979, NIOSH and Union Carbide announced their decision to sponsor jointly a historical cohort mortality study of 44,000 Union Carbide employees at three chemical plants in the Kanawha River Valley region of West Virginia. The three Union Carbide plants in this study represent the oldest and one of the largest petrochemical plants in the United States. These plants have produced a large array of chemicals, many of which are used in the Union Carbide Texas City plants that have been associated with an excess risk of brain cancer among its employees.

Initial analyses will attempt to test the apparent excess proportions of multiple myeloma and cancer of the brain and kidney at the Kanawha Valley plants. These excesses were revealed by a company-sponsored proportionate mortality study based on 819 deaths known to Union Carbide. One of the chemical exposures experienced by the Kanawha Valley workforce is ethylene oxide (EtO). Ethylene oxide is considered a suspect carcinogen. Exposure of laboratory animals to 33 and 100 ppm of EtO over a two-year period caused mononuclear cell leukemia and peritoneal mesothelioma in rats; other studies have shown cellular genetic changes in at least 13 biological species.

In addition to analyses of EtO exposure, persons with polycyclic aromatic hydrocarbons exposure experienced at a coal hydrogenation process, will be analyzed. Exposures to these compounds have been associated with cancer of the respiratory system, congenital system, and skin.

The cohort has been coded onto the computer and vital status follow-up should be completed during FY'84.

PROJECT TITLE: Registry of Dioxin Workers (C)

The Dioxin Registry of the National Institute for Occupational Safety and Health (NIOSH) is a registry of United States production workers who were potentially exposed to dioxin during the synthesis or formulation of substances contaminated with dioxin. These substances include trichlorophenol, 2,4,5-trichlorophenoxy acetic acid, and pentachlorophenol.

The Registry data will be used initially to conduct a retrospective cohort mortality study, and the workers will then be followed prospectively. A subcohort of workers with diagnosed or possible chloracne will be identified and considered a definite exposure group. After data collection has been completed, an evaluation will be made to determine whether the cohorts can be utilized for studies of morbidity or reproductive outcomes.

As of October 1, 1983, 12 sites have been identified as suitable for inclusion in the Registry. Data collection has been completed at all ten 2,4,5-T and trichlorophenol sites. The decision to include two pentachlorophenol production facilities was made in FY'83. Records will be collected in FY'84. About 5,000 workers have been identified. Standard methods of follow-up are being used to determine their vital status. The anticipated completion date for the study is mid-1985.

PROJECT TITLE: Update of Completed Cohort Mortality Studies

The Industrywide Studies Branch (IWSB) has completed a number of retrospective cohort mortality studies during the past few years, many of which lacked conclusive results. The primary reasons for inconclusive results are too few deaths (low statistical power) and a short follow-up period (resulting in a short latency period). Thus, many of the original hypotheses that were tested by these studies remain unresolved questions. Examples of such studies include workers exposed to PCB's, perchloroethylene, chlorinated hydrocarbon pesticides, and styrene butadiene rubber. These cohorts are being followed through the latest possible date. The additional death information is being added to the file, and the life table analysis will be rerun.

Additional studies will be selected based on the length of time since the last follow-up, the adequacy of the current data to validly address the hypothesis, and the current interest or priority of the study.

PROJECT TITLE: Uranium Miners - Low Dose Study (L)

Since the early 1950's, NIOSH and its predecessors have been studying a cohort of 4,000 uranium miners to determine the adverse health effects of radon daughters and other exposures. Dose-response relationships between radon daughters exposures and lung cancer have been established and used to set federal regulations. Data points for the dose-response curve in the area of low doses (i.e., less than 120 WLM) are however, still needed for this cohort and for radiation carcinogenesis in general.

NIOSH in collaboration with NCI, intends to update the work and smoking histories of this cohort through 1982 (last update was through 1969) and to extend the vital status follow-up through 1982 (last follow-up through 1977). This updating and follow-up will allow NIOSH to finalize the occupational exposures for virtually all of the cohort and to extend the median period of observation to about 27 years.

In FY'83, vital status follow-up through the Social Security Administration and Internal Revenue Service was completed. The study protocol and a draft of the questionnaire were completed and underwent peer review and the necessary clearances. The contract to administer the questionnaire for work and smoking histories was awarded. In FY'84, the vital status follow-up will be completed. Also, the exposure data will be collected, verified and computerized. This project is important to NIOSH's efforts: (1) to evaluate the current standard for radon daughter exposures; and (2) to assess health implications of energy industries. As nuclear energy plays a larger role worldwide, more and more workers in the U.S. and abroad will be involved in these industries.

INDUSTRYWIDE STUDIES PROGRAM
PUBLICATIONS AND SPEECHES - FY'83

PUBLICATIONS

Acquavella, J., Wiggs, L., Waxweiler, R., Macdonell, D., and Wilkinson, G.
Supplementary Documentation for an Environmental Impact Statement Regarding the Pantex Plant - Occupational Work Force Mortality Study (LA-9445-PNTX-Q). Los Alamos National Laboratory, Los Alamos, New Mexico, 16 pages, December 1982.

Alcarese, A., and Reisdorf, R.
Industrial Hygiene Characterization of Urea Formaldehyde and Polyurethane Foam Insulation. DHHS (NIOSH) 83-108, 130 pages, April 1983.

Beaumont, J., and Weiss, N.
Chromium and Asbestos As Two Probable Risk Factors in Lung Cancer Among Welders (Letter-to-the-Editor). J. of Occ. Med. 24(11):874, November 1982.

Blade, L.
Formaldehyde: Toxicology and Epidemiology Mechanisms. Chapter 1, Occupational Exposures to Formaldehyde - Recent NIOSH Involvement. Proceedings of Formaldehyde Toxicity - 1982 Update, edited by J. Clary, J. Gibson, R. Waxitz. Marcel Dekker, New York, New York, 1983.

Brown, D., Dement, J., and Beaumont, J.
The Toxicity of Upstate New York Talc (Letter-to-the-Editor). J. of Occ. Med. 25(3):178-181, March 1983.

Fajen, J., Lemen, R., et al.*
IARC Monograph on the Evaluation of the Carcinogenic Risk of Chemicals to Humans - Miscellaneous Pesticides. Vol. 30, International Agency for Research on Cancer, Lyon France, March 1983.

Fingerhut, M., and Halperin, W.
Dioxin Exposure and Sarcoma (Letter-to-the-Editor). JAMA 249(23):3176-3177, June 17, 1983.

Futagaki, S.
Petroleum Refinery Workers Exposure to PAHs at Fluid Catalytic Cracker, Coker, and Asphalt Processing Units. DHHS (NIOSH) 83-111, 207 pages, May 1983.

Gordon, J., and Meinhardt, T.
Spontaneous Abortions in Hospital Sterilizing Staff (Letter-to-the-Editor). British Medical Journal 286:1976, June 18, 1983.

* Only NIOSH authors are indicated.

Halperin, W., Goodman, M., Stayner, L., Elliott, L., Keenlyside, R., and Landrigan, P.
Nasal Cancer in a Worker Exposed to Formaldehyde. JAMA 249(4):510-512, January 28, 1983.

Johnson, B., Boyd, J., Burg, J., Lee, S., Xintaras, C., and Albright, B.
Effects on the Peripheral Nervous System of Workers' Exposure to Carbon Disulfide. Neurotoxicology 4(1):53-66, 1983.

Ludwig, H., Mesiter, M., Roberts, D. and Cox, C.
Worker Exposure to Perchloroethylene in the Commercial Dry Cleaning Industry. Am. Indust. Hyg. Assoc. J. 44(8):600-605, August 1983.

Meinhardt, T., Lemen, R., Crandall, M., and Young, R.
Environmental Epidemiologic Investigation of the Styrene-Butadiene Rubber Industry: Mortality Patterns With Discussion of the Hematopoietic and Lymphatic Malignancies. Scand. J. of Work, Envir. and Health 8:250-259, December 1982.

Putz-Anderson, V., Albright, B., Lee, S., Johnson, B., Chrislip, D., Tayler, B., Brightwell, W., Dickerson, N., Culver, M., Zentmeyer, D., and Smith, P.
A Behavioral Examination of Workers Exposed to Carbon Disulfide. Neurotoxicology 4(1):67-78, 1983.

Reeve, G., Bond, G., Lloyd, J., Cook, R., Waxweiler, R., and Fishbeck, W.
An Investigation of Brain Tumors Among Chemical Plant Employees Using a Sample-Based Cohort Method. J. Occ. Med. 25(5):387-393, May 1983.

Rinsky, R.
More on Direct Estimates of Low-Level Radiation Risks. Yale Journal of Biology and Medicine 55:405-407, 1982.

Rinsky, R., and Landrigan, P.
Data on Lung Cancer in Radiation Workers (Letter-to-the-Editor). J. of the Royal Society of Medicine 76:324-325, April 1983.

Rosenberg, M.
Vital Strategies for Reproductive Health Protection. Proc: First National Conference on Hospital Employee Health. American Health Consultants, Atlanta, Georgia, pp. 301-310, 1983.

Rounbehler, D., and Fajen, J.
N-Nitroso Compounds in the Factory Environment, DHHS (NIOSH) 83-114, 204 pages, June 1983.

Saltsman, T. and Cox, C.
Commerical Dry Cleaning Worker Exposure to Perchloroethylene. The National Clothesline, 6, March 1983.

Todd, A., and Timbie, C.
Industrial Hygiene Surveys of Occupational Exposures to Wood Preservative Chemicals. DHHS (NIOSH) 83-106, 92 pages, February 1983.

Tanaka, S., Smith, A., Halperin, W., and Jensen, R.
Carpet-Layer's Knee (Letter-to-the-Editor). N.E.J. of Med. 307(20):1276-77, November 11, 1982.

Waxweiler, R., Alexander, V., Leffingwell, S., Haring, M., and Lloyd, J.
Mortality From Brain Tumors and Other Causes in a Cohort of Petrochemical Workers. J. Nat. Cancer Inst. 70(1):75-81, January 1983.

Waxweiler, R., Archer, V., Roscoe, R., Watanabe A., and Thun, M.
Mortality Patterns Among a Retrospective Cohort of Uranium Mill Workers. Proc: Health Physics Society Mid-Year Symposium on Epidemiology. Rio Grande Chapter of the Health Physics Society, Albuquerque, New Mexico, pp. 428-435, 1983.

Waxweiler, R., Beaumont, J., Henry, J., Brown, D., Robinson, C., Ness, G., Wagoner, J., and Lemen, R.
A Modified Life Table Analysis System for Cohort Studies. J. of Occ. Med. 25(2):115-124, February 1983.

Waxweiler, R., and Robinson, C.
Asbestos Exposure and Non-Hodgkin's Lymphoma (Letter-to-the-Editor). Lancet, 189-190, January 22, 1983.

CDC MORBIDITY AND MORTALITY WEEKLY REPORT

Worker Exposure to Perchloroethylene in Commercial Dry-Cleaning Operations - United States. MMWR, 32(2):269-271, 1983.

COMPLETED REPORTS SUBMITTED TO NIOSHTIC AND NTIS - NOT PUBLISHED ELSEWHERE

Elliott, L., Carson, G., Pauker, S., West, D., Wallingford, K., and Greife, A.
Industrial Hygiene Characterization of Commercial Applications of Genetic Enginering and Biotechnology. (DSHEFS Internal Report), 35 pages, September 1983.

Jones, J. and Slovin, D.
Investigation of Potential Hazards in the Rhode Island Jewelry Industry. (DSHEFS Internal Report), 28 pages, April 1983.

Leffingwell, S., Robinson, C., Lee, S., Ditzel, C., Hornung, R., Cottrill, C., Stephenson, F. and Halperin, W.
Women Pharmaceutical Workers and Adverse Reproductive Outcomes. (DSHEFS Internal Report), 26 pages, June 1983.

Nicholson, W., et al.
Investigation of health Hazards in Brake Lining Repair and Maintenance Workers Occupationally Exposed to Asbestos (NIOSH Contract No. 210-77-0119), 130 pages, May 1983.

Ringenburg, V.
Survey Report of Triborough Bridge and Tunnel Authority, Randall's Island, New York. (DSHEFS Internal Report), 97 pages, May 1983.

Roberts, D.
Summary Report - NIOSH-EPA Interagency Agreement for the Assessment of Human Health Effects from Exposure to Di-2-(Ethylhexyl Phthalate) (DSHEFS Internal Report), 13 pages, April 1983.

Roberts, D., and Zumwalde, R.
Industrial Hygiene Summary Report of Asbestos Exposure Assessment for Brake Mechanics. (DSHEFS Internal Report), 39 pages, November 1982.

Selevan, S., Hornung, R., Fajen, J., and Cottrill, C.
Paternal Exposure to Carbon Disulfide and Spouses Pregnancy Experience. (DSHEFS Internal Report), 44 pages, July 1983.

Stayner, L., Meinhardt, T., Lemen, R., Bayliss, D., Herrick, R., Reeve, G., Smith, A., and Halperin, W.
A Retrospective Cohort Mortality Study of a Phosphate Fertilizer Production Facility. (DSHEFS Internal Report), 25 pages, July 1983.

Todd, A.
Industrial Hygiene Assessment of New Agents III: Agent III - Paraquat. (NIOSH Contract 210-78-0060), 60 pages, May 1983.

APPROVED FOR PUBLICATION (IN PRESS)

Albert, D., Egan-Baum, E., and Smith, A.
Ocular Melanomas in Chemical Workers (Letter-to-the-Editor). Am. J. of Opthalmology.

Bernstein, R., Stayner, L., Elliott, L., Falk, H., and Kimbrough, R.
Exposures to Formaldehyde Gas: Facts in Toxicity and Epidemiology and Dilemmas in Control Measures. J. Am. Public Health Assoc.

Bond, G., Reeve, G., Ott, M., and Waxweiler, R.
Mortality Among a Sample of Chemical Company Employees, J. of Occ. Med.

Greenburg, E., Rosner, B., Hennekens, C., Rinsky, R., and Colton, T.
An Investigation of Bias in a Study of Nuclear Shipyard Workers. American J. of Epidemiology.

Haring, M., Walrath, J., and Waxweiler, R.
Mortality Among Retired Fur Workers: Dyers, Dressers (Tanners) and Service Workers. Am. J. of Epid.

Landrigan, P., Meinhardt, T., Gordon, J. and Lipscomb, J.
Overview of Toxicologic and Epidemiologic Research on Ethylene Oxide. Am. J. of Ind. Medicine.

Leffingwell, S., Waxweiler, R., Alexander, V., Ludwig, H., and Halperin, W.
Case-Control Study of Brain Cancers Among Workers Employed by a Texas City, Texas Chemical Plant. (Journal Unknown)

Ratcliffe, J.
Altered Fertility. WHO Monograph on Occupational Reproductive Health.

Rosenberg, M.
Workshop F: Reproductive Epidemiology: What Are the Problems in Methodology. Proc.: Symposium on Reproductive Policies in the Workplace. University of Pittsburgh School of Medicine and the Graduate School of Public Health and Family Planning Council of Western Pennsylvania, Inc.

Rosenberg, M., and Halperin, W.
The Role of Surveillance in Monitoring Reproductive Health. In, Environmental Influences on Fertility, Pregnancy and Development, edited by M. Rosenberg, H., Zenick, H., and M. Legator. Alan Liss, New York, New York.

Samet, J., Kutvirt, D., Waxweiler, R., and Key, C.
Uranium Mining and Lung Cancer in Navajo Males. New England J. of Med.

Selevan, S.
Design of Pregnancy Outcome Studies of Industrial Exposures. In, Occupational Hazards and Reproduction, edited by K. Hemminiki, M. Sorsa, and H. Vanio, Hemisphere Publishers.

Smith, A., and Brown, D.
Polychlorinated bipheryls in the Workplace. In, PCBs and the Environment.

Smith, A., Tanaka, S., Halperin, W.
Correlates of Ocular and Somatic Symptoms Among Video Display Terminal Users. J. of Human Factors.

Steenland, K., and Beaumont, J.
The Accuracy of Occupation and Industry Data on Death Certificates. Am. J. of Epid.

Steenland, K., Beaumont, J., and Hornung, R.
The Use of Regression Analyses in a Cohort Mortality Study of Welders. J. of Occ. Med.

Taylor, P., Lawerence, C., Hwang, H., and Paulson, A.
Polychlorinated Biphenyls: Influence on Birthweight and Gestational Age. Scand. J. of Work, Env. and Health.

Thun, M., Steenland, K., Smith, A., and Halperin, W.
An Investigation of Renal Toxicity in Uranium Mill Workers. Scand. J. of Work, Envir. and Health.

SPEECHES

Beaumont, J.
Cancer Mortality at a Naval Shipyard. 16th Midyear Topical Meeting, Epidemiology Applied to Health Physics. Albuquerque, N.M., January 1983.

Beaumont, J.
Cancer and Other Causes of Death Among Styrene Boat Builders. Symposium on Health in the Boat Building Industry - Recognition and Control Strategies. Marine Health Services, Inc., Castine, Maine, August 1983.

Beaumont, J.
Methodologic Issues in Measuring Occupational Exposurer. Society for Epidemiologic Research, Winnepeg, Canada, June 1983.

Blade, L.
Formaldehyde Exposure in the Garment-Manufacturing Industry (Poster Session). American Industrial Hygiene Conference, Philadelphia, Pennsylvania, May 1983.

Blade, L.
Occupational Exposures to Formaldehyde - Recent NIOSH Involvement. Formaldehyde Institute's Conference on Formaldehyde Toxocity - 1982 Update, Washington, D.C., November 1982.

Bloom, T.
Radon Daughter Surveys in Foundries Using Zirconium Sand as a Molding Agent (Poster Session). American Industrial Hygiene Conference, Philadelphia, Pennsylvania, May 1983.

Brown, D.
The Role of the Epidemiologist. Tennessee Valley Section of AIHA, Nashville, Tennessee, October 1982.

Clapp, D.
Analyses of Industrial Hygiene Field Data Using a Microcomputer Coupled to a Miniframe Computer. American Industrial Hygiene Conference, Philadelphia, Pennsylvania, May 1983.

Clapp, D.
Glycol Ethers - Searching for a Cohort. NIOSH Symposium of Toxic Effects of Glycol Ethers, Cincinnati, Ohio, September 1983.

Clapp, D.E.
Microcomputers in Industrial Hygiene. Iowa-Illinois Local Section of AIHA, Iowa City, Iowa, February 1983.

Cox, C.
Confounding Exposures at VDT Operations. Ashland Oil Video Display Terminal Seminar, Ashland, Kentucky, December 1982.

Cox, C.
Occupational Exposures During the Turnaround of a Thermal and a Fluid Catalytic Cracking Unit (Poster Session). American Industrial Hygiene Conference, Philadelphia, Pennsylvania, May 1983.

Crandall, M.
Styrene Exposure in the Reinforced Boat Making Industry. Symposium on Health in the Boat Building Industry - Recognition and Control Strategies. Marine Health Services, Inc., Castine, Maine, August 1983.

Fajen, J.
Summary Report on N-nitrosamines in the Factory Environment. United Rubber Workers National Conference on the Recognition and Prevention of Occupational Cancer Among Workers. St. Louis, Missouri, July 1983.

Fajen, J.
Summary Report on N-nitrosamines in the Factory Environment. URW 1983 Labor Management Symposium on Recognition and Prevention of Cancer Among Workers, Akron, Ohio, August 1983.

Fajen, J.
In-depth Industrial Hygiene Survey for CS_2 at a Synthetic Fiber Plant (Poster Session). American Industrial Hygiene Conference, Philadelphia, Pennsylvania, May 1983.

Fingerhut, M.
Dioxin Registry - An Update. VA Advisory Committee on Health-Related Effects of Herbicides, Washington, D.C., February 1983.

Fingerhut, M.
The NIOSH Dioxin Registry. American Industrial Hygiene Association Local Meeting, Cincinnati, Ohio, September 1983.

Fingerhut, M.
The NIOSH Dioxin Registry. Illinois Agent Orange Study Commission, Washington, D.C., February 1983.

Fingerhut, M.
Phenoxy Herbicides, Chlorophenols and Soft Tissue Sarcoma. Symposium on Dioxin. St. Louis Medical Center, St. Louis, Missouri, January 1983.

Halperin, W.
Medical Screening in the Workplace: Proposed Principles. ACGIH Conference on Computerized Occupational Health Record Systems. Memphis, Tennessee, March 1983.

Halperin, W.
Medical Screening in the Workplace: Proposed Principles. APHA Conference, Montreal, Canada, November 1982.

Hills, B.
Health Hazard Assessment Study of the Leather Tanning Industry (Poster Session). American Industrial Hygiene Conference, Philadelphia, Pennsylvania, May 1983.

Landrigan, P.
Overview of Toxicologic and Epidemiologic Research on Ethylene Oxide. Occupational Hazards to Health Care Workers. Research and Prevention Conference, Seattle, Washington, May 1983.

Landrigan, P.
Overview of the Health Hazards in Boat Building. Symposium on Health in the Boat Building Industry - Recognition and Control Strategies. Marine Health Services, Inc., Castine, Maine, August 1983.

McCammon, C.
Final Results of Occupational Exposures in Automotive Wood Model Shops (Poster Session). American Industrial Hygiene Conference, Philadelphia, Pennsylvania, May 1983.

Ratcliffe, J.
Altered Fertility. WHO Working Group Meeting on Occupational Reproductive Health, Thilisi, Russia, April 1983.

Ratcliffe, J.
Effects of the Environment on the Pregnant Woman. 7th Annual Air Force Nurse Practitioners Symposium, Dayton, Ohio, June 1983.

Ratcliffe, J.
Medical Screening in the Workplace. CDC Epidemic Intelligence Service Conference, Atlanta, Georgia, April 1983.

Reeve, G.
Cardiovascular Disease Mortality Among Nitroglycerin-Exposed Munition Workers. CDC Epidemic Intelligence Service Conference, Atlanta, Georgia, April 1983.

Reeve, G.
Cardiovascular Disease Mortality Among Nitroglycerin-Exposed Munition Workers. Society for Epidemiologic Research, Winnepeg, Canada, June 1983.

Rinsky, R.A.
Leukemia in Benzene Workers. Monsanto Seminar, Mound Facility, Dayton, Ohio, February 1983.

Robinson , C.
Mortality Among Production Workers in Pulp and Paper Mills. Society for Epidemiologic Research, Winnipeg, Canada, June 1983.

Roscoe, R.J.
Morbidity Follow-up Through 1977 of the White Underground Uranium Miners Cohort Examined by the United States Public Health Service. 16th Midyear Topical Meeting. Epidemiology Applied to Health Physics, Albuquerque, N.M., January 1983.

Rosenberg, M.
Reproductive Issues - VDT's. Ahsland Oil Video Display Terminal Seminar, Ashland, Kentucky, December 1982.

Rosenberg, M.
Reproductive Surveillance. Reproduction - the New Frontier in Occupational and Environmental Health Research, University of Utah Rocky Mountain Center for Occupational and Environmental Health, Salt Lake City, Utah, April 1983.

Selevan, S.
Characterizing Exposure and Linkage With Reproductive Outcomes. Reproduction - the New Frontier in Occupational and Environmental Health Research, University of Utah Rocky Mountain Center for Occupational and Environmental Health, Salt Lake City, Utah, April 1983.

Selevan, S.
Research on Occupational Reproductive Hazards. University of Michigan/Michigan State Chamber of Commerce Management Briefing Seminar, Traverse City, Michigan, July 1983.

Selevan, S.
Use of Questionnaries in Research on Pregnancy Outcomes in Occupational Seetings. Exxon Seminar on Reproductive Risk Epidemiology. East Millstone, New Jersey, December 1982.

Selevan, S.
Validation of Interview Data on Pregnancy Outcomes and Occupational Exposures. APHA Conference, Montreal, Canada, November 1982.

Selevan, S.
Validation of Interview Data on Pregnancy Outcomes and Occupational Exposures. CDC Epidemic Intelligence Service Conference, Atlanta, Georgia, April 1983.

Smith, A.
Occupational Exposures to Polychlorinated Biphenyls. Third Safety and Health Conference. International Association of Machinists and Aerospace Workers, Washington, D.C., May 1983.

Tanaka, S.
Carpet Installer's Knee. NIOSH Workshop on the Chronic Effects of Repeated Trauma to the Skin, Cincinnati, Ohio, April 1983.

Ward, E.
Chlorinated Naphthalene Exposure and Soft Tissue Sarcoma. CDC Epidemic Intelligence Service Conference, Atlanta, Georgia, April 1983.

Waxweiler, R.
Preliminary Assessment of Mortality Patterns Among a Retrospective Cohort of Uranium Mill Workers. 16th Midyear Topical Meeting. Epidemiology Applied to Health Physics, Albuquerque, N.M., January 1983.

Zaebst, D.
Occupational Exposure to Estrogens: Results of a Pilot Study (Poster Session). Symposium on Health in the Boat Building Industry - Recognition and Control Strategies. Marine Health Services, Inc., Castine, Maine, August 1983.

Zaebst, D.
Occupational Exposure to Estrogens: Results of a Pilot Study (Poster Session). American Industrial Hygiene Conference, Philadelphia, Pennsylvania, May 1983.

HEALTH HAZARD EVALUATION PROGRAM

(CONTACT PERSON - JAMES M. MELIUS, M.D. - 513-684-4382)

HEALTH HAZARD EVALUATION PROGRAM
HIGHLIGHTS - FY'83

The purpose of this Program area is to respond to general industry requests (i.e., excluding mining and milling activities) for assistance from employers, employees, employee representatives, other Federal agencies and State and local agencies. These requests result in (a) an evaluation of whether or not chemical, biological, or physical agents are hazardous as used or found in the workplace, and (b) recommendations for control procedures, improved work practices, and medical screening to reduce exposure levels and subsequent health effects. This Program is conducted pursuant to Section 20(a)(6) of the Occupational Safety and Health Act. Expenditures for this Program amounted to 2.7 million dollars and accounted for 76 person-years of research effort. In addition to DSHEFS staff, approximately 15 person-years of industrial hygiene support were provided to the Program from NIOSH's 10 Regional Offices.

During FY'83, NIOSH received 465 general industry requests for a Health Hazard Evaluation and Technical Assistance (HETA) pursuant to the OSH Act. This was a 16% increase as compared to FY'82, when 400 requests were received. Most of the increase was in requests from Federal, State, and local government agencies. Table 1 shows the breakdown of requests by type of requestor, Table 2 presents the geographical distribution of the requests, and Table 3 lists recent HETA's of occupational health research interest.

During FY'83, 435 site visits were conducted and 460 HETA's were completed (as compared to 464 in FY'82). These completions included 183 final reports, 180 letter reports (most after a site visit), and 97 other close outs. (This segregating of requests was designed to assure that more important requests receive significantly more attention.) The average completion time for a final report was 12.0 months (partially due to an emphasis on clearing the backlog of older requests). However, the overall median completion time (including letter reports) was only 6.0 months. In addition, frequent interim reports and letters are sent out during the course of all evaluations.

The Program also increased work with state and local health departments. During FY'83, 35 Health Hazard Evaluation requests were received from these agencies, and over 8 joint site visits were conducted (on other requests). Through July 1983, third-year Epidemiologic Intelligence Service (EIS) Officers were assigned (one each) to the Washington and Virginia State Health Departments, and in July 1983 a NIOSH EIS Officer was assigned to the California State Health Department.

Dissemination Efforts

Examples of some important HETA findings from FY'83 that were disseminated beyond the plant of interest were:

1. Silicosis in foundries*
2. PCB transformer fires
3. Indoor air pollution ("stuffy office syndrome")
4. Psychogenic illness*
5. Phototoxic dermatitis*
6. Hazardous waste dumps
7. Electrocution deaths among farm workers*
8. Noise-induced hearing loss in fire fighters*
9. Formaldehyde in anatomy labs*
10. Respiratory illness among carpet cleaners*
11. DDT exposures in museum workers*
12. Reducing lead exposures in firing ranges*
13. PAH exposures in roofing operations
14. Arsenic contamination of buildings*

*Includes publication of an article in the CDC Morbidity and Mortality Weekly Report (MMWR)

Dissemination efforts (which are detailed in the Publications Section) included eleven CDC Morbidity and Mortality Weekly Report articles, one internal report (CDC EPI Aid-2), five published articles and ten reports approved for publication. Also, 38 speeches were presented.

The following are several other important findings in HETA's completed during FY'83:

Pulmonary

In addition to an MMWR article on silicosis in foundry workers, an evaluation of workers exposed to petroleum coke found evidence of pulmonary function changes in these workers. Several active Health Hazard Evaluations are under way concerning occupational asthma, including one on workers exposed to MDI at a foundry and two on workers exposed to a plaster blowing agent in molding operations.

PCB Transformer Fires

The results of several evaluations of the hazards from PCB transformer fires were publicized. Evaluations of transformer incidents in Binghamton, New York; San Francisco, California; Chicago, Illinois; Boston, Massachusetts; St. Paul, Minnesota; and Miami, Florida; are currently under way, and a joint Current Intelligence Bulletin with DSDTT is currently being drafted.

Construction Industry

Significant exposure risks for construction and maintenance employees were evaluated in several Health Hazard Evaluations. Several studies of roofing workers exposed to polynuclear aromatic hydrocarbons were conducted, and exposures to solvents during the installation of plastic pipe were evaluated among plumbers. Also, significant sulfur exposures were found for road construction workers using asphalt mixed with sulfur.

Pesticides

Cotton gin workers were found to have significant pesticide exposures in a Health Hazard Evaluation conducted in Arizona, while dermatitis was found in workers exposed to pesticides at a mushroom cultivation facility in California. Museum workers in Denver were found to be exposed to DDT when handling specimens shipped from Africa in the 1960's.

Hospital Workers

Significant exposures to formaldehyde were found for workers in hospital histology laboratories and renal dialysis units, and a high prevalence of dermatitis was found among housekeeping workers using phenolic cleaning agents.

Hazardous Materials

As part of an Interagency Agreement with the Environmental Protection Agency (EPA), evaluations of exposures at several hazardous waste facilities were conducted in FY'83. Consultation was provided at approximately 25 other industrial sites where dioxin contamination has been found. A study of health effects following a chemical plant explosion in Mississippi was also completed. In addition, several other studies of fire fighters exposed at hazardous waste spills or fires are currently under way.

Other

Other important evaluations included: the finding of persistent liver function abnormalities among workers at a chemical plant; the finding of high exposures to respirable particulate among workers at a facility using refuse-derived fuel; and an evaluation of solvent exposure at a shoe manufacturing facility in Minnesota.

Worker Notification Pilot Study

In FY'83, NIOSH issued an interim report demonstrating an excess risk for bladder cancer (maximum risk ratio of 111) in the Augusta cohort. The impact was found to be extensive. It involved workers' families, litigation and subsequent Freedom of Information requests, and coverage in the media. Currently, follow-up screening is being conducted, additional data are being analyzed, and recommendations for ongoing surveillance, based on epidemiologic

characteristics, are being developed. This study was also the impetus for the development of exploratory papers, submitted for publication, on the public health framework for worker notification and suggested criteria for determining when notification is warranted.

Table 1

HETA Requests for FY'82 and '83
by Type of Requestor

REQUESTOR	FY'82		FY'83	
	#	%	#	%
Employer	80	20.0	101	21.7
Employee/Union	195	48.8	167	35.9
Federal Agency	52	13.0	83	17.8
OSHA TA	7	1.8	3	0.6
CDC TA	2	0.5	22*	4.7
State and Local Governments	57	14.3	78**	16.8
Other	7	0.5	11	2.4
Total	400		465	

*Includes Superfund consultations through CEH
**Includes 35 requests from state and local health departments

Table 2

HETA Requests for FY'83

by State

Region	State	Number
I	Connecticut	6
	Maine	4
	Massachusetts	11
	New Hampshire	2
	Rhode Island	1
	Vermont	1
II	New Jersey	20
	New York	31
	Puerto Rico	1
III	District of Columbia	15
	Delaware	1
	Maryland	6
	Pennsylvania	35
	Virginia	8
	West Virginia	24
IV	Alabama	4
	Florida	11
	Georgia	14
	Kentucky	10
	Mississippi	1
	North Carolina	5
	South Carolina	2
	Tennessee	5
V	Illinois	9
	Indiana	15
	Michigan	8
	Minnesota	2
	Ohio	81
	Wisconsin	6
VI	Arkansas	1
	Louisiana	4
	New Mexico	1
	Oklahoma	4
	Texas	8

Table 2 (Continued)

HETA Requests for FY'83

by State

Region	State	Number
VII	Iowa	1
	Kansas	1
	Missouri	27
	Nebraska	4
VIII	Colorado	27
	Montana	2
	North Dakota	2
	South Dakota	1
	Utah	1
	Wyoming	1
IX	Arizona	7
	California	23
	Hawaii	0
	Nevada	0
X	Idaho	0
	Oregon	5
	Washington	6
	Alaska	0

Table 3

Recent HETA's of Occupational Health Research Interest

81-043-1207	Refrigeration Company Provo, Utah	Evaluation of possible peripheral neuropathy among refrigeration workers (Toxicity Determination: -)
80-245-1210	Colorado River Gin Poston, Arizona	Evaluation of exposures to cotton dust, noise, and pesticides at a cotton gin (Toxicity Determination: +)
82-089-1213	Centers for Disease Control Atlanta, Georgia	Cluster of miscarriages among laboratory workers (Toxicity Determination: 0)
80-197-1215	The Geyser Power Plant Walnut Creek, California	Eye irritation and dermatitis among workers at a thermal electric facility (Toxicity Determination: -)
81-283-1224	Southern Minnesota Beet Sugar Corp. Renville, Minnesota	Evaluation of exposures to formaldehyde and welding fumes at a sugar beet processing facility (Toxicity Determination: +)
81-322-1228	Mylan Pharmaceutical Morgantown, West VIrginia	Diuretic exposures at a pharmaceutical facility (Toxicity Determination: -)
81-455-1229	Red Wing Shoe Co. Red Wing, Minnesota	Evaluation of solvent exposures at a shoe manufacturing facility (Toxicity Determination: +)
82-156-1231	Sheller-Globe Corporation Keokuk, Iowa	Evaluation of nitrosamine exposures during the manufacture of rubber products (Toxicity Determination: +)
82-264-1232	Olympic Medical Laboratories Bremerton, Washington	Evaluation of formaldehyde exposures in a histopathology laboratory (Toxicity Determination: +)
82-200-1233	Todd Uniform Maury City, Tennessee	Dermatitis and eye irritation among workers at a garment plant (Toxicity Determination: +)

Table 3 (Continued)

Recent HETA's of Occupational Health Research Interest

82-242-1234	Olympic Peninsula Kidney Center Bremerton, Washington	Formaldehyde exposures at a renal dialysis unit (Toxicity Determination: +)
81-336-1237	Construction Sites Boston, Massachusetts	Medical and industrial hygiene evaluation of workers installing plastic pipe (Toxicity Determination: -)
82-273-1239	Spectrum Control Fairview, Pennsylvania	Mass psychogenic illness at a manufacturing facility (Toxicity Determination: +)
82-364-1243	Ohio Thermometer Co. Springfield, Ohio	Evaluation of mercury exposures at a thermometer manufacturing facility (Toxicity Determination: +)
82-209-1245	Children's Hospital Boston, Massachusetts	Evaluation of exposures to anesthetic waste gases in a hospital operating room (Toxicity Determination: +)
82-329-1246	Social Security Administration Baltimore, Maryland	Survey of symptoms among VDT users (Toxicity Determination: +)
81-366-1248	West Foods, Inc. Ventura, California	Dermatitis due to pesticide exposure at a mushroom processing facility (Toxicity Determination: +)
81-421-1251	Great Lakes Carbon Port Arthur, Texas	Respiratory disease among workers exposed to petroleum coke (Toxicity Determination: +)
82-330-1252	Downing Displays, Inc. Cincinnati, Ohio	Evaluation of solvent exposures from screen printing (Toxicity Determination: -)
82-067-1253	Roofing site Columbus, Ohio	Evaluation of exposures during roofing tear-off (Toxicity Determination: +)

Table 3 (Continued)

Recent HETA's of Occupational Health Research Interest

82-053-1263	Bay Area Hospital Coos Bay, Oregon	Dermatitis among hospital cleaning workers exposed to phenolic cleaning agents (Toxicity Determination: +)
82-338-1266	Georgetown University Washington, D.C.	Evaluation of exposures to nitrobenzene and to pyridine at a hospital smell clinic (Toxicity Determination: +)
82-191-1267	American Air Filter St. Louis, Missouri	Acute respiratory problems among workers exposed to sulfur dioxide when cleaning a tank of acid (Toxicity Determination: +)
82-246-1275	Metal Scrap Yard Pittsburgh, Pennsylvania	Evaluation of PCB exposure at a scrap yard (Toxicity Determination: +)
82-272-1276	Boeing Vertol Company Philadelphia, Pennsylvania	Eye irritation among workers at a facility with sodium vapor lights (Toxicity Determination: -)
81-375-1277	K-P Manufacturing Company Minneapolis, Minnesota	Evaluation of carpal tunnel syndrome due to repetitive motion (Toxicity Determination: +)
82-027-1281	Denver Museum of Natural History Denver, Colorado	DDT exposure from handling stored museum specimens (Toxicity Determination: +)
82-365-1282	MGM Hotel and Casino Las Vegas, Nevada	Eye irritation and respiratory symptoms among stage workers in a show using pyrotechnics (Toxicity Determination: +)
81-409-1290	Donaldson's, Inc. Dixon, Illinois	Evaluation of peripheral neuropathy and carpal tunnel syndrome at a light manufacturing facility (Toxicity Determination: +)

Table 3 (Continued)

Recent HETA's of Occupational Health Research Interest

83-047-1295	U. of Colorado Health Sciences Center Denver, Colorado	Evaluation of exposures to xylene and formaldehyde in a histology laboratory (Toxicity Determination: +)
82-168-1302	Hubert Humphrey Building Washington, D.C.	Hypersensitivity pneumonitis among office workers (Toxicity Determination: +)
83-010-1313	Detroit Gasket Fremont, Ohio	Possible excess incidence of miscarriges among manufacturing workers (Toxicity Determination: -)
82-315-1320	Wilmington Chemical Company Wilmington, Delaware	Possible liver function abnormalities among workers at a chemical plant (Toxicity Determination: +)
81-465-1323	Hopkins Agricultural Chemical Co. Atlanta, Illinois	Evaluation of pesticide exposures at a formulation facility (Toxicity Determination: +)
83-090-1326	Fort Stanwix National Monument Rome, New York	Evaluation of exposures to pentachlorophenol (PCP) at a National Park office built from PCP-treated logs (Toxicity Determination: -)
81-274-1328	ALCOA Newburgh, Indiana	Possible excess incidence of leukemia among aluminum reduction workers (Toxicity Determination: -)
82-285-1339	MS ChemFlax Gulfport, Mississippi	Evaluation of an explosion at a chemical plant (Toxicity Determination: +)
82-223-1340	Rubbermaid, Inc. Wooster, Ohio	Evaluation of exposures from rubber molding operations (Toxicity Determination: +)
83-048-1347	National Jewish Hospital Denver, Colorado	Evaluation of exposures to formaldehyde in a physiology laboratory (Toxicity Determination: +)

Table 3 (Continued)

Recent HETA's of Occupational Health Research Interest

79-129-1350	San Francisco News Agency San Francisco, California	Evaluation of possible respiratory disease among workers at a newspaper printing facility (Toxicity Determination: -)
83-020-1351	Cornell University Ithaca, New York	Dermatitis among museum workers possibly exposed to an amine compound (Toxicity Determination: +)
82-185-1353	Markland Lock & Dam Markland, Kentucky	Possible excess incidence of skin cancer among lock workers (Toxicity Determination: +)
83-417-1357	Triangle Chemical Site Bridge City, Texas	Evaluation of worker exposures during a hazardous waste site clean-up (Toxicity Determination: 0)
82-292-1358	Road Construction Projects Wisconsin	Evaluation of exposures during asphalt paving using liquid sulfur (Toxicity Determination: +)
80-096-1359	Eureka Company Bloomington, Illinois	Respiratory disease among workers exposed to vanadium and asbestos (Toxicity Determination: +)
81-304-1361	Robertson Paper Box Company Monteville, Conneticut	Aplastic anemia possibly due to glycol ether exposure (Toxicity Determination: +)
82-201-1365	Wright-Patterson AFB Dayton, Ohio	Evaluation of exposures to refuse-derived waste at a boiler plant (Toxicity Determination: +)
81-278-1371	Warrick Generating Station Evansville, Indiana	Evaluation of exposures and possible respiratory disease among workers at a coal-fired power plant (Toxicity Determination: +)
81-112-1372	Culley Brown Electrical Gen. Station Evansville, Indiana	Evaluation of exposures and possible respiratory disease among workers at a coal-fired power plant (Toxicity Determination: +)
82-377-1376	D & F Corporation Warren, Michigan	Dermatitis and eye irritation among workers exposed to fibrous glass and epoxy resins at a manufacturing facility (Toxicity Determination: +)

HEALTH HAZARD EVALUATION PROGRAM
PUBLICATIONS AND SPEECHES - FY'83

PUBLISHED ARTICLES

_____. Formaldehyde Exposures in Dialysis Units. Dialysis and Transplantation 12(1):43-44, January 1983.

Costello, R., Eller, P., and Hull, R.
Measurement of Multiple Inorganic Arsenic Species. Am. Industr. Hyg. Assoc. J. 44(1):21-28, January 1983.

Decker, D., Clark, S., Elia, V., Kominsky, J., and Trapp, J.
Worker Exposure to Organic Vapors at a Liquid Chemical Incinerator. Am. Indust. Hyg. Assoc. J. 44(4):296-300, April 1983.

Landrigan, P., Costello, R., and Stringer, W.
Occupational Exposure to Arsine: An Epidemiologic Reappraisal of Current Standards. Scand. J. of Work, Environ. and Health 8:169-177, December 1982.

Melius, J., and Buckley, J.
Blood Tests A Valid Way to Guage PCB Exposure (Letter-to-the-Editor). The Sun-Bulletin, Binghamton, N.Y., p. 12-A, November 30, 1982.

CDC Morbidity and Mortality Weekly Report

Arsenic Contamination in an Abandoned Building - Ohio. MMWR, 31(30):531-532, 1982.

DDT Exposures in a Natural History Museum - Colorado. MMWR, 32(34):443-444, 1983.

Epidemic of Acute Illness - West Bank. MMWR, 32(16):205-208, 1983.

Epidemic Psychogenic Illness in an Industrial Setting - Pennsylvania. MMWR, 32(22):287-288, 294, 1983.

Formaldehyde Exposures in a Gross Anatomy Laboratory - Colorado. MMWR, 31(52):698-700, 1982.

Irrigation-Pipe-Associated Electrocution Deaths - Washington. MMWR, 32(13):169-171, 1983.

Noise-Induced Hearing Loss in Fire-Fighters - New York. MMWR, 32(4):57-58, 1983.

Phototoxic Reaction Among Dock Workers - Tennessee. MMWR, 32(11):147-154, 1983.

Reducing Exposures to Airborne Lead in Indoor Firing Ranges - United States, MMWR, 32(37):483-489, 1983.

Respiratory Illness Associated With Carpet Cleaning at a Hospital Clinic - Virginia. MMWR, 32(29):378-384, 1983.

Silicosis - South Dakota - Wisconsin. MMWR, 32(24):318-319, 1983.

CDC EPIDEMIOLOGIC AID REPORTS

Herwaldt, L., Boxer, P., et al.
Pontiac Fever in an Automobile Engine Assembly Plant Caused by a New Legionella species: Legionella Feeleii, Sp. Nova., Centers for Disease Control, EPI 81-82-2, Atlanta, Georgia, 22 pages.

APPROVED FOR PUBLICATION (IN PRESS)

Boxer, P., Singal, M., and Hartle, R.
An Epidemic of Psychogenic Illness in an Electronics Plant. J. of Occ. Med.

Helgerson, S. and Milham, S.
Irrigation Pipes and Electrocutions in Washington State: A Life Threatening Hazard for Farm Workers. J. of Safety Research

Herwaldt, L., Gorman, G., McGrath, T., Toma, S., Brake, B., Hightower, A., Jones, J., Reingold, A., Boxer, P., Moss, C., Wilkinson, H., Brenner, D., And Broom, C.
Pontiac Fever in an Automobile Engine Assembly Plant Caused by a New Legionella species: Legionella Feeleii, sp. Nova. N.E.J. of Med.

King, M., Eller, P., and Costello, R.
A Qualitative Sampling Device for Use at Hazardous Waste Sites. Am. Indust. Hyg. Assoc. J.

Landrigan, P., and Miller, B.
Epidemic Acute Illness in the West Bank. Lancet.

Liss, G., Kominsky, J., Gallagher, J., Melius, J., Brooks, S., and Bernstein, I.
Failure of Enzyme Encapsulation to Prevent Sensitization of Workers in the Dry Bleach Industry. J. of Allergy & Clinical Immunology.

Tanaka, S., and Lucas, J.
Paperhanger's Dermatitis (Short Communication). Contact Dermatitis.

Tanaka, S., and Lucas, J.
Paperhanger's Dermatitis: A Dermatological Survey of Paperhangers With Patch Testing. CUTIS.

Wilcox, T., and Wasserman, D.
Vibration White Finger Disease and Pneumatic Tool Operation in Selected U.S. Industries (Abstract). J. of Occ. Medicine.

Zey, J., Piacitelli, G. and Jones, W.
Characterization of Airborne Cotton Dust Concentrations in the Non-Textile Cotton Industry. Am. Indust. Hyg. Assoc. J.

SPEECHES

Ahrenholz, S.
Health Hazard Surveillance in the Plastics Industry. 53rd All-Ohio Safety Congress and Exhibit, Columbus, Ohio, April 1983.

Aw, T.
Effects of an Explosion at a Chemical Factory- Gulfport, Mississippi. CDC Epidemic Intelligence Service Conference, Atlanta, Georgia, April 1983.

Boxer, P.
An Outbreak of Psychogenic Illness in an Electronics Plant. CDC Epidemic Intelligence Service Conference, Atlanta, Georgia, April 1983.

Cherniack, M.
The Hawks Nest Tunnel Disaster. CDC Epidemic Intelligence Service Conference, Atlanta, Georgia, April 1983.

Cone, J.
Screening for Silicosis in Foundry Workers, APHA Conference, Montreal, Canada, November 1982.

Costello, R.
A Health Hazard Evaluation of Waste Disposal Operators at a Municipal Landfill (Poster Session).American Industrial Hygiene Conference, Philadelphia, pennsylvania, May 1983.

Costello, R.
Worker Exposure at a Licensed Hazardous Waste Facility. University of Michigan/Michigan State Chamber of Commerce, Management Briefing Seminar, Traverse City, Michigan, July 1983.

Costello, R.
Worker Inhalation Exposure Monitoring During Removal of Hazardous Waste. American Industrial Hygiene Conference, Philadelphia, Pennsylvania, May 1983.

Donohue, M.
Health and Safety Hazards for Hospital Employees and Recognition, Evaluation and Control of Workplace Health Hazards. 11th Annual Physician Assistant Conference, St. Louis, Missouri, June 1983.

Egilman, D.
The Health Effects of TDI. URW 1983 Labor Management Symposium on Recognition and Prevention of Cancer Among Workers, Akron, Ohio, August 1983.

Egilman, D.
Recognizing Illness as Work Related. Ohio State Womens Compensation Institute, Columbus, Ohio, March 1983.

Helgerson, S.
Irrigation Pipes and Electrocutions in Washington State. CDC Epidemic Intelligence Service Conference, Atlanta, Georgia, April 1983.

Keenlyside, R.
NIOSH's Health Hazard Evaluation Program. APHA Conference, Montreal, Canada, November 1982.

King, M.
A Qualitative Sampling Device for Use at Hazardous Waste Sites. American Industrial Hygiene Conference, Philadelphia, Pennsylvania, May 1983.

Kominsky, J.
Assessing PCB Contamination From Electrical Equipment Failures. American Industrial Hygiene Conference, Philadelphia, Pennsylvania, May 1983.

Kominsky, J.
Assessing PCB Contamination from Electrical Equipment Failures. Disease Prevention and NIOSH State Conference, Auburn, Massachusetts, April 1983.

Kominsky, J.
Assessing PCB Contamination from Electrical Equipment Failures. Seminar on Effective Control of PCBs. Minnesota Pollution Control Agency, St. Paul, Minnesota, February 1983.

Kominsky, J.
Assessing PCB Contamination from Electrical Equipment Failures. 62nd Annual Massachusetts Safety and Health Conference, Boxborough, Massachusetts, April 1983.

Landrigan, P.
Occupational Exposure to Arsine: An Epidemiologic Reappraisal of Current Standards. CDC Epidemic Intelligence Service Conference, Atlanta, Georgia, April 1983.

Lipscomb, J.
Serological Survey of Cytomegalovirus Infections in Nursing Personnel. CDC Epidemic Intelligence Service Conference, Atlanta, Georgia, April 1983.

Liss, G.
Occupational Exposure to Pitch in a Non-Heated Process. CDC Epidemic Intelligence Service Conference, Atlanta, Georgia, April 1983.

Liss, G.
The Use of Serum Bile Acids in the Detection of Chemical Hepatotoxicity. APHA Conference, Montreal, Canada, November 1982.

Melius, J.
Asthma and Work. 11th Annual Physician Assistant Conference, St. Louis, Missouri, June 1983.

Melius, J.
Chemical Hazards and Firefighting Symposium for Occupational Safety and Health for Firefighters, Columbus, Ohio, April 1983.

Melius, J.
Epidemiology - A Tool for Preventive Medicine. 11th Annual Physician Assistant Conference, St. Louis, Missouri, June 1983.

Melius, J.
Medical Effects from Exposure to PCBs, Dioxins and Related Compounds. International Assoc. Industrial Accident Boards and Commission, Atlanta, Georgia, September 1983.

Melius, J.
The NIOSH Health Hazard Evaluation Program. American Public Health Association, Occupational Health and Safety Section, 2nd Annual Midwest Regional Meeting, Chicago, Illinois, June 1983.

Melius, J.
The NIOSH Health Hazard Evaluation Program. Disease Prevention and NIOSH State Conference, Auburn, Massachusetts, April 1983.

Melius, J.
The NIOSH Health Hazard Evaluation Program. Occupational Medicine Conference, New Orleans, Louisiana, May 1983.

Melius, J.
Recognition, Evaluation, and Control of Workplace Hazards. 11th Annual Physician Assistant Conference, St. Louis, Missouri, June 1983.

Murphy, D.
Solvent Exposure and Acute Occupational Illness. CDC Epidemic Intelligence Service Conference, Atlanta, Georgia, April 1983.

Parrish, G.
NIOSH's Health Hazard Evaluation Program. AFL/CIO Safety and Health Conference, Columbus, Ohio, December, 1982.

Pryor, P.
Pesticide Exposures Among Cotton Gin and Field Workers (Poster Session). American Industrial Hygiene Conference, Philadelphia, Pennsylvania, May 1983.

Reed, L.
Worker Exposure to Contaminants at a Facility Burning Refuse Derived Fuel (RDF) (Poster Session). American Industrial Hygiene Conference, Philadelphia, Pennsylvania, May 1983.

Wallingford, K.
Tight Building Syndrome: Approaches to Indoor Air Quality in Non-Industrial Workplaces. AIHA Indiana Local Section, Second Spring Conference, Indianapolis, Indiana, March 1983.

Wallingford, K.
Tight Building Symdrome - Approaches to Indoor Air Quality in Non-Industrial Workplaces. Annual Conference of State Sanitary Engineers, Bloomington, Minnesota, May 1983.

Wilcox, T.
Vibration White Finger Disease and Pneumatic Tool Operation in Selected U.S. Industries. 68th Annual Meeting American Occupational Medical Association, Washington, D.C., April 1983.

Zey, J.
Field Evaluation of an Alternative Cotton Dust Sampler (Poster Session). American Industrial Hygiene Association Conference, Philadelphia, Pennsylvania, May 1983.

SUPPORT SERVICES PROGRAM

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SUPPORT SERVICES
HIGHLIGHTS - FY'83

The Support Services Program of DSHEFS provides technical, logistic, and administrative support to the Division's research activities. This includes staff technical support for clinical, statistical, and ADP requirements of health hazard evaluations, industrywide studies and surveillance projects.

Biomedical Instrumentation Laboratory

On request, staff assistance is provided to other groups (e.g., EPA, and other NIOSH Divisions) on instrumentation development, modification, and adaptation. During the past year, laboratory personnel have completed 13 work order requests - 5 of these were for other NIOSH Divisions.

These personnel perform an invaluable service to the Division in that their ability to calibrate and repair medical instruments/equipment and to repair ADP equipment saves the Division time as well as thousands of dollars annually. In addition, this group served as the lead for the modification work on DSHEFS' mobile environmental laboratory in preparation for use at Superfund waste disposal sites.

The Laboratory personnel also spent considerable time in undertaking and improving the reliability of asynchronous serial data transmission of local data files from Wang diskettes or Memodyne digital cassettes to the Parklawn Computer Center.

Medical Services

The Medical Services Program provides timely, efficient, and cost-effective support of DSHEFS' research. The staff (3) provided support to 23 hazard evaluations and one Freedom of Information request. Over 1,100 subjects were examined and more than 1,150 medical records were reviewed. Seven follow-up HHE telephone questionnaires have been administered.

The Program is also providing support to two ambitious Industrywide Studies projects. The first is the Renal Case Control Study which will involve 500 subjects and 500 controls. The controls will be selected by random digit dialing. This project is expected to last 14-16 months. The second study (Ethylene Oxide) involves contacting approximately 300 manufacturers of this chemical and administering a questionnaire to determine the number of workers exposed.

Computer Services

Once again, the Division operated with a reduced Automatic Data Processing (ADP) budget. The operating procedures which were so effective in reducing ADP costs in the fourth quarter, FY'83 projects were continued without any noticeable adverse effect on data analysis or project completion.

ADP service is provided from three sources: a small in-house data processing (DP) staff, a data entry contractor, and a DP contractor. The data entry contractor processed over 400 tasks totalling over $237,000. The DP contractor processed almost 2,900 tasks at a cost (personnel only) of more than $611,000. Of these 2,900 tasks, approximately 2,750 were minor routine edits, updates, and data retrieval performed by a staff of 2-3 people working on-site. The other approximately 150 tasks were program development, data base design and implementation which were done at the contractor's facilities.

The in-house staff responded to 330 requests for information from data bases it maintains, i.e. NOES-I, NOES-II, and Dunn and Bradstreet. It is noteworthy that the building of the NOES-II data file was exceptionally smooth and on schedule, especially when one considers that over 20 surveyors coded more than 950,000 records.

The Computer Services Program is working closely with personnel in other branches and sections in developing more cost-efficient data management programs.

The Program also has undertaken the initiative in performing maintenance on all the Institute's mass-storage volumes as well as "cleaning up", i.e., removing outdated and unnecessary data sets from these volumes.

Statistical Services

During FY'83, the Statistical Services Program completed statistical analysis and clerical support for 62 DSHEFS' projects and HHE's. In addition, four training lectures were given in the Division of Training and Manpower Development Industrial Hygiene Measurements Course, a short course in basic statistics for HETAB staff was developed, and three seminars were given on other statistical topics. Another accomplishment worth noting was the completion of an FOI request concerning the Augusta study which required over 16 person-weeks of effort and produced over 24,000 copies of documents.

GENERAL

GENERAL
PUBLICATIONS AND SPEECHES - FY'83

PUBLISHED ARTICLES

Kreiss, D., Zack, M., Landrigan, P., Feldman, R., Niles, C., Chirico-Post, J., Sax, D., Boyd, M., and Cox, C.
Neurological Evaluation of a Population Exposed to Arsenic Well Water. Arch. Env. Health 38(2):116-121, March/April 1983.

Landrigan, P.
Arsenic (Chapter 41). Environmental and Occupational Medicine, edited by W. Rom, Little Brown & Co., Boston, Massachusetts, pp. 473-479, 1982.

Landrigan, P.
Epidemiologic Approaches to Persons With Waste Chemical Exposures. Env. Health Perspec. 48:93-97, 1983.

Landrigan, P.
Occupational and Community Exposures to Toxic Metals: Lead, Cadmium, Mercury and Arsenic. In, Occupational Disease - New Vistas for Medicine. West. J. Med. 137(6):531-539, December 1982.

Landrigan, P.
Toxic Exposures and Psychiatric Disease - Lessons from the Epidemiology of Cancer. Acta Psychiat. Scand. 67, Suppl. 303:6-15, 1983.

Landrigan, P., and Baker, E.
Epidemiological Aspects of Occupational Lead Poisoning. Journal of the Japan University of Occupational and Environmental Health. 5 Suppl:145-155, 1983.

Landrigan, P., Melius, J., Rosenberg, M., Coye, M., and Binkin, N.
Reproductive Hazards in the Workplace: Development of Epidemiologic Research. Scand. J. of Work, Env. and Health 9:83-88, 1983.

Landrigan, P., Powell, K., James, L., and Taylor, P.
Paraquat and Marijuana: Epidemiologic Risk Assessment. Am. J. of Public Health 73(7):784-788, July 1983.

Liss, G., and Singal, M.
Specificity and Sensitivity: A Significant Difference (Letter-to-the-Editor). Postgraduate Medicine 73(6):34, June 1983.

COMPLETED REPORTS SUBMITTED TO NIOSHTIC AND NTIS - NOT PUBLISHED ELSEWHERE

Schwartz, J.
Report on Flattening Effect in Carcinogenesis (NIOSH P.O. No. 83-0523). November 1982, 9 pages.

APPROVED FOR PUBLICATION (IN PRESS)

Helgerson, S.
Occupational Health: Recognizing and Preventing Work-Related Disease (Book Review). JAMA.

Landrigan, P.
Occupational and Pediatric Aspects of Lead Toxicity. Veterinary and Human Toxicology.

Landrigan, P., and Bridbord, K.
Additional Exposure Routes. Proc: Dahlem Workshop on Changing Biogeochemical Cycles of Metals and Human Health.

Liss, G., and Singal, M.
Review of Massachusetts General Hospital Case 33 - 1983 (Letter-to-the-Editor). New England Journal of Medicine.

Moseley, C.
The Role of the Industrial Hygienist. Proc: National Symposium on Occupational Health Nursing.

Schulte, P.
Criteria for the Notification of Subjects of Epidemiological Studies. American J. of Epidemiology.

SPEECHES

Coye, M.
Occupational Health of Farm Workers. APHA Conference, Montreal, Canada, November 1982.

Coye, M.
What is Public Health in the 80's. APHA Conference, Montreal, Canada, November 1982.

Egilman, D.
Women and Minorities - Occupational Safety and Helth Problems. AFL/CIO Safety and Health Conference, Columbus, Ohio, December 1982.

Fox, S.
Hippocrates Unbound - China's Medical Education for the 80's. APHA Conference, Montreal, Canada, November 1982.

Landrigan, P.
Epidemiologic Aspects of Occupational Poisoning, 2nd UOEH Symposium on Epidemiology in Occupational Medicine, Tokyo, Japan, October 1982.

Melius, J.
Legal and Governmental Aspects of Imparting Health Hazard Information. Occupational Health Conference, West Virginia University, Charleston, West Virginia, October 1982.

Melius, J.
Occupational Cancer. Standard Oil Company Health and Safety Training Program, Chicago, Illinois, July 1983.

Melius, J.
Occupational Reproductive Hazards: Recent Developments in Occupational Medicine. University of Washington, Seattle, Washington, March 1983.

Moseley, C.
Panel Discussion - The Role of the Industrial Hygienist. National Symposium on Occupational Health Nursing. NIOSH, Cincinnati, Ohio, June 1983.

Schulte, P.
Criteria for the Notification of Subjects of Epidemiologic Studies. Society for Epidemiologic Research, Winnepeg, Canada, June 1983.

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15. Supplementary Notes

16. Abstract (Limit: 200 words) The accomplishments reached during the 1983 fiscal year through the Division of Surveillance, Hazard Evaluations and Field Studies of NIOSH were described. The report was divided into the surveillance program itself, industrywide studies program, and the health hazard evaluations program. The surveillance program included the National Occupational Hazard Survey/Exposure Survey, Surveillance Cooperative Agreements between NIOSH and States (SCANS), Sentinel Health Events (Occupational), the list of the ten leading work related diseases and injuries, and the use of computer generated maps in occupational hazard and mortality surveillance. The Industrywide Studies program conducted 29 planned projects, and initiated feasibility assessments for 37 projects. The Health Hazard Evaluation Program conducted 435 site visits, and completed 460 Hazard Evaluation and Technical Assistance reports. This annual report included project summaries and lists of publications and speeches for each program area.

17. Document Analysis a. Descriptors

b. Identifiers/Open-Ended Terms NIOSH-Publication, NIOSH-Author, Industrial-health-programs, Occupational-health-programs, Epidemiology, Risk-factors, Occupational-exposure, Occupational-hazards

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