**FINAL PERFORMANCE REPORT**

PB98-130768

# OCCUPATIONAL MEDICINE TRAINING GRANT

UNIVERSITY OF PITTSBURGH
GRADUATE SCHOOL OF PUBLIC HEALTH
DEPARTMENT OF ENVIRONMENTAL AND OCCUPATIONAL HEALTH
PITTSBURGH, PA 15261

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During the 3 year grant period from July 1, 1993 through June 30, 1996, the Occupational Medicine Residency program at the University of Pittsburgh graduated ten residents, all of whom entered employed in the specialty of industry, academia, hospital based clinics, military and government service. All who have taken specialty board examinations in Occupational Medicine have passed. Three resident physicians will complete the program in July of 1996 and three new resident physicians have been recruited and selected to begin the residency program in August of 1996. The program also has attracted physicians from other countries. The merging of the University of Pittsburgh Medical Center Health Service with the Occupational Medicine Clinic greatly increased both numbers and variety of patient populations available to Occupational Medicine Residents. Another training opportunity was provided by close collaboration with the Clinical Toxicology service at the University of Pittsburgh Medical Center. Three physicians have been recruited to the full time core faculty to both strengthen the teaching and the clinical activities of the residency program.

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1993 - 1996
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PITTSBURGH, PENNSYLVANIA 15261

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# ABSTRACT

Continued NIOSH support of the Occupational Medicine Residency at the University of Pittsburgh Graduate School of Public Health has been instrumental in maintaining the strength of the program. Training Grant funds have been used exclusively for trainee expenses, stipends and support throughout the period of the grant. Strong continuing institutional support has allowed recruitment of additional full-time faculty. This strengthening of the Occupational Medicine Faculty will enhance both the academic and practicum aspects of the residency.

During the three year training period from July 1, 1993 to June 30, 1996 the Occupational Medicine Residency graduated 10 residents. All are employed in the specialty in industry, academia, hospital based clinics, military and government service. All who have taken specialty board examinations in Occupational Medicine have passed. Three resident physicians will complete the program at the end of July 1996, and three new resident physicians have been recruited and selected to begin the residency in August 1996.

The academic program and practicum training sites have retained their essential character and physicians and from other countries as well as from the local area continue to be attracted to Occupational Medicine programs in the Department of Environmental and Occupational Health

* The programmatic details for this report were kindly supplied by David TOLLERUD, MD, MPH prior to his accepting a new position at Allegheny University of the Health Sciences in Philadelphia.

SIGNIFICANT FINDINGS

The NIOSH Training Grant for Training Physicians in Occupational Medicine support has been provided continuous support to the Occupational Medicine Residency at the University of Pittsburgh Graduate School of Public Health during the reporting period July 1, 1993 through June 30, 1996. This support has been used exclusively for trainee expenses, stipends, and support during the grant period. Major institutional support has permitted expansion of the program to the current level of four full time physicians, three part time physicians, and numerous adjunct faculty.

During the reporting period, ten physicians successfully completed the Occupational Medicine Residency and entered practice in academia (1), military (1), government (1), industry( 1), comprehensive consulting firm (1) and hospital settings (5). Hospital settings continue to attract the largest percentage of graduates for first professional practice experience.

Eight graduates in the period July 1, 1993 - June 30, 1996 have taken the allopathic (7) or osteopathic (1) specialty board examination in occupational medicine and all have passed. Two local practicing physicians are expected to complete the MPH in late Summer or early Fall of 1996.

Occupational and Environmental Medicine programs at the University of Pittsburgh Graduate School of Public Health continue to attract physicians from other countries. Two Japanese physicians were sent to the Occupational Medicine Program to enter studies leading to the MPH. Both were awarded the MPH and returned to positions of responsibility at their Universities and have continued to collaborate with Doctor Tollerud on lung cytokine studies. Also two physicians from Indonesia began study leading to a PhD in Environmental Health.

The University of Pittsburgh Medical Center Health Service was merged into the Occupational Medicine Clinic greatly increasing both numbers and variety of patient population available to Occupational Medicine Residents. Close collaboration with the Clinical Toxicology service at the University of Pittsburgh Medical Center provides another important training opportunity. As the realignment of community hospitals by affiliation and merger into hospital systems linked to major medical centers are formalized, new training opportunities for future Occupational Medicine Residents are expected to develop.

Strong institutional support has facilitated recruitment of three physicians to the full time core faculty: Jay D. Harper, MD, MPH, to director the expanding clinical activities of the Division; Michael Kuniak, DO, MPH, and Jesse Monestersky, DO, MPH, (effective December 1, 1996) to strengthen both teaching and clinical activities of the Residency. Doctors Bertram Dinman, William Gauss, and Roy Gibson continued to provide day to day residency support and direction.

# PROGRAM DESCRIPTION AND ACCOMPLISHMENTS

## BACKGROUND

Occupational Medicine education and training has strong historical roots at the University of Pittsburgh. As a major industrial center since the turn of the century, the Pittsburgh business community recognized the need for a regional resource and training center for prevention - oriented Occupational Physicians. The Department of Occupational Medicine was one of four original academic departments when the Graduate School of Public Health (GSPH) was founded in 1948. The University of Pittsburgh Occupational Medicine Residency Program was one of the first training programs to be accredited by the Accreditation Council on Graduate Medicinal Education (ACGME). From its inception in the 1950's until the Program became idle in the 1970's, over 100 physicians completed the training programs. These physicians have gone into a variety of Occupational Medicine settings, both in the United States and internationally.

The modem era of the residency training program began in 1983, when Dr. William McClellan reinitiated Occupational Medicine residency training at the University. Dr. Roy Gibson and Dr. Bertram Dinman were recruited as co-Directors of the Program in 1985 and were joined by Dr. William Gauss, 1987. The reborn residency, downsized due to limited funding, successfully acquired a NIOSH Training Grant in 1986 which provided critical support during the growth and development of the program. Building on the NIOSH funding, the program received strong Institutional support, as well as support from the Industrial Community.

Over the years, the field of Occupational Medicine has evolved and matured. The historical predominance of industry-based practice and "plant physicians" has been joined by a growing cadre of private, small-group, and hospital-based practitioners who provide Occupational Medicine services for the business community.

Increasing concerns about health effects of environmental exposures have also spawned the evolving field of Environmental Medicine. The recent name change of the American College of Occupational Medicine to the American College of Occupational and Environmental Medicine has acknowledged the prominent involvement of occupational physicians in Environmental Medicine.

Occupational Medicine has also received increasing attention at the National level. A report from the Institute of Medicine in 1991 and a follow-up report in the New England Journal of Medicine described the breadth of health effects which must be addresses by the discipline.

The Institute estimated the National need for OEM physicians at 3,100 to 5,500, including primary care physicians with specialized competence in occupational and environmental medicine.

ACHIEVEMENTS DURING THE AWARD PERIOD

The evolution and increased visibility of the prevention-oriented specialty of Occupational Medicine is exemplified at the University of Pittsburgh. In the late 1980's the University of Pittsburgh Medical Center began a major initiative to promote and develop four broad disciplines for the 1990's: cancer treatment and research; transplantation; human genetics; and Environmental and Occupational Health (EOH). The initiative in EOH resulted in recruitment of Dr. Herbert Rosenkranz as Chairman of the Department of Environmental and Occupational Health and Dr. David Tollerud as Director of Occupational and Environmental Medicine. Dr. Allene Scott was recruited as Associate Director, to take primary responsibility for the clinical activities of the Division.

The EOH program area has also benefited significantly from the appointment of Dr. Donald Mattison as Dean of the Graduate School of Public Health. Dr. Mattison's expertise and research interests are in reproductive toxicology, and his academic appointment is in the Department of Environmental and Occupational Health.

The Department of EOH has historical strengths in industrial hygiene, radiation health and toxicology, and a long heritage of achievement in research in air and water pollution and ecology. The Department has recently expanded its research focus to include intense study of the molecular basis for environmental and occupational toxicology. Research faculty have been recruited in such areas as internal dosimetry and protein adduct formation, molecular biological approaches to host susceptibility factors (i.e., cytochrome P-450 isozymes), DNA adducts, oxidant damage and free radical chemistry, and pharmacodynamic studies of toxic chemicals and their metabolites. The Department's clinical and research units form the foundation for the multi-disciplinary CENTER FOR ENVIRONMENTAL AND OCCUPATIONAL HEALTH AND TOXICOLOGY (CEOHT).

The CEOHT signifies a new era for Environmental and Occupational Medicine at the University of Pittsburgh. The Division of Occupational and Environmental Medicine (OEM) forms the clinical arm of the CEOHT and provides important input into long-range planning for future research initiatives. Institutional support for the Center has allowed recruitment of additional Occupational Medicine faculty, enhancement of research efforts, and expansion of clinical activities. These developments have led to a dramatic increase in the visibility of Environmental and Occupational Health in the Medical Center and the region at large.

The Occupational and Environmental Medicine Clinic moved from the Falk Clinic of the Department of Medicine, School of Medicine, to the Department of Environmental and Occupational Health, Graduate School of Public Health in a newly designed quarters in the Medical Arts Building. Concurrently the University of Pittsburgh Medical Center Employee Health Service, serving approximately 13,000 employees, was merged into the Occupational and Environmental Medicine Clinic. This administrative change has brought all Occupational and Environmental Medicine activities at the University into a single unified program with expanded space, equipment, resources and staffing to permit full five day clinic activities with a focus on prevention. Coincident with the expansion of clinic activities will be more active and comprehensive involvement of residents in the clinical program. PGY2 residents spend approximately one-half day per week in the Clinic during the academic year. PGY3 residents will spend a minimum of one month in a Practicum rotation in the Clinic under the supervision of the Clinic Director and the clinical staff physician.

The clinical and administrative presence of the OEM Program is also expanding into the non-medical areas of the University with the Office of Environmental Health & Safety, developing procedures and protocols to address Occupational and Environmental Health needs of University employees and faculty. A major effort was focussed on addressing the regulatory mandates of the OSHA Bloodbome Pathogen Standard, including development of exposure control plans, training, medical evaluation and follow up, and student policies. As this support activity expanded to include the full range of potential occupational and environmental exposures inherent in a large, research-oriented university, Occupational Medicine residents have had an opportunity to work with the Environmental Health & Safety Office during their clinical rotation in the OEM Clinic. Some residents have developed health and safety-related research projects in this area to satisfy the MPH thesis requirements.

Inclusion of the UPMC Employee Health Service and the University Health and Safety Office has significantly broadened the range of Occupational and Environmental Health problems to which resident trainees are exposed. The OEM Clinic itself has continued to see a combination of diagnostic referral cases, employee groups referred for medical surveillance, and Workers' Compensation and other legal cases. Expansion of Clinic facilities and personnel have permitted prevention-oriented activities to receive significantly greater attention. Of particular interest for training purposes has been an increase in site visits and workplace walk-through evaluations offered as part of a comprehensive prevention-oriented clinical package. This activity is lacking in traditional medical education, and is ignored by many private clinic and hospital-based Occupational Medicine practices.

Institutional support has also allowed a marked increase in research activities in the Division. Dr. Tollerud has established an Immunology Laboratory, developing chemiluminescence techniques to measure cytokines, growth factors and other inflammatory mediators in serum, urine and other body fluids. This Laboratory has focussed on determining the immunological effects of potentially toxic occupational or environmental exposures. Numerous national and international collaborative projects are underway which will allow increasing opportunities for residents to be involved in cutting-edge research related to occupational and environmental medicine. Also Dr. Allene Scott developed an active research focus on shiftwork, addressing both psychological aspects and fundamental physiological alterations.

Mr. Lawrence Keller, Director of Environmental Health & Safety for the University of Pittsburgh and a former graduate of the Industrial Hygiene Program at the Graduate School of Public Health has been instrumental in teaching industrial hygiene topics for courses in the Occupational Medicine Program. In addition, the Division is providing support for Mr. Keller's office to develop procedures and protocols for Occupational & Environmental Medicine for University employees outside of the Medical Center. This activity, which initially focussed on addressing the Blood borne Pathogens Standard recently promulgated by OSHA, has also provided an industrial hygiene/policy development experience for Occupational Medicine residents during their Practicum year rotation in conjunction with the Occupational and Environmental Medicine Clinic.

The expanded faculty teaching, clinical, and research, and teaching activities offer unparalleled opportunities for integrating all aspects of OEM into an effective, integrated training program. The Program enjoys strong Institutional support and has achieved wide-spread recognition regionally and nationally. NIOSH funding has played a crucial role in program development. This grant has laid the foundation for plans to initiate a modest expansion of this program, capitalizing on the additional faculty and resources accrued over the past six years to meet regional and national needs for Occupational Medicine practitioners.

## PROGRAM DESCRIPTION

### 1. Program Leadership and Faculty

The Director of the Program is Dr. David J. Tollerud. He is an Associate Professor in the Department of Environmental and Occupational Health in the Graduate School of Public Health and holds a joint appointment in the Division of Pulmonary and Critical Care Medicine and Allergy in the School of Medicine. Administrative support is provided by Dr. Herbert Rosenkranz, Chairman of the Department and Dr. Donald Mattison, Dean of the Graduate School of Public Health.

### a. PRIMARY TRAINING FACULTY

1. DAVID J. TOLLERUD, M.D., M.P.H. - Director
   Full-time tenure track faculty member who devotes 30% effort to the Residency Training Program. He is Board-certified in Internal Medicine, Pulmonary Medicine, and Critical Care Medicine in addition to Occupational Medicine. He teaches OEM topics in the School of Medicine and the Graduate School of Public Health and has an active research program. Dr. Tollerud brings to the Division clinical expertise in respiratory diseases and hypersensitivity syndromes and research expertise in immunology and epidemiology.

2. ALLENE SCOTT, M.D., M.P.H. - Associate Director
   Dr. Scott, an Assistant Professor, is Board-certified in Occupational Medicine. Prior to joining the faculty at Pittsburgh, she served as Head of the Occupational Medicine Division, Navy Environmental Health Center in Norfolk, Virginia and Assistant Professor of Occupational and Environmental Health, Department of Preventive Medicine and Biometrics at the Uniformed Services University of the Health Sciences. She has developed a research program investigational medical and psychological parameters of shift work in collaboration with researchers at Western Psychiatric Hospital and Clinic. She also participates in the academic teaching programs of the Department.

3. BERTRAM D. DINMAN, M.D., Sc.D. - Clinical Professor
Part-time faculty member, Board-certified in Occupational Medicine who devotes approximately 75% of his faculty time to the Residency program. He was formerly Co-director of the Program. He has been active in occupational medicine teaching programs for sixteen years prior to joining the faculty at Pittsburgh. He has served as Vice Chairman for Occupational Medicine of the American Board of Preventive Medicine and was Vice President for Health, Safety and Environment at Aluminum Company of America (ALCOA).

4. WILLIAM F. GAUSS, M.D., M.P.H. - Clinical Professor
Part-time faculty member, Board-certified in Occupational Medicine who devotes approximately 75% of his faculty time to the Residency program. He has been active in teaching Occupational Medicine at the National and Regional levels, Chairing the Basic Curriculum Committee of the American College of Occupational Medicine from 1990 to 1992 He is currently past president of the Tri State Occupational Medicine Association. At GSPH he is Chairman of the Educational Policies and Curriculum Committee and President of the Faculty Senate.

5. ROY L. GIBSON, M.D. - Clinical Professor
Part-time faculty member, Board-certified in Occupational Medicine who devotes approximately 75 % of his faculty time to the Residency program. He was formerly Co-director of the Program. He has served as Chairman of the Basic Curriculum Committee for the American College of Occupational Medicine and was formerly Corporate Medical Director for Gulf Oil Company.

## NEW PRIMARY TRAINING FACULTY

Three physicians joined the occupational medicine faculty during the reporting period.

Jay D. Harper, MD, MPH, MBA was recruited in 1996 to serve as Director of the occupational medicine clinics. He is a Diplomate of the American Board of Preventive Medicine, Certified in Occupational Medicine. His background includes manufacturing and business experience in the chemical industry. He has also been Associate Medical Director at CONSOL, Inc., a large coal company operating both underground and surface mines, a marine and an aviation division with around 10,000 employees. Most recently he has been director of occupational medicine at Allegheny General Hospital, a large regional tertiary care facility. Doctor Harper takes an active role in teaching parts of the Occupational Health Law Course as well as mentoring occupational medicine residents. He adds a strong dimension to the Occupational medicine faculty at the University of Pittsburgh.

Michael Kuniak, DO, MPH joined the occupational medicine faculty as Assistant Professor in 1995. His principal clinical duties include serving as medical director at a nearby nuclear power facility and at a large chemical plant. In the occupational medicine research area, he has been a collaborator with Doctor Tollerud in the field of cytokines; a collaboration that is expected to continue. He takes an active role in mentoring occupational medicine residents, teaching in departmental courses and in the educational activities of the Western Pennsylvania Safety Council and the Allegheny County Medical Society. Doctor Kuniak is a Diplomate of the American Board of Family Practice and is Board Eligible in Occupational Medicine.

Jesse Monestersky, DO, MPH, MS was recruited as Assistant Professor to join the occupational medicine department faculty in December 1996. He brings broad military and civilian experience in both occupational medicine and industrial hygiene His activities in the Division of Occupational and Environmental Medicine will include developing clinical practices at affiliated community hospitals, teaching in the academic programs in toxicology and industrial hygiene, areas in which he holds Master of Science Degrees. He will also serve as a clinical mentor for occupational medicine residents. Doctor Monestersky also has specialized training as a Flight Surgeon and in Hyperbaric Medicine.

b. OTHER TRAINING FACULTY

The following physicians, hold adjunct faculty appointments and are actively involved in the training program through teaching, supervising and sponsoring Practicum year training rotations:

1. Andrew Krouskop, M.D., Chief Medical Officer - Harmarville Rehabilitation Center,
2. Alberto Columbi, M.D., Corporate Medical Director, PPG Incorporated.
3. Thomas Neilson, M.D., Corporate Medical Director, CONSOL Inc.
4. Joseph J. Schwerha, M.D., General Manager-Health Services, USS,
5. Milton Black, MD, MPH, Medical Director Mon Valley, USS
6. E. Carroll Curtis, MD, MPH, Director Occupational Health Harmarville Rehabilitation Center

c. CLINIC FACULTY

1. David Locke, MD, Former Medical Director Duquesne Light Company
2. Frank Pawlosky, MD, Medical Director GE Specialty Glass Plant

## 2. Program Plan

The overriding purpose of the Occupational Medicine Residency at the University of Pittsburgh has always been to prepare physicians for the full-time practice of Occupational Medicine.

The program emphasizes prevention as the cornerstone of Occupational Medicine practice. Common themes which are reiterated throughout the didactic, clinical and Practicum rotations include the need for Occupational physicians to be familiar with the workplace and job activities of the worker clientele; techniques for hazard identification and exposure prevention; the need for data acquisition skills and problem-solving ability; and development of clinical and diagnostic skills related to occupational diseases and injuries.

Occupational Medicine differs from most specialties in its unique position at the interface between society, industry, government and the legal system. The University of Pittsburgh OEM Program stresses real-life application of the cognitive skills acquired during the academic year: epidemiology and biostatistics, business, occupational and environmental law, safety and industrial hygiene, toxicology and risk assessment, and Occupational and Environmental Medicine. A major focus of the training is to instill in the residents the perception that the physician must be capable of investigating workers' exposure to chemical, physical and biologic agents. The Program addresses this need by augmenting the residents' powers of observation and understanding of the work processes.

The Occupational Medicine residents attendance at the same courses as doctoral and master level students in toxicology, risk assessment, epidemiology, biostatistics, health services administration, environmental law, and behavioral science ensures that the physicians gain an appreciation for interdisciplinary approaches to occupational and environmental health problems. Participation in classes with students from a variety of backgrounds also engenders an appreciation for other critical elements in Occupational Medicine practice: communication skills and the ability to interact effectively with a broad range of professional colleagues.

In June, 1991, the clinical and academic elements of Occupational and Environmental Medicine at the University of Pittsburgh were united under the administrative umbrella of the Division of Occupational and Environmental Medicine at the Graduate School of Public Health. This unification has fostered a much more rigorous and thorough integration of clinical, academic and research training throughout the two-year Occupational Medicine Program. After an orientation period prior to the beginning of the academic year, Occupational Medicine residents participate in a variety of Journal Club, Seminar, Grand Rounds, and other enrichment activities. Clinical continuity is augmented by the three to four

month industrial rotations in the Practicum year and by discrete Practicum rotations in the Clinic and the UPMC Employee Health Service.

The training program has an important mandate to prepare physicians to meet the requirements of the American Board of Preventive Medicine for certification in Occupational Medicine. The academic and Practicum training schedule is reviewed at least annually to assure that all general and special requirements of the Board are met, both in name and content. The Program has been extremely successful in this regard. To date, all graduates of the Program who have applied to the American Board of Preventive Medicine for eligibility in Occupational Medicine have been granted eligibility. In addition, all graduates who have taken the Board examination have passed and have received certification.

The University of Pittsburgh Occupational Medicine Residency was given full accreditation in June 1991 for five years by the Accreditation Council on Graduate Medical Education (ACGME) as a two-year program: an academic year (PGY2) and Practicum year (PGY3). The program will be reviewed again in the Fall of 1996. Currently, the Program is accredited for three residents in each year. Planning is in progress to determine feasibility of expanding the program. Physicians entering the program must have, at a minimum, already successfully completed an acceptable clinical year (PGY1) in a direct patient-care specialty such as a Family Practice or Internal Medicine. The Program actively seeks candidates who have additional clinical training or practical experience, and many of the residents are already Board-eligible or certified in another specialty prior to entering the Program.

The PGY2 year consists of an orientation period in August, followed by an academic year conducted in the Graduate School of Public Health and leading to the MPH degree. The orientation consists of an overview and introduction to Occupational and Environmental Medicine, with emphasis on the "real-life" practice of Occupational Medicine. Activities in this orientation period include lectures, group discussions, seminars, and demonstrations and field trips. Residents are introduced to the Occupational and Environmental Medicine Clinic, including hands-on training in medical record keeping, occupational history taking, and pulmonary function testing. This orientation forms the foundation for the residents' immediate incorporation into the Clinic experience. Course work in the academic year addresses all cognate areas specified in the general and specific requirements of the American Board of Preventive Medicine. Courses in Toxicology, Ergonomics, Radiation Health, Biostatistics, Epidemiology, Health Administration, Risk Sciences, Behavioral Sciences and seminars, individual projects, field trips and a thesis Environmental and Occupational Health Law prepare the trainees for entrance into the Practicum year and ultimately for the practice of the specialty.

The highly successful "Field Trip Course" EOH Environmental and Occupational Health: Processes, Practices & Programs was changed from a 1 credit course series offered in the Fall and Spring terms to a 2 credit course given in the Fall term. The change insures good traveling weather and allows utilization of course time. The course continues to provide an opportunity for occupational medicine residents to interact with other students to experience first-hand the settings in which Occupational and Environmental Medicine is practiced. Field trips are made to sites in the Greater Pittsburgh area which illustrate the breadth and depth of Occupational and Environmental Health practice. Field trips are preceded by a lecture, demonstration or discussion of the health aspects of the site to be visited. Following the field trip, students prepare reports and discuss issues which were brought out during the field trip experience. This experience also lays the foundation for the programmatic emphasis on work site visits as a fundamental part of the practice of Occupational Medicine.

Throughout the year, residents participate in a variety of seminars, conferences, and training activities to supplement formal courses and practicum rotations. A monthly Journal Club, now held jointly with Clinical Toxicology on Tuesday afternoons, provides an additional forum for discussion of OEM literature. The Journal Club is open to community practitioners, clinical faculty and residents from outside the Program, as well as Occupational Medicine residents and faculty. It provides a unique opportunity for in-depth discussions of the literature and the practical implications of scientific findings.

Completion of the academic portion of the residency leads to an MPH. Students completing the degree are required to prepare, present, and defend a thesis or essay. The topic may range from a laboratory research experience to clinical research or a comprehensive state-of-the-art literature review and analysis. This is normally completed during the 12 month academic year from August through July of the next year.

The Practicum year is designed to build upon the concepts developed during the academic year and to emphasize the application of these new cognitive skills to the practice of Occupational Medicine. The faculty monitors the Program to assure that it satisfies the training requirements of the American Board of Preventive Medicine (in Occupational Medicine). In addition, faculty members spend a great deal of time tailoring the Practicum Program to the background and needs of each individual resident physician. In addition to industrial rotations, each of which usually lasts 2-4 months, the Practicum year includes rotations in the Occupational and Environmental Medicine Clinic, , US Steel, CONSOL, OSHA, PPG, and Harmarville Rehabilitation Center. Practicum rotations can be developed, as needed with the United Steel Workers' Union, the Allegheny County Health Department,

Currently, all Practicum training sites are located in the Greater Pittsburgh area, facilitating

close coordination of Program components and allowing detailed monitoring of residents' progress. All Practicum experiences are supervised by a Board-certified Occupational physician and include: opportunities for clinical management of occupationally-related disease and injury; pare-placement evaluations emphasizing knowledge of specific job requirements and medical examination results; investigation of patterns of work-related illness; issues and practical aspects of Workers' Compensation; rehabilitation evaluation and practice; health promotion and employee assistance; preparation of reports and recommendations based on work site evaluation in conjunction with industrial hygiene and safety professionals; and direct participation in organizational planning and administration of health programs and policies. Formal reports based on assigned projects and investigations during Practicum year rotations frequently result in institutional policy statements and may lead to publication in professional journals. Practicum rotations in the industrial sites include a unique opportunity for residents to work hand-in-hand with a Corporate Medical Director of a major industrial firm for a prolonged period of time. These experiences have proven invaluable to the residents both for current academic value and future professional advancement, and have uniformly received enthusiastic evaluations from the residents.

Example of a Trainee Program

A typical academic year would include the following courses:

Fall Term

| Department & Course | Credits | Description |
|---|---|---|
| EOH 2175 | 3 | Organ System Toxicology |
| EOH 2030 | 2 | Survey of Radiation Health |
| EOH 2021 | 1 | Special Studies (Thesis Research) |
| EOH 2111 | 2 | "Field Trip" |
| EOH 2505 | 3 | Environmental/Occupational Health |
| BIOS 2041 | 2 | Introduction to Statistical Methods |
| EPID 2110 | 2 | Epidemiology |

Spring Term

| | | |
|---|---|---|
| EOH 2102 | 1 | Introduction to Research Methods |
| EOH 2510 | 3 | Occupational Medicine |
| EOH 2063 | 2 | Ergonomics |
| EOH 2009 | 2 | Noise |
| EOH 2006 | 3 | Environmental Health Law |
| EOH 2021 | 1 | Special Studies (Thesis Research) |
| HSA 2502 | 1.5 | Behavioral Science |
| HSA 2000 | 1.5 | Health Administration |
| Clinic | 0 | Clinical Practice |

Summer Term

| | | |
|---|---|---|
| EOH 2180 | 3 | Risk Analysis |
| EOH 2021 | 2 | Special Studies (Thesis Research) |
| Clinic | 0 | Clinical Practice |

Practicum YEAR

A typical Practicum rotation for a PGY3 resident is shown:

| Period | Location |
|---|---|
| I MONTH | CLINIC |
| 3 MONTHS | CONSOL |
| 2 MONTHS | PPG |
| 2 MONTH | HARMARVJLLE |
| 2 MONTHS | U. S. STEEL |
| 2 MONTHS | OSHA |

The PGY3 year also includes a didactic component which includes attendance at Occupational Medicine seminars, conferences, individual tutorial sessions, and formal evening courses offered at the Graduate School of Public Health. Elective study for enrichment or to fill gaps in background training is provided.

Currently, the Program offers six full-time resident physician positions: three in PGY2 and 3 in PGY3 years. In addition to the full-time residents in the MPH Program a number of part-time students, primarily practicing physicians from the local Community, are enrolled in the MPH Program for periods typically 3-5 years in duration.

### 3. Training Candidates

The minimum qualifications for physicians seeking admission to the residency, in accordance with requirements for certification by the American Board of Preventive Medicine, is an earned degree of Doctor of Medicine or equivalent from a U.S. or foreign medical school acceptable to the Board. In the case of foreign medical graduates, an ECFMG Certificate is required, and passage of FLEX is desired. Additionally, since this residency program is approved to offer PGY2 and PGY3 only, PGY1 in a direct clinical care specialty such as family practice or internal medicine acceptable to the American Board of Preventive Medicine must have been completed satisfactorily elsewhere. Candidates must be eligible for appropriate training licensure required by the PA State Board of Medicine. In addition to documentation of past training records, three letters of recommendation from physicians familiar with candidates' academic record and work experience are required. Personal interviews are arranged with EOH Department faculty members and with members of the Residency Advisory Committee. Previous experience in occupational medicine or a related field and research experience are not required but are considered in evaluating as applicant.

The program has been advertised principally by word of mouth and "Green Book" listing. Applicants are undoubtedly encouraged by the successful record of this institution as a training center for occupational medicine. Over the past nine years (1983-92) sixteen physicians have been admitted to the academic year and ten to the Practicum year. In addition, two foreign physicians have completed the DPH program and three the MPH program. Support for the foreign students was provided by their individual countries of origin and the U.S. AID program. An average of about five part-time, local U.S. physicians have participated in the program each year.

## METHODS USED TO EVALUATE RESIDENTS

Residents are regularly evaluated in a formal, documented fashion in accordance with procedures established by the University. During the academic year, residents are evaluated by their course instructors and academic advisors at GSPH. Class performance and grades are included in the evaluation. The supervising occupational physician on-site and the preceptor during the resident's Practicum year are expected to monitor and provide a written report of the progress.

Residents are asked to evaluate their experiences and the quality of the instruction and supervision that they receive, and are asked to discuss their observations with their faculty advisor.

4. Training Facilities and Resources

## UNIVERSITY OF PITTSBURGH GRADUATE SCHOOL OF PUBLIC HEALTH

The University of Pittsburgh campus is situated on 120 acres in the heart of the city's Oakland area. The Graduate School of Public Health (GSPH) is accredited by the Council on Education for Public Health. It is conveniently located among the other schools and the hospitals of the University Health Center and the large University campus. The GSPH is an important unit in the University's total program for its Schools of the Health Professions: Medicine, Dental Medicine, Health Related Professions, Nursing, Pharmacy, and Public Health.

### Department of Environmental and Occupational Health

Oakland Campus

The Division of Occupational and Environmental Medicine and the Occupational Medicine Residency Training Program are situated in the Graduate School of Public Health on the Oakland Campus. This location provides faculty offices and teaching resources in close proximity to the Medical Center and the Occupational and Environmental Medicine Clinic. Research laboratories and non-medical faculty in the Department of Environmental and Occupational Health are being moved to the newly acquired RIDC Facility. Courses taught by Department faculty may be held at the GSPH, at the RIDC Facility with shuttle service provided for students, or offered at both facilities through video teleconference technology.

RIDC Facility

The Center for Environmental and Occupational Health and Toxicology (CEOHT) at RIDC continues to house the Department of Environmental and Occupational Health. It was designed specifically for toxicological research and therefore contains all of the safety features, plumbing, air handling facilities, electrical wiring, and specialized laboratories necessary for research using potentially hazardous materials. The building comprises 48,000 square feet, two thirds of which is laboratory space. Additional $1.6 million in alterations

have been carried out, to increase the laboratory space and further tailor the space to the needs of the research carried out in the department. Specific features already present in the building are a state-of-the art ventilation system, separately vented hazardous materials laboratories, and separate storage space for hazardous materials. An alarm system is built in that allows the hazardous materials room to be sealed off in the event of a leakage or spill. All laboratories are equipped and arranged to conform with OSHA standards. The institutional safety officer is a member of our departmental faculty and will instruct all laboratory personnel in appropriate guidelines to ensure safe working conditions.

Most of the academic and research programs of the Department are housed in this facility. To accommodate the educational aspects, a shuttle schedule links the building with the campus-based Graduate School of Public Health. The building is networked with the University computer system and houses its own library and conference rooms.

### Department Of Epidemiology

The cornerstone of the Department of Epidemiology's educational program is the concept that advances in the health of both populations and individuals have depended almost exclusively on disease prevention. Epidemiology is one of the key basic sciences of preventive medicine. The Department is therefore committed to a program to improve the methods of disease prevention in the population. Major projects have included "Mr. Fit", cardiovascular, and AIDS research.

### Department Of Biostatistics

The Department of Biostatistics applies statistical techniques to examine, delineate, and solve public health problems. A major research initiative within the department is the application of statistical and epidemiological methods to evaluate health effects associated with urban and industrial environments. Another study focuses on how the interaction between air pollution and weather conditions affects community mortality due to. cardiovascular and respiratory illness. in the course of research in this area, departmental faculty and staff have developed and marketed an occupational health-related research software package that is used as a primary analytic tool for statistical/epidemiological research by more than 55 domestic and 12 foreign research groups.

## SCHOOL OF MEDICINE

As an integral part of the University, the School of Medicine, founded in 1883 as the Western Pennsylvania Medical College, shares in the primary mission of education and research. The office of the Senior Vice Chancellor for Health Sciences coordinates the relationship of the

School of Medicine with the other Schools of the Health Sciences. Clinical facilities include the University managed and state sponsored Western Psychiatric Institute and Clinic (WPIC) and the University Health Center of Pittsburgh (UHCP). The UHCP is composed of five area hospitals and two outpatient clinics: the Falk Clinic and the Matilda Theiss Health Center. Educational investigative programs of varying scope also encompass the affiliated Veterans Administration Medical Centers and some 75 community hospitals and related health care institutions in Allegheny County and Western Pennsylvania.

The 13 story Scaife Hall houses research laboratories, classrooms, lecture halls, and conference space for courses, seminars, and grand rounds taught in the School of Medicine. Additional areas are designated for faculty and administrative offices, a bookstore, the Falk Library of the Health sciences, student and faculty lounges, and facilities for medical photography. The new Biomedical Sciences Tower has approximately 353,000 gross square feet of space dedicated to basic and clinical research laboratories and teaching facilities.

## LIBRARY FACILITIES

The Maurice and Laura Falk Library of the Health Sciences houses a collection of more that 220,000 volumes and subscribes to 1,500 journals. The library has recently installed NOTIS, an integrated library automation system. The library's Learning Resource Center houses the audiovisual and computer software collections, as well as a new microcomputer facility, the Medical Microcomputing and Media Center, to support a variety of computer applications. The Historical Collection includes more that 15,000 volumes in medicine, psychiatry, and public health. Remote access to Medline and the University of Pittsburgh Library system is available to residents via modem from office or home.

## COMPUTING FACILITIES

Computing and Information Systems (CIS) operates the University's central computer facilities, which include a VAX cluster (VAX 8650/8800s) that supports both timesharing and batch processing. A Cray Y/MP supercomputer is available through the NSF-funded Pittsburgh Supercomputing Center, a collaboration among The University of Pittsburgh, Carnegie Mellon University, and the Westinghouse Electric Corporation. Access to the University's mainframe computers is provided by a fiber optic network with ISN ports.

## CONCLUSION

The University of Pittsburgh residency training program in occupational medicine continues to grow and mature, building on its historical strengths and close association with regional industries and healthcare facilities. The NIOSH training grant funds have played a major role in supporting this training process, substantially facilitating the acquisition of substantial institutional funds. To this solid foundation, the program has added academic and clinical faculty; enabling trainees to become familiar with state of the art environmental research in molecular technology. Continued training grant support will strengthen the program significantly in achieve its mission to train the occupational physicians of tomorrow.

# APPENDIX

Occupational Medicine Program Graduates
July 1, 1993 - June 30, 1996

| Name | Position |
|---|---|
| Douglas Adams, MD, MPH<br>1991 - 1992 PGY2<br>1992 - 1993 PGY3 | Director Occupational Health<br>Health and Hygiene<br>Greensboro, NC |
| *Angel Constantino, MD, MPH<br>1991 - 1992 PGY2<br>1992 - 1993 PGY3 | Director Occupational Medicine<br>Armstrong Hospital<br>Kittaning, PA |
| *Edward McVay, MD, MPH<br>1991 - 1992 PGY2<br>1992 - 1993 PGY3 | Director Occupational Medicine<br>DuBois General Hospital<br>DuBois, PA |
| C. Edgar Cox, MD, MPH<br>1992 - 1993 PGY2<br>1993 - 1994 PGY3 | Associate Medical Director<br>US Postal Service<br>Denver, CO |
| William Scorby, MD, MPH<br>1992 - 1993 PGY2<br>1993 - 1994 PGY3 | Head Occupational Health Clinic<br>US Navy<br>Welcome, MD |
| *Theodore Sofish, MD, MPH<br>1992 - 1993 PGY2<br>1993 - 1994 PGY3 | Medical Director<br>Sharon General Hospital<br>Sharon, PA |
| *Michael Kuniak, DO, MPH<br>1993 - 1994 PGY2<br>1994 - 1995 PGY3 | Assistant Professor Occupational Medicine<br>University of Pittsburgh<br>Pittsburgh, PA |
| *Edward Meros, MD, MPH<br>1993 - 1994 PGY2<br>1994 - 1995 PGY3 | Assistant Medical Director<br>CONSOL, Inc.<br>Pittsburgh, PA |
| Fabienne D. Ransom, DO, MPH<br>1993 - 1994 PGY2<br>1994 - 1995 PGY3 | Director of Occupational Medicine<br>Morehead Clinic<br>Charlotte, NC |
| *Dawn E. Murphy, MD, MPH<br>1994 - 1995 PGY2 (WVU)<br>1995 - 1995 PGY3(December) | Contract Occupational Medicine Physician<br>St, Margaret's Hospital<br>Pittsburgh, PA |

* Practicing in local area