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**OCCUPATIONAL
SAFETY AND HEALTH
TRAINING GRANTS | 1976-77**

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National Institute for Occupational Safety and Health

**U.S. DEPARTMENT OF
HEALTH, EDUCATION,
AND WELFARE
Public Health Service
Center for Disease Control**

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OCCUPATIONAL SAFETY AND HEALTH
TRAINING GRANTS
1976-77

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service
Center for Disease Control
National Institute for Occupational Safety and Health
Division of Training & Manpower Development
Cincinnati, Ohio
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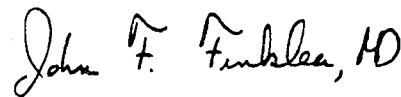
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FOREWORD

There is a growing awareness of the complex interrelationships inherent in national well-being and safety and health considerations in the work place. The enactments into law of the Federal Coal Mine Health and Safety Act of 1969 and the Occupational Safety and Health Act of 1970 have served to focus attention on the importance of these matters and to channel efforts to deal with the hazards that beset and threaten our working population. Among the declared congressional purposes in promulgating these pieces of legislation is the protection of the health and safety of "our most precious resource" - human beings - "to assure so far as possible every working man and woman in the Nation safe and healthful working conditions and to preserve our human resources."

The National Institute for Occupational Safety and Health (NIOSH) has among its responsibilities the development of an adequate supply of qualified manpower and womanpower to carry out the purposes of the Act of 1970. Toward this end, the training grant mechanism provides a particularly useful instrument. Training grant funds are used to support, strengthen, and extend training at educational institutions not only in the traditional occupational safety and health disciplines such as prepare qualified industrial hygienists, safety engineers, industrial physicians, toxicologists, and industrial health nurses, but also in innovative programs which may prepare new types of specialists as exemplified by the Occupational Safety and Health Professional. Paraprofessional and technician training and curriculum development in keeping with the mission of the NIOSH are appropriate activities for training grant support.

This booklet has been prepared to describe the programs supported by training grant funds. This information should be of assistance to educational and training institutions with ongoing or contemplated programs in occupational safety and health manpower development and also to students considering career opportunities.



John F. Finklea, M.D.
Director
National Institute for
Occupational Safety and Health

INTRODUCTION

Training grants are available to colleges, universities, and other public or private non-profitmaking instructional institutions for the purpose of supporting programs designed to prepare researchers, administrators, teachers, professional practitioners, technologists, and technicians in all aspects of occupational safety and health subject matter areas. All levels of training may be supported for both long-term (one year or longer) or short-term (less than one year) duration. Grants for long-term projects are intended to provide training in the fields of, among others, occupational medicine, industrial hygiene, industrial nursing, and occupational safety engineering. Short-term training generally is designed for updating or expanding the skills and knowledge of individuals who have satisfactorily completed basic professional preparation for employment in one of the occupational safety and health professions or occupations.

Curriculum development and instructional methodology development in appropriate occupational safety and health areas are eligible for grant support. It is also planned in FY 1977 to include grants for Educational Resource Centers which will provide for coordinated multidiscipline and multilevel training and short term/continuing education under a single grant serving a geographic region.

Grants are made under the authority of the applicable legislation and in accordance with the prescribed rules and regulations of the Department of Health, Education, and Welfare and the National Institute for Occupational Safety and Health. All applications for training grant support are initially reviewed according to established schedules by a consultative committee of distinguished technical and educational experts who provide objective appraisals of scientific and training merit of each proposal. Recommendations for approval are then reviewed by the Institute for a funding determination within available budgets, taking into account program relevance and consonance with public policy.

All questions and inquiries on admissions to programs, prerequisites, student benefits, student eligibility, course curricula, and the like should be addressed to the individual program directors at their respective institutions.

All inquiries about training grant applications, eligibility, guidelines, review schedules and the like should be addressed to:

Training Grant Program Officer
Division of Training & Manpower Development
National Institute for Occupational Safety and Health
Robert A. Taft Laboratories
4676 Columbia Parkway
Cincinnati, Ohio 45226

INDUSTRIAL HYGIENE

CALIFORNIA STATE UNIVERSITY
Northridge, California

Grant Number: 5 T01 OH 07006-02

Program Title: Occupational Health and Safety Training Program

Degrees Offered: B.S., M.S.

Objectives: The aim is to train industrial hygiene and safety specialists for professional field practice.

Prerequisites: Trainees in the baccalaureate program are expected to complete successfully a college-level basic sciences core including, as a minimum, precalculus mathematics (algebra, trigonometry), physics, biology including physiology, and chemistry. Master's degree candidates are expected to have, as a minimum, a baccalaureate degree in occupational safety and health, or its equivalent. Applicants not meeting the minimum admission requirements are expected to complete an appropriate qualifying program.

Curriculum: The baccalaureate program includes didactic and practical work in occupational safety and health. The master's level program is of 12 to 18 months duration.

Representative courses include:

- occupational health
- industrial hygiene measurements
- industrial toxicology
- radiological health
- accident prevention and industrial safety

Address all Communications to:

Dr. Dennis L. Kelly
California State University, Northridge
18111 Nordhoff Street
Northridge, California 91324

UNIVERSITY OF CALIFORNIA
Berkeley, California

Grant Number: 5 T01 OH 00020-09

Program Title: Environmental Health

Degrees Offered: M.S., Ph.D. (Environmental Health), M.P.H.

Objectives: The M.S. and Ph.D. programs seek the development of research oriented scientists in specialized areas of toxicology and industrial hygiene. The M.P.H. program is also technically oriented but with greater emphasis on the applied aspects of industrial hygiene and toxicology.

Prerequisites: Trainees are baccalaureate degree holders in a physical, biological, or applied science. Selection for admission is based on past academic performance, recommendations, research promise and, when possible, personal interview.

Curriculum: The curriculum for each student is largely dependent on their background and their specialization within environmental health but four basic courses are required of all students; statistics, epidemiology, environmental toxicology, and the course in microbiological aspects of environmental health.

Specific requirements for the M.S. degree:

1. Successful completion of prerequisites and required general courses as indicated above.
2. At least 12 quarter units of graduate study in Environmental Health Sciences.
3. At least 18 additional quarter units from selected courses.
4. A thesis is required for the degree.

Specific requirements for the Ph.D. degree:

1. Preparation equivalent to that outlined for the M.S. degree in Item 1.
2. At least 15 quarter units of graduate study in Environmental Health Sciences to be completed during the first year of residence.
3. A program of study consisting of two minors to be undertaken prior to taking the Ph.D. qualifying examination.

UNIVERSITY OF CALIFORNIA

4. The successful completion of the Ph.D. qualifying examination.
5. An acceptable doctoral dissertation and an open final examination.

Specific requirements for the M.P.H. degree:

1. Preparation equivalent to that outlined for the M.S. degree in Item 1.
2. At least 36 units of acceptable work with 18 units taken within the School of Public Health.
3. Successful completion of a comprehensive examination.

Address all Communications to:

Dr. Robert C. Spear
School of Public Health
Earl Warren Hall
University of California
Berkeley, California 94720

UNIVERSITY OF CINCINNATI
Cincinnati, Ohio

Grant Number: 2 T01 OH 00028-08

Program Title: Training Program in Industrial Hygiene

Degrees Offered: M.S., Ph.D.

Objectives: The program is designed to develop capable professional industrial hygienists who will be able to evaluate and correct in-plant problems. Training is also provided at the doctoral level for those contemplating careers in research, teaching, or directing programs.

Prerequisites: Students are selected on the basis of past academic records, Graduate Record Examination scores, letters of recommendation, and when possible, personal interviews.

Curriculum: Master's Degree -

Requirements for the degree are 45 quarter credits of graduate course work, including a thesis. Work usually can be completed in one year.

Doctoral Degree -

Requirements include 135 graduate quarter credits, including a dissertation based on original research. Usually three years of residence are necessary.

Specialized skills in industrial hygiene are developed through specific courses, laboratory work, field trips and guided research.

A partial listing of required and elective courses is as follows:

<u>Autumn Quarter</u>	<u>Quarter Credits</u>
* Environmental Health Seminar	1
* Environmental Hygiene Technology I	3
* Introduction to Occupational Health	1
a* Introductory Physiology	3
* Air Sampling and Analysis I	3
* Basic Industrial Safety	2
Environmental Hygiene Technology II	3
b Instrumental Methods of Analysis of Pollutants I	3
Occupational Dermatology	2
Radiobiology I	2
Radiation Health	2
Small Particle Technology	3

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Environmental Sanitation	2
Chemical and Biological Effects of the Human Environment	2
^c Teaching Practicum in Environmental Health	2

Winter Quarter

* Environmental Health Seminar	1
* Environmental Hygiene Technology I	3
* Air Sampling and Analysis II	3
* Introduction to Toxicology	3
* Industrial Ventilation	2
^b Environmental Hygiene Technology II	3
Instrumental Methods of Analysis of Pollutants II	3
Occupational Dermatology	2
Basic Health Physics	2
Energy and the Environment	3
Air Pollution Meteorology	4
Environmental Sanitation	2
Epidemiology	3
Radiobiology II	2
Radiation Health	2
Chemical and Biological Effects of the Human Environment	2
^c Teaching Practicum in Environmental Health	2

Spring Quarter

* Environmental Health Seminar	1
* Environmental Hygiene Technology I	3
^a Introduction to Statistics	4
* Industrial Hygiene Laboratory	3
^b Environmental Hygiene Technology II	3
Instrumental Methods of Analysis of Pollutants III	3
Biological Effects of Air Pollutants	2
Physical Aspects of the Environment	1
Ergonomics	2
Design of Environmental Quality Monitoring Programs	2
Chemical and Biological Effects of the Human Environment	2
Theory and Applications of Aerosol Technology	2
Radiobiology III	2
^c Teaching Practicum in Environmental Health	2

Summer Quarter

Research, Thesis Research, Special Topics	Variable
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UNIVERSITY OF CINCINNATI

- * Required courses for M.S. and Ph.D. programs. Sufficient credits for a full program are selected from other courses listed as suggested electives. Other courses may be elected with the consent of the adviser. Ph.D. candidates prepare for minors in two areas and must pass a qualifying examination.
- ^a May be waived with the permission of the adviser and the instructor.
- ^b One quarter or the equivalent is required for M.S. candidates, three quarters for Ph.D. candidates.
- ^c Required for full-time Ph.D. candidates taking less than 12 hours of regularly scheduled formal courses (in second and later years).

Address all Communications to:

Dr. Bernard E. Saltzman
Kettering Laboratory
University of Cincinnati
3223 Eden Avenue
Cincinnati, Ohio 45267

COLORADO STATE UNIVERSITY
Fort Collins, Colorado

Grant Number: 5 T01 OH 07039-02

Program Title: Occupational Health and Safety Training Program

Degrees Offered: B.S.; M.S.

Objectives: This program seeks to strengthen the occupational safety and health components of the established environmental health program.

Prerequisites: Minimum admission requirements for the undergraduate program include graduation from an accredited high school, submission of satisfactory SAT or ACTP scores, and presentation of evidence of satisfactory completion of 10 academic units of English, foreign languages, mathematics, science and social studies.

For the graduate program, the candidate must have passed the G.R.E. and satisfy the Department of Microbiology requirements for graduate study. Applicants should have a 3.0 grade point average and a science background.

Curriculum: This program is unique in that it is administratively located in the Department of Microbiology but has multidisciplinary representation and numerous joint appointments of instructional staff. Laboratory work, field exercises, and guest lectures for special topics are integral parts of the program.

In the baccalaureate program, the curriculum includes intensive specialization in occupational health and safety in the junior and senior years. The senior year program includes work in methods and analysis, occupational health and safety, environmental toxicology, public health administration, environmental health engineering, and public health practice. In the final 10 weeks, the student is assigned to work in a department of public health or occupational safety and health agency.

The graduate program which is designed with flexibility contains offerings from departments of many colleges of the University, such as Engineering, Chemistry, Veterinary Medicine, and Biomedical Science.

Seminars, guest lecturers, and individualized practices are integral components of the curriculum. Research activities comprise essential salient features of this program.

Address all Communications to:

Dr. Roy M. Buchan
Department of Microbiology
College of Veterinary Medicine
and Biomedical Science
Colorado State University
Fort Collins, Colorado 80523

HARVARD UNIVERSITY
SCHOOL OF PUBLIC HEALTH
Boston, Massachusetts

Grant Number: 5 T01 OH 07014-02

Program Title: Graduate Program in Industrial Hygiene

Degrees Offered: M.S., Sc.D., post-doctoral training

Objectives: The aim of this program is to prepare qualified industrial hygiene specialists and/or research workers in federal, state, and local health agencies or related groups in industry. The training may also aid those seeking positions on faculties of colleges and universities.

Prerequisites: All candidates must successfully satisfy the Committee on Admissions and Degrees in competition with other departments for available spaces in the School of Public Health. Candidates are recruited from among holders of baccalaureate degrees in engineering and the physical and biological sciences.

Curriculum: The program at the master's level is a flexible one and may be successfully completed in one academic year by exceptionally well-prepared and qualified students. Two academic years of study is the usual course duration. Field experience may be arranged for summer and intersession periods with the assistance of the faculty advisor.

Core course programs comprising industrial hygiene and related subjects are required for both the one and two-year master's level programs. Cooperative arrangements may be made with MIT and other divisions of Harvard University. Forty and eighty credit units are required for completion of the one and two-year programs, respectively.

Emphasis is placed on research at the doctoral level. A wide range of research areas and dissertation topics is available at the Harvard Graduate School of Arts and Sciences and the Massachusetts Institute of Technology to supplement the offerings at the School of Public Health.

Address all Communications to:

Professor William A. Burgess
Harvard School of Public Health
665 Huntington Avenue
Boston, Massachusetts 02115

UNIVERSITY OF HAWAII
Honolulu, Hawaii

Grant Number: 1 A14 OH 00008-01

Program Title: Introduction to Industrial Hygiene

Degrees Offered: None

Objectives: This is a short-term training program designed to provide practicing industrial hygiene, occupational health and safety personnel with a basic understanding and knowledge of industrial hygiene principles and practices in order that they can function more effectively in their daily activities and provide for a safe and healthful work environment. Participants will become familiar with the hazards of major concern in the Pacific Basin Work environment and their potential adverse effects on human health and well-being; use of monitoring equipment and their operation and application; methods, materials and practices of hazards measurement; and principles of reporting (initial and follow-up) dealing with initiation, evaluation, and effectiveness of control measures.

Curriculum: This program is comprised of two two-week (10 day) training sessions. Each two-week session will have different participants. Participants will be selected from those actively working in the field of industrial hygiene and occupational health and safety. Content of the training will include such topics as: Insult-Injury-Response Syndrome and Interactions; Noise; Nuisances and Hazards; Dust collection, control, evaluation; Gases and Vapors; Hazard Evaluation and reporting; Application of OSHA Regulations; Radiation; Mists and Vapors; Principles of Toxicology; Principles.

A variety of methods will be used to enhance the learning: Didactic presentations; laboratory workshops; analysis and discussion of participant identified problems or problem areas, readings; films, etc.

Address all Communications to:

Mr. Richard Y. Suehiro
Director of Continuing Education
University of Hawaii at Manoa
School of Public Health
1960 East-West Road
Honolulu, Hawaii 96822

or

Mr. Louis J. Pansky, Associate
Western Consortium for Continuing Education
for the Health Professions, Inc.
655 Sutter Street, Suite 408
San Francisco, California 94102

UNIVERSITY OF ILLINOIS
AT THE MEDICAL CENTER
Chicago, Illinois

Grant Number: 1 T01 OH 07049-01

Program Title: Occupational Health and Safety Specialist Training Program

Degrees Offered: M.P.H., M.S., Dr.P.H., Ph.D.

Objectives: Education in this program is directed toward preparing industrial hygiene practitioners and researchers who are capable of serving at the professional level in industry, government or academe.

Prerequisites: All candidates must successfully satisfy the Committee on Admissions in competition with other departments and programs for available openings in the School of Public Health or the Graduate College. Students are recruited from among holders of baccalaureate degrees in engineering and the physical and biological sciences.

Curriculum: The Master and Doctor of Public Health degrees are professional school offerings and may be completed by well qualified students in 1 year and 3 years, respectively. The Master of Science and Doctor of Philosophy degrees are oriented toward scientific research and specialization. The M.S. requires 50 quarter hours of course credits and 22 credits of research and thesis and may be completed in 18 months. The Ph.D. degree is open-ended but in any event must be completed within 7 years of first enrollment in graduate study. The study curriculum for an M.S. student is flexible and individually designed to complement the student's strengths and supplement his weaknesses. Typically, the industrial hygiene curriculum will include courses in biometry, epidemiology, human physiology, environmental medicine, toxicology, occupational psychology, occupational health, radiation protection, and safety. Various electives are available.

Address all Communications to:

Dr. Edward R. Hermann
School of Public Health
University of Illinois at the Medical Center
Post Office Box 6998
Chicago, Illinois 60680

THE JOHNS HOPKINS UNIVERSITY
Baltimore, Maryland

Grant Number: 1 T02 OH 07005-01A1

Program Title: Occupational Health and Safety

Degrees Offered: B.S. in Industrial Hygiene (prospective)

Objectives: This upper division (junior and senior years) program will prepare professional industrial hygienists to function in industry and government. The program accent will be on the toxicological aspects of industrial exposures and their control.

Prerequisites: Admission requirements include satisfactory completion of a minimum of two years of college level course work in the sciences and related fields.

Students will include qualified persons now functioning in industry or government at the technical level who wish to further their education, as well as persons currently enrolled in educational institutions.

Curriculum: This two-year upper division program will lead to a baccalaureate degree. Students will be prepared to assume responsibility in the following areas:

1. Identification of all potentially hazardous substances which may be present in the work environment;
2. Measurement and documentation of levels of environmental exposure to specific hazardous substances;
3. Evaluation of the health significance of levels of exposures;
4. Institution of appropriate controls for the prevention of hazardous exposures and monitoring of their effectiveness;
5. Program administration;
6. Participation, with other members of the occupational health team, in developing and presenting employee health education programs;
7. Development of evaluative procedures in order to assure continuing professional development.

Address all Communications to:

Dr. Marshal S. Levine
The Johns Hopkins University
School of Health Services
624 North Broadway
Baltimore, Maryland 21205

THE UNIVERSITY OF MICHIGAN
Ann Arbor, Michigan

Grant Number: 5 T01 OH 00037-12

Program Title: Graduate Professional Education in Industrial Health

Degrees Offered: M.S., M.P.H., Ph.D., Dr.P.H.

Objectives: This program is directed toward the production of Industrial Hygienists. Trainees of both the M.S. and M.P.H. programs will be specialists in industrial hygiene, but M.P.H. trainees will be particularly well qualified to operate within governmental health departments.

Prerequisites: Candidates for training are recruited from among physicians, engineers, and post-baccalaureate students with physical and biological science backgrounds. Applicants must meet the scholastic requirements of the Horace H. Rackham School of Graduate Studies or the School of Public Health.

Curriculum: The M.P.H. degree programs are usually for a period of two years, but applicants with sufficient prior experience in industrial hygiene or related areas may earn the degree in as little as one year. The M.S. degree programs are usually for a period of one year. The doctoral programs are tailored to the needs of individual students, and generally require a minimum of two years beyond the master's degree. For all degree programs students are required to take courses in the following areas unless prior course work or experience indicate otherwise.

Biostatistics
Industrial Hygiene
Industrial Hygiene Sampling and Analysis
Industrial Toxicology
Industrial Ventilation
Industrial Safety
Principles of Radiological Health
Principles of Epidemiology
Field Studies

Additional courses and seminars are selected from a wide variety of offerings. M.P.H. and Dr.P.H. programs require, in addition, a prescribed minimum of additional course work in other areas of public health.

Address all Communications to:

Dr. Ralph G. Smith
School of Public Health
The University of Michigan
Ann Arbor, Michigan 48109

UNIVERSITY OF MINNESOTA
Minneapolis, Minnesota

Grant Number: 5 T01 OH 00135-05

Program Title: Occupational Health

Degrees Offered: M.S., M.P.H., Ph.D.

Objectives: This program is designed to train environmental health specialists in occupational health, industrial safety, particle technology, and risk management. The training is directed primarily to service but also is applicable to teaching and research. Cooperative activities are established with the Institute of Technology, School of Business Administration, School of Medicine and University Health Service of the University as well as with the State Health Department.

Prerequisites: Trainees must be of post-baccalaureate level with degrees in engineering, physical sciences, or biological sciences; or persons with appropriate experience in industrial safety or public health who desire deeper involvement in occupational health and safety.

Curriculum: Three options are available for the master's degree level. For the M.S. degree, Plan A involves research and a thesis whereas Plan B involves three papers of the quality but not range of the M.S. thesis. For the M.P.H. degree the candidate, who is admitted to the School of Public Health, is required to submit three papers similar to those required for Plan B; but there is no research or thesis provision in this program. The minimum time required for the M.P.H. degree or M.S. (Plan B) degree is 11 months. The M.S. (Plan A) program normally is of 18-24 months duration. The Ph.D. program requires a minimum period of three years. Research and a dissertation are also required.

A typical curriculum for the master's degree would include the listed courses below. For the Ph.D. degree, in addition to these listed courses, all the core environmental health courses are required, as are additional courses of environmental significance in other branches of the University

<u>Core Courses</u>	<u>Credits</u>
Biological Basis of Health and Disease	3
Environmental Health	4
Epidemiology I	3
Biometric Methods in Public Health	6
Seminar - Environmental Health	1
Agency Experience	5

UNIVERSITY OF MINNESOTA

Specialty Courses

Credits

Industrial Hygiene Engineering	4
Air Analysis	6
Ventilation Control of Environmental Hazards	3
Public Health Aspects of Toxic Products	2
Measurement of Ionizing Radiation	4
Environmental Toxicology	3
Particle Technology (Mechanical Engineering)	8
Occupational Safety (Industrial Engineering)	3
Noise and Man	3
Medical Aspects of Occupational Health	3

Elective Courses

Industrial Ventilation (Mechanical Engineering)	3
Agricultural Occupational Health	3
Health Survey of Manufacturing Processes	2
Field Problems in Occupational Health	3
Research in Occupational Health	Credit Arranged
Research in Injury Control	Credit Arranged
Introduction to Air Pollution Problems	3
Air Pollution Controls and Surveys	3

Address all Communications to:

Mr. Knowlton J. Caplan
Associate Professor
Environmental Health
University of Minnesota
School of Public Health
1360 Mayo Memorial Building
Minneapolis, Minnesota 55455

UNIVERSITY OF NORTH CAROLINA
Chapel Hill, North Carolina

Grant Number: 5 T01 OH 00099-07

Program Title: Occupational Health Training

Degrees Offered: M.S.P.H. (Public Health), M.S.E.E. (Environmental Engineering),
Ph.D.

Objectives: This is a graduate program which seeks to train practitioners of industrial hygiene, primarily at the master's degree level. The training which is essentially practical, is broadly based, including work in biostatistics, epidemiology, radiological health, environmental sanitation, and many aspects of air pollution control.

Prerequisites: Trainees are sought from among holders of baccalaureate (or higher) degrees in engineering, chemistry, biology, or any physical or natural science, and among doctors of medicine. Mathematics through the calculus and an academic average of B is required. A statement of research interests and professional goals is required.

Curriculum: The program crosses disciplinary lines as well as institutional lines and students may be permitted to take courses such as agriculture, forestry (meteorology), and chemical engineering (which are not available at Chapel Hill) at Duke University and/or North Carolina State University.

Although the formal course requirements of the School of Public Health and the Department of Environmental Sciences and Engineering are minimal, the master's degree program generally takes one or two years. The programs generally follow typical patterns. The one-year program generally includes two semesters plus a summer session, for a total of about 42 credits. The two-year program generally includes four semesters plus a summer session, for a total of about 72 credits. The course work typically includes among a wide selection:

Statistics and Probability
Epidemiology
Applied Physiology and Toxicology
Air Pollution Control
Elements of Radiological Health
Instrumental Methods of Analysis
Chemistry of the Troposphere
Industrial Safety
Industrial Medicine
Special Problems in Industrial Hygiene
Physiology & Toxicology

UNIVERSITY OF NORTH CAROLINA

A research project and report are required at the master's level and opportunities are provided for field experience.

Address all Communications to:

Dr. David A. Fraser
University of North Carolina
Department of Environmental Sciences
and Engineering
Chapel Hill, North Carolina 27514

UNIVERSITY OF PITTSBURGH
Pittsburgh, Pennsylvania

Grant Number: 5 T01 OH 00214-02

Program Title: Industrial Hygiene Training Grant

Degrees Offered: M.S. (Industrial Hygiene)

Objectives: The principal aim of the program is to prepare industrial hygiene practitioners who will be capable of:

1. assessment and evaluation of chemical and physical hazards in the work environment, and
2. recommending engineering design to control hazards and to provide a salubrious work environment.

Prerequisites: Trainees are recruited from holders of the bachelor's degree in a physical or biological science or a branch of engineering. Admission to the program is based on G.R.E. scores, undergraduate record, letters of recommendation, and statement of intent.

Curriculum: The full program comprises eleven calendar months of instruction (two terms plus a summer session). Required courses include one or more in statistics, experimental design, epidemiology, occupational health, work physiology, industrial hygiene, ventilation, toxicology, industrial medicine, and radiation health. These total 25 credit hours, with 4 more in proposed courses in law and safety. A variety of electives is available, with an overall total of 40 to 45 credits expected for graduation. Field trips are included in the training and a thesis must be completed.

Address all Communications to:

Dr. Nurtan A. Esmen
Graduate School of Public Health
University of Pittsburgh
130 DeSoto Street
Pittsburgh, Pennsylvania 15261

QUINNIPIAC COLLEGE
Hamden, Connecticut

Grant Number: 5 T02 OH 07041-02

Program Title: Four-Year Baccalaureate Program in Industrial Hygiene

Degrees Offered: Certificate; B.S. (prospective)

Objectives: This program has a twofold objective; to enhance the skills and knowledge of people currently working in occupational safety and health by providing opportunity for continuing education, and to develop new practitioners of occupational safety and health specialties.

Prerequisites: Students are recruited from high schools, science and engineering programs in colleges, industry, and government, civilian and military agencies. Disadvantaged persons are included.

Curriculum: The baccalaureate program requires 127-130 semester credits for completion distributed as follows: 49 in sciences, 36 in occupational safety and health courses, 12 in mathematics, 21 in the liberal arts, and 9-12 in various electives. The first two years consist of a basic science, mathematics, and liberal arts core. The summer following the second year is occasioned by introduction of course work in industrial hygiene and manufacturing processes.

Priority areas of importance include:

- ventilation
- noise
- toxicology
- safety-accident prevention, protection, investigations
- electrical and mechanical hazards
- ionizing and non-ionizing radiation
- occupational diseases

Other areas of consideration include:

- heat stress
- fire prevention, protection, and control
- administration of hygiene and safety programs
- ergonomics-work physiology
- in-service teaching

Address all Communications to:

Dr. Floyd A. Van Atta
Department of Biological Sciences
Quinnipiac College
Mount Carmel Avenue, Box 153
Hamden, Connecticut 06518

SAINT AUGUSTINE'S COLLEGE
Raleigh, North Carolina

Grant Number: 5 T01 OH 00225-02

Program Title: Undergraduate Occupational Safety and Health

Degrees Offered: B.S. (Occupational Health and Safety)

Objectives: The aim of this program is to train qualified practitioners of industrial hygiene for careers of service and research in government and industry.

Prerequisites: Trainees are high school graduates admitted to Saint Augustine's College on the same basis as other students.

Curriculum: The program consists of 120 units to be completed in 36 months plus three summer sessions. In addition to the usual undergraduate subjects in the liberal arts, the specialized program is structured around chemistry. Of the required 120 units, 114 are didactic with the remaining 6 devoted to readings, conferences, and special topics including field trips.

Address all Communications to:

Mr. Roamless Hudson, Jr.
Department of Chemistry
P.O. Box 566
Saint Augustine's College
1315 Oakwood Avenue
Raleigh, North Carolina 27611

TEMPLE UNIVERSITY
Philadelphia, Pennsylvania

Grant Number: 5 T01 OH 00160-02

Program Title: Occupational Health Training Program

Degrees Offered: M.S. (Environmental Health)

Objectives: This program seeks to prepare professional level industrial hygienists trained in the recognition, evaluation and control of health problems in occupational environments.

Prerequisites: Candidates are accepted into the program who are science majors with a background in chemistry and biology.

Curriculum: This is a 12-month interdisciplinary program comprising two semesters of lectures, demonstrations, laboratory work, field trips and conferences and during the summer session the students serve an externship with industry or governmental agencies where they function with an Industrial Hygienist to develop a greater competency in Industrial Hygiene technology.

Standard Curriculum

First Semester

Credits

Fundamentals of Biostatistics	3
Isotope Methodology, Lecture and Laboratory	4
Medical Aspects of Occupational Health	2
Industrial Hygiene I, Lecture and Laboratory	4
Analytical Instrumentation	3
Seminar	1

Second Semester

Industrial Safety	2
Environmental Toxicology	3
Industrial Ventilation	2
Engineering Aspects of Air Pollution Control	2
Introduction to Computer Programming and Application	3
Administration and Organization	3
Seminar	1

Field Trips - These are arranged to appropriate industrial locations in the greater Philadelphia area.

Address all Communications to:

Dr. Samuel Elkin
Center for Environmental Studies
Temple University School of Pharmacy
3307 North Broad Street
Philadelphia, Pennsylvania 19140

TEXAS A&M UNIVERSITY
College Station, Texas

Grant Number: 1 A14 OH 00009-01

Program Title: Industrial Hygiene Engineering Institute

Objectives: This program is intended to provide background and foundational material to a group of college teachers interested in initiating industrial hygiene engineering concepts or courses into the curricula of their institutions. The instruction is conducted by faculty of Texas A&M University and supplemented by invited guest lecturers from various industries with extensive experience in the field. Techniques of instruction include lecture/demonstration, laboratory sessions, and field trips to selected sites with unique industrial hygiene study conditions. The content of the program consists of Recognition, Evaluation, and Control of Occupational Hazards.

Trainees are selected from college or university faculties who have demonstrated competence in engineering-related subjects and have potential to grasp and apply industrial hygiene concepts and methods in courses at their institutions.

Address all Communications to:

Dr. Ralph J. Vernon
Department of Industrial Engineering
Texas A&M University
College Station, Texas 77843

TEXAS A&M UNIVERSITY
College Station, Texas

Grant Number: 5 T01 OH 00215-02

Program Title: Occupational Safety and Health Educational Programs

Degrees Offered: B.S., Industrial Engineering (System Safety Specialty)
B.S., Industrial Safety
M.S., Industrial Hygiene
M.S., Industrial Safety
M.E., Industrial Engineering (Safety Engineering Specialty)
Ph.D., Industrial Engineering (Industrial Hygiene and Safety Engineering Specialties)

Objectives: These programs are designed to prepare professional level practitioners as well as teachers, researchers, and administrators of industrial hygiene, safety engineering, and occupational safety and health.

Prerequisites: Trainees for the bachelor's degrees are selected on the basis of their grade point ratio, attitude and interest in occupational safety and health as determined during a personal interview. Candidates for the graduate program's support must: 1) hold an acceptable baccalaureate or master's degree from a recognized institution; 2) show promise of ability to pursue advanced study and research; 3) have had adequate preparation to enter or continue graduate study in the field chosen; 4) submit acceptable G.R.E. scores; 5) have a satisfactory background and/or experience; 6) have acceptable references; 7) have a satisfactory personal interview.

Curricula:

1. The B.S. in Industrial Engineering (System Safety Specialty) is an E.C.P.D. accredited degree designed to prepare engineers in the identification, evaluation and control of hazards during the planning and development phases of a system. They cooperate with other members of the design team to produce an optimum degree of safety established within constraints for the life cycle of a production operation, a product, an environment or other system. A total of 137 semester credit hours is required.
2. The B.S. in Industrial Safety curriculum comprises 135 credit hours distributed in mathematics, basic sciences, management sciences, engineering sciences, industrial materials and processes, occupational safety and health, humanities and social studies, and electives. Logical problem identification and problem solution is inherent throughout the program. The student gains insight and expertise in safeguarding of operations through knowledge of machine guarding, environmental surveillance, fire protection, and methods analysis.

TEXAS A&M UNIVERSITY

3. The M.S. degree in Industrial Hygiene is designed to prepare industrial hygienists to recognize significant exposures (agents, elements or processes), to evaluate those exposures, and to develop or design controls. A grade point ratio of 2.5 on a 4.0 base is required with a degree in engineering, physical sciences, or biological sciences. The Graduate Record Examination is required with a combined verbal and quantitative score in excess of 950. Courses include industrial hygiene, industrial safety engineering, industrial hygiene instrumentation, human physiology, industrial and environmental toxicology, statistical analysis, ventilation systems, evaluation and control of the occupational environment, and research. A minimum of 32 semester hours is required.
4. The M.S. degree in Industrial Safety has the same qualification requirements as the M.S. in Industrial Hygiene. Courses include industrial safety engineering, human factors engineering, facilities design, equipment design, industrial hygiene, statistics and research. A minimum of 32 semester hours is required.
5. The M.E. in Industrial Engineering (Safety Engineering Specialty) requires a baccalaureate degree in engineering or physical sciences. Other entry requirements are identical with those for the M.S. in Industrial Hygiene. Courses include system safety engineering, industrial hygiene, industrial safety engineering, equipment design, operations research, facilities design, advanced quality control, human factors engineering and a research problem. A minimum of 36 semester hours is required.
6. The Doctor of Philosophy degree in Industrial Engineering (Industrial Hygiene and Safety Engineering Specialties) is designed to give the candidate a thorough and comprehensive knowledge of his professional field and to educate him in research methods. The final basis for granting the degree is the candidate's grasp of the subject matter of a broad field of study and his/her demonstrated ability to do independent research. In addition, the candidate must have acquired the ability to express himself clearly and forcefully in both oral and written languages. A minimum of ninety-six (96) semester credit hours beyond the baccalaureate degree or sixty-four (64) semester credit hours beyond the Master's degree is normally required for the Doctor of Philosophy.

All degree programs are administered in the Department of Industrial Engineering.

Address all Communications to:

Dr. Ralph J. Vernon
Department of Industrial Engineering
Texas A&M University
College Station, Texas 77843

UNIVERSITY OF WASHINGTON
Seattle, Washington

Grant Number: 1 T01 OH 07048-01

Program Title: Industrial Hygiene and Safety

Degrees Offered: M.S. (Environmental Health)

Objectives:

1. To prepare graduates with technical knowledge and skills in both industrial hygiene and safety.
2. To prepare graduates for positions involving program planning, administration and management.

Prerequisites:

1. B.S. or equivalent degree in environmental health or a physical science or a biological science.
2. Admission to graduate school. A GPA of 3.0+ overall or during last year of college.
3. The Graduate Record Exam is required.

Curriculum:

1. Six quarter program of study including field applications and research totaling a minimum of 60 credit hours plus 9 hours of thesis credit.
2. Submission of an acceptable thesis.

TYPICAL PROGRAM

<u>Autumn</u>	<u>Credits</u>
Introduction to Industrial Hygiene and Safety	3
Environmental Problems	3
Biostatistics	3
Accident Prevention	2
Environmental Reading	1
<u>Winter</u>	
Industrial Hygiene and Safety	2
Instrumentation Lab	
Laboratory Management and Safety	1
Environmental Problems	3
Design for Safety	3
Environmental Reading	1
Elective	3

UNIVERSITY OF WASHINGTON

<u>Spring</u>	<u>Credits</u>
Industrial Hygiene Chemistry Lab	2
Community Noise	2
Epidemiology	4
Control of the Industrial Environment	3
Environmental Readings	1
<u>Autumn</u>	
Human Factors	2
Graduate Research	3
Electives	6
Seminar	1
<u>Winter</u>	
Air Pollution	2
Health Services	3
Accident Investigation, Analysis and Costs	2
Thesis	4
Seminar	1
<u>Spring</u>	
Industrial Safety Practices	2
Particle Microscopy	2
Thesis	5
Electives	3
Seminar	1

INTERN PROGRAM

During the summer months three students are selected as interns to assist the State industrial hygienists and safety engineers with inspections and surveys of work places. This program has been in operation for three years. Each student is paid a stipend by the State for the summer work.

Arrangements are being made with a number of industries and other agencies for similar programs.

Address all Communications to:

Peter A. Breysse
Associate Professor
Department of Environmental Health, F461 HSB, SC-34
School of Public Health and Community Medicine
University of Washington
Seattle, Washington 98195

WICHITA STATE UNIVERSITY
Wichita, Kansas

Grant Number: 2 A14 OH 00006-02

Program Title: Comprehensive Short-Term Training in Occupational Safety and Health

Degrees Offered: Only a certificate of completion is provided.

Objectives: Purpose of the program is to provide comprehensive, intensified training in occupational safety and industrial hygiene. Emphasis is placed on recognition and evaluation of potential hazards in the work environment and recommendation of effective control measures.

Prerequisites: Candidates must be employees of state or local government agencies with demonstrable responsibility to occupational safety and health programs. Federal employees are accepted on a space available basis only.

Curriculum: Three 8-week identical sessions are conducted during the fiscal year. The first five weeks are devoted to industrial hygiene topics with a week of field trips and transitional subjects with the final week devoted to safety. The 240 hours of instruction are conducted according to the following general format.

Week One

History of Occupational Safety and Health
Occupational Safety and Health Act (OSHA)
Fundamentals of Industrial Hygiene
Fundamentals of Illumination
Anatomy of Eye, Ear and Skin

Week Two

Basic Concepts of Ionizing Radiation
Protection From Non-Ionizing Radiation
Noise Fundamentals
Noise Survey Techniques and Instrumentation
Noise Control
Hearing Conservation

Week Three

Anatomy of the Lungs and Modes of Entry
Toxic Materials Classification
Threshold Limit Values

Week Three (Contd.)

Basic Chemicals
Halogenated and Aromatic Hydrocarbons
Solvents and Plastics
Pesticides

Week Four

Field Sampling Techniques and Instrumentation
Industrial Waste Disposal

Week Five

Industrial Ventilation
Measurements in Hot Environments
Respiratory Protective Equipment

Week Six

Field Trips
Ergonomics
Fired and Unfired Pressure Vessels

Week Seven

Trenching and Excavation
Construction Safety
National Electrical Code

Week Eight

Material Handling
Fire Prevention and Protection

Address all Communications to:

Dr. Everett L. DeWhitt, Jr.
Division of Continuing Education
P.O. Box 100
Wichita State University
Wichita, Kansas 67208

OCCUPATIONAL SAFETY

AUBURN UNIVERSITY
Auburn, Alabama

Grant Number: 5 T01 OH 00162-05

Program Title: Training Program in Occupational Safety and Health

Degrees Offered: Bachelor of Industrial Engineering (Unsupported M.S. and M.I.E. programs also available)

Objectives: The aim of the program is to develop persons who are professionally prepared at the undergraduate level to work in both the design and operational levels of occupational safety programs in government and in service and manufacturing industries.

Prerequisites: For this professional baccalaureate degree level program, candidates are graduates of high schools or are transfer students from junior colleges or other universities meeting the normal entrance requirements of the Auburn University School of Engineering.

Curriculum: The following represents the Bachelor of Industrial Engineering - Occupational Safety Option program, leading to the Bachelor of Industrial Engineering degree. This degree is accredited by the Engineer's Council for Professional Development as an Industrial Engineering program.

INDUSTRIAL ENGINEERING (I.E.)
1976-77

OCCUPATIONAL SAFETY OPTION

FRESHMAN YEAR

<u>First Quarter</u>	<u>Second Quarter</u>	<u>Third Quarter</u>
MH 161 An Geom & Cal...5	MH 162 An Geom & Cal...5	MH 163 An Geom & Cal...5
CH 103 Fund Chem I....4	CH 104 Fund Chem II....4	PS 220 Gen Physics I....4
CH 103L Gen Chem Lab....1	CH 104L Gen Chem Lab....1	EH 103 English Com.....3
EH 101 English Comp....3	EH 102 English Comp....3	HY 204 Tech & Civ I.....3
EGR 100 Engr Perspect...2	TS 102 Graphic Comm....2	Basic ROTC or Elect....1
Basic ROTC or Elect....1	Basic ROTC or Elect....1	Physical Ed.....1
Physical Ed.....1	Physical Ed.....1	<u>17</u>
<u>17</u>	<u>17</u>	

SOPHOMORE YEAR

IE 202 Ind Engr Fund...3	IE 300 Computer Prog...3	IE 311 StatisticsI.....3
MH 264 An Geom & Cal...5	MH 265 Diff Equations..3	IE 327 Engr Econ Anal...5
PG 211 Gen Psychology..5	EC 200 Economics I.....5	HY 206 Tech & Civ III...3
PS 221 Gen Physics II..4	PS 222 Gen Physics III.4	PS 320 Modern Physics...3
Basic ROTC or Elect....1	HY 205 Tech & Civ II...3	Basic ROTC or Elect....1
<u>18</u>	Basic ROTC or Elect....1	+Hum-Soc Elect.....3
	<u>19</u>	<u>18</u>

JUNIOR YEAR

IE 323 Engr Stat II.....5	IE 308 Ergonomics I....4	IE 408 Ergonomics II...5
IE 305 Info-Des Sys.....3	IE 333 Engr Stat III...4	IE 415 Oper Res Models.5
PG 321 Exp Psych II: Perception.....4	IE 335 Linear Prog.....4	IE 402 Sys Anal for Occup Safety.....3
ME 301 Thermodynamics I.4 +Hum-Soc Elect.....3	IE 401 Occup Safety Fund.....3	EE 263 Linear Circuits Analysis II....4
<u>19</u>	EE 261 Linear Circuits Analysis I.....3	<u>17</u>
	<u>18</u>	

SENIOR YEAR

IE 416 Simulation.....3	IE 425 Prod Cont Func II.....3	*IE 428 Oper & Fac Design II.....3
IE 422 Prod Cont Func I.4	*IE 427 Oper & Fac Des I3	IE 406 Occup Safety Lab3
IE 403 Occup Acc Prev...3	IE 405 Occup Hyg Engr II.....3	ME 321 Dynamics.....4
IE 404 Occup Hyg Engr I.3	ME 207 Stren of Mat I..3	ME 444 Design Hazard Reduction.....4
ME 205 Statics.....4	EE 397 Intro Acoustics.3	<u>14</u>
<u>17</u>	<u>15</u>	

TOTAL -- 206 Quarter Hours

+Substitute Adv. ROTC for 6 hours of Hum-Soc Electives

*To be safety related design in this option

In addition to the above NIOSH supported program, the Department independently offers a Master of Science program and an ECPD accredited Master of Industrial Engineering program. Within these programs, there is a limited opportunity for advanced study for persons interested in occupational or highway traffic safety. Such students would be encouraged to follow a plan of study that develops a general competence in occupational human performance (ergonomics) and applied statistics and/or management engineering, and is expected to pursue a safety oriented thesis or design project. The student would be expected to take the advanced ergonomics courses, the advanced occupational safety courses, at least one advanced course in either general human physiology or work physiology, the advanced engineering economy course, and at least three of the advanced level applied statistics courses. The remainder of the student's program might come from management, environmental engineering, psychology, physiology, audiology, production control, or some other allied area that is supportive of the particular thesis or design project activity he decides to pursue. Directed readings or other special activities in areas of particular interest to the student that may not be covered by regularly scheduled courses may be included in the plan of study. Several faculty members in the department are capable of directing graduate students whose interest is in occupational safety.

Address all Communications to:

Dr. George H. Brooks
Department of Industrial Engineering
Auburn University
Auburn, Alabama 36830

UNIVERSITY OF ARIZONA
Tucson, Arizona

Grant Number: 5 T01 OH 00210-02

Program Title: Master of Science in Safety Management

Degrees Offered: M.S. in Finance (Safety Management)

Objectives: The objectives of the program are fourfold, namely:

To provide the necessary knowledge and ability to organize and administer comprehensive occupational safety and health programs and risk management at the problem solving and decision making level of management.

To develop a capability to work within the economic and legal framework of an organization so that risks and their costs are defined and controlled within acceptable levels.

To provide an understanding of behavioral concepts as they apply to safety and risk management.

To expand knowledge of the occupational safety and health sciences as they apply to recognition, evaluation, and control of hazards within the economic and financial structure of an organization.

Prerequisites: Candidates must have a baccalaureate degree and preferably some background in safety related fields.

Test scores from the Graduate Management Admission Test or Graduate Record Examination must be submitted prior to admission to the program.

Curriculum: The program consists of 36 units of study. Of these, 30 units are required core courses and six units are electives.

The core courses are as follows:

Survey of Safety Sciences
Safety Law
Safety Management (two semesters)
Statistical Methods for Measuring Safety Performance
Risk Management
Organizational Theory and Behavioral Relations
System Safety
Research Techniques in Safety
Research Master's Report

UNIVERSITY OF ARIZONA

This program is designed to be completed by students in one year. That is, the full-time student should be able to finish the program in two academic semesters plus two 5-week summer sessions.

Address all Communications to:

Dr. Nestor R. Roos
Department of Finance
College of Business and
Public Administration
University of Arizona
Tucson, Arizona 85721

CENTRAL MISSOURI STATE UNIVERSITY
Warrensburg, Missouri

Grant Number: 1 T01 OH 07044-01

Program Title: Industrial Safety and Hygiene Degree Program

Degrees Offered: B.S., Public Services: Industrial Safety
M.S., Public Services: Industrial Safety
M.S., Public Services: Industrial Hygiene

Objectives: To provide a program which permits an individual to select either industrial safety or industrial hygiene or both and obtain a quality education in preparation for providing services teaching, or supervising an industrial safety and health program.

Prerequisites: Bachelor of Science, Public Services: Industrial Safety
Candidates are graduates of high schools, junior colleges, and transfer students who meet the normal entrance requirements of Central Missouri State University.
Master of Science, Public Services: Industrial Safety
Candidates must have an undergraduate degree from an acceptable college or university with 15 hours of safety related courses which must include Safe 4010, Safe 4050, and Psy 4610 or their equivalent.
Master of Science, Public Services: Industrial Hygiene
Candidates must have an undergraduate degree from an acceptable college or university with one year of chemistry as required for chemistry major, one year of physics as required for physics major and one-half year of biology or physiology.

Curriculum: B.S., Public Services: Industrial Safety

<u>Course</u>	<u>No.</u>	<u>Title</u>	<u>Sem. Hrs.</u>
Hed	1350	Standard First Aid & Personal Safety	2
IS&H	2800	Fire Prevention & Protection	3
IS&H	3120	Introduction to Industrial Hygiene	3
IS&H	3430	Introduction to Safety Engineering	3
IS&H	4140	Safety & Health Laboratory	2
IS&H	4410	Total Loss Control	3
IS&H	4420	Occupational Safety & Health Legislation	3
IS&H	4430	Workmen's Compensation Legislation	2
Safe	4010	Principles of Accident Prevention	3
Safe	4020	Legal Aspects of Safety Programs	3
Safe	4050	Philosophy of Safety	3
Safe	4210	Civil Defense & Emergency Procedures	2
Psy	4610	Psychology in Safety & Accident Prevention	2
Mf&C	4310	Construction Safety	3
TOTAL			37

CENTRAL MISSOURI STATE UNIVERSITY

Electives: A minimum of 21 semester hours will be selected from the courses approved by the Head of the Industrial Safety and Hygiene Department.

M.S., Public Services: Industrial Safety

Required Courses 17 Sem. Hrs.

Safe	5010	Organization, Administration, & Supervision of Safety Programs	3
Safe	5940	Current Literature & Research in Public Services	3
IS&H	5120	Principles of Industrial Hygiene	3
IS&H	4410	Total Loss Control	3
IS&H	5430	Industrial Safety Engineering	3
IndM	5210	Human Factors in Engineering Design	2

Electives (Area I) 10-12 Sem. Hrs.

Safe	4020	Legal Aspects of Safety Programs	3
Safe	5070	Field Experiences in Safety	3
Safe	6080	Internship in Safety	1-6
Safe	4210	Civil Defense & Emergency Procedures	2
Safe	5950	Readings in Safety	1-5
Safe	5990	Thesis or	
Safe	6930	Individual Research Problems	2-6
IS&H	4140	Safety & Health Lab	2
IS&H	4420	Occupational Safety & Health Legislation	3
IS&H	4430	Workmen's Compensation Legislation	2
IS&H	5140	Industrial Ventilation for Environmental Safety & Health	3

Electives (Area II) 3-5 Sem. Hrs.

Psy	4520	Statistics for the Behavioral Sciences	3
Psy	4600	Industrial Psychology	3
Psy	5430	Stimulants & Depressants	2
Soc	4850	Industrial Sociology	3
SP&A	5702	Industrial Audiology	3
IndM	4210	Industrial Management	3
Mf&C	4310	Construction Safety	3
BAdm	4630	Data Processing in Business	3

Minimum Total 32 Sem. Hrs.

All courses are to be selected with the approval of the student's adviser and the consent of the school graduate committee.

M.S., Public Services: Industrial Hygiene

Required Courses 28 Sem. Hrs.

IS&H	5120	Principles of Industrial Hygiene	3
Safe	5010	Organization, Administration, & Supervision of Safety Programs	3

CENTRAL MISSOURI STATE UNIVERSITY

Safe	5940	Current Literature & Research in Public Services	3
*Chem	5011	Chemical Fundamentals for Industrial Hygienists	3
Chem	5200	Industrial Environmental Monitoring	3
Chem	5400	Industrial Toxicology	3
Phys	4601	Noise & Vibration Measurements	1
*Phys	4602	Radiation & Optics	2
Phys	4702	Nuclear Radiation & X-Rays	2
Biol	5403	Biology for Industrial Hygienists	3
SP&A	5702	Industrial Audiology	2

Electives in Safety 4 Sem. Hrs.

All courses are to be selected with the approval of the student's adviser and the consent of the school graduate committee.

*Students excused from Chem 5011 and/or Psy 4602 will select additional electives in safety to complete the degree program.

Address all Communications to:

Mr. Herbert H. Jones
Lecturer: Industrial Hygiene
Department of Industrial Safety and Hygiene
Central Missouri State University
Warrensburg, Missouri 64093

CLEMSON UNIVERSITY
Clemson, South Carolina

Grant Number: 1 T01 OH 00235-01

Program Title: Occupational Safety and Health

Degrees Offered: B.S.

Objectives: This is an undergraduate program with strong emphasis in Administrative Management. The training is directed toward the development of junior level Safety Professionals.

Prerequisites: Baccalaureate level candidates are high school graduates admitted through the normal admission procedures of Clemson University. These students are selected on the basis of academic performance and professional interest in the field of occupational safety and health.

Curriculum: The curriculum comprises 132 credit hours distributed as follows:

<u>Area</u>	<u>Credits</u>
Mathematics, Basic Sciences and Computer Science	27
Occupational Safety and Health	24
Industrial Management	37
Humanities and Social Studies	27
Electives	17

SAFETY AND HEALTH CORE COURSES

SH 201	Scope and Functions of a Safety Professional
SH 301	Accident Prevention and Loss Control Procedures I
SH 302	Accident Prevention and Loss Control Procedures II
SH 303	Industrial Health Management
IM 307	Personnel Management
SH 401	Fire Protection - Prevention
SH 402	Occupational Safety Field Operations
SH 404	Industrial Safety Management
SH 410	Public Safety
Econ 301	Economics of Labor
Econ 306	Risk and Insurance
SOC 351 or	Industrial Sociology
Psyc 301	Industrial Psychology

Address all Communications to:

Dr. Donald W. Lyons
College of Industrial Management
and Textile Science
Clemson University
Clemson, South Carolina 29631

UNIVERSITY OF MIAMI
Coral Gables, Florida

Grant Number: 5 T01 OH 07012-02

Program Title: Occupational Safety and Health Training

Degrees Offered: B.S.; Post-baccalaureate Certificate of Proficiency;
Higher graduate degrees also available

Objectives: This program is designed to meet both the immediate and long-term needs of agriculture, industry, insurance, and government for trained practitioners of occupational safety and health. Agricultural worker's safety and health is emphasized. Special efforts are made to recruit trainees from minority groups.

Prerequisites: Baccalaureate level students must meet the admission requirements of the Industrial Engineering Department which is a grade of "C" in high school courses, or present an Associate of Arts degree with a minimum "C" average. Candidates for the certificate program must present at least one of the following:

1. Baccalaureate degree in a recognized field of engineering, health-related fields, basic sciences, or the equivalent.
2. Registration as a professional engineer or as a certified safety professional.
3. Presentation of evidence to the satisfaction of the Department of Industrial Engineering of an adequate background in Occupational Safety and Health.

Curriculum: For the baccalaureate program, the requirements include the basic minimum undergraduate subjects in the humanities and a minimum of 15 semester hours in specialized occupational safety and health courses. Among these are the following:

	<u>Credits</u>
Industrial Security	3
Industrial Safety Engineering	3
Product Safety Engineering	3
Accident Prevention Systems	3
Man-Machine Systems	3
Industrial Hygiene	3
Industrial Toxicology	3

In addition, a project is required, in a selected option, in all courses requiring projects. These courses are:

Methods Engineering
Manpower Systems
Production Systems
Systems Analysis Applications

The Certificate Program requires completion of a minimum of 15 semester hours of individually planned advanced course work of which at least 12 hours are directly related to occupational safety and health. Some suggested courses are the following:

Accident Prevention Systems
Occupational Biomechanics
Industrial Hygiene
Industrial Toxicology
Biostatistics Methods
Man-Machine Systems
Product Safety Engineering
Design of Experiments

Address all Communications to:

Dr. Tarek M. Khalil
Department of Industrial Engineering
School of Engineering and Environmental Design
University of Miami, Box 8294
Coral Gables, Florida 33124

THE UNIVERSITY OF MICHIGAN
Ann Arbor, Michigan

Grant Number: 2 T01 OH 00161-04

Program Title: Occupational Health and Safety Engineering

Degrees Offered: M.S., Ph.D.

Objectives: The program is designed primarily to prepare practitioners in occupational health and safety fields. A major aim is the provision of training for the prevention of occupationally unhealthy and unsafe working conditions. This is accomplished by preparing the trainees to be capable of designing desirable work situations within the limits imposed by man's psychological, physiological and anatomical capabilities.

Prerequisites: Trainees must hold a baccalaureate degree from a recognized program in engineering, physics, or a related field and give evidence of ability to pursue graduate studies in this field as judged by a five-man admissions committee. Some graduates in mathematics may be admitted to the program, if interested in the Systems Modeling topics of Occupational Health and Safety problems.

Curriculum: A minimum of 30 credit hours is required for the master's degree. The following division is recommended:

	<u>Credits</u>
Industrial Engineering (Occupational Health and Safety)	(min.) 16
Industrial Health	(min.) 7
Suggested electives	7

Required courses for all trainees include:

Environmental Physiology
Industrial Hygiene
Industrial Hygiene Control
Human Factors in Engineering Systems
Biomechanics and Work Physiology
Safety Engineering and Industrial Accident Prevention

A wide range of elective courses is available under the following and other categorical headings:

Occupational Health - Concepts and Controls
Human Performance and Safety Engineering
Seminar Topics in Occupational Health and Safety Engineering
Occupational Law
Insurance and Actuarial Science
Psychology in Industry

THE UNIVERSITY OF MICHIGAN

Statistics in Occupational Safety and Health
Safety Engineering
Safety Management
Industrial Organizational Theory
Bioengineering Measurement
Physiology for Engineers
Environmental Health Planning
Anthropometry

Address all Communications to:

Dr. Don B. Chaffin
The University of Michigan
2260 G. G. Brown Laboratory
Ann Arbor, Michigan 48109

MONTANA COLLEGE OF MINERAL
SCIENCE AND TECHNOLOGY
Butte, Montana

Grant Number: 5 T02 OH 07003-02

Program Title: Baccalaureate Training in Industrial Safety, Safety Management,
and Industrial Hygiene

Degree Offered: B.S. (Occupational Safety and Health)

Objectives: This program of undergraduate instruction is designed to develop
professionals:

1. with capability and insight into the physical and life sciences, behavioral sciences, management, law, communications, engineering, industrial safety, safety management and industrial hygiene, and
2. capable of developing a safe and healthy work environment and administering comprehensive occupational safety and health programs.

Prerequisites: Trainees are high school graduates and transfer college students.

Curriculum: Credits

41	Physical Sciences
18	Life Sciences
16	Humanities and Social Studies
11	Communications
12	Engineering
38	Occupational Safety and Health
5	Management
<u>141</u>	<u>Total</u>

Applied aspects of the student's education is enhanced through emphasis of environmental sampling laboratories, problem solving courses, human performance laboratory, field trips, and seminars and conferences held on campus.

Address all Communications to:

Mr. Floyd C. Bossard, Chairman
Environmental Engineering Department
Montana Tech
Butte, Montana 59701

NEW YORK UNIVERSITY
New York, New York

Grant Number: 2 T01 OH 00163-05

Program Title: Training in Occupational Safety and Health

Degrees Offered: M.A., Ph.D., Non-degree Postdoctoral Training

Objectives: The principal aim of this program is the development of professional specialists for careers as practitioners in controlling occupational hazards. Applicants are recruited from among those in appropriate disciplines such as engineering, life and physical sciences, management, and education. The trainees acquire competence in solving broad occupational safety and health implementation problems as well as developing skills in diagnosis, evaluation, and correction of specific hazards such as may be found in most operating systems.

Prerequisites: For the master's degree program, applicants must hold an acceptable baccalaureate degree and have a scholastic average of 2.5 (A = 4). Students holding an acceptable master's degree may be admitted on submission of evidence of that degree. Matriculation for the doctoral degree requires the same credentials as for a master's degree, plus competency in written English, a minimum score of 1,000 on the Graduate Record Examination, and favorable recommendations.

Curriculum: The curriculum is comprised of courses selected from the Post-Graduate School of Medicine and The Center for Safety. The work is balanced between theory and practice. The master's degree is the terminal one for most trainees, with the Ph.D. or postdoctoral training available on a selected basis.

The master's degree program requires a minimum of 43 credits, of which 34 must be from a body of core courses. Electives require approval of departmental advisors. The core segment includes:

	<u>Credits</u>
Foundations of Safety for the Modern Society	3
Environmental Factors in Safety	3
Human Performance Variables in Safety	3
Statistical and Epidemiological Approaches to Hazard Analysis	3
Occupational Health Seminar	3
Practicum in Occupational Hazards	3
Psychology in Hazard Central Education	3
Environmental Hygiene	3
Industrial Hygiene Laboratory	4
Occupational Safety Program: Organization and Administration	3

NEW YORK UNIVERSITY

Federal Safety Legislation: Its Implications and Implementation	3
Advanced Safety Management	3
Biomechanics	3
Field Experience for the Safety Specialist	3

The Ph.D. program which requires 36 credits beyond the master's degree, includes research for a dissertation (6 credits) and the following courses:

Departmental Seminar in Safety Progress	<u>Credits</u> 6
Dissertation Proposal Seminar	6

Address all Communications to:

Dr. John V. Grimaldi
The Center for Safety
329 Shimkin Hall
New York University
Washington Square
New York, New York 10003

NORTH CAROLINA STATE UNIVERSITY
Raleigh, North Carolina

Grant Number: 5 T01 OH 00089-07

Program Title: Systems Safety Engineering

Degrees Offered: M.I.E. (Industrial Engineering)

Objectives: The principal goal of this continuing program is the preparation of occupational safety and health specialists, technologists and safety engineers for careers in professional practice. This is accomplished by means of the "total systems" approach encompassing relevant disciplines including: ergonomics, behavioral sciences, engineering, environmental considerations, public health, and professional ethics and practice.

Prerequisites: Trainees are recruited from among holders of baccalaureate degrees with special entrance consideration given to people with preparation in engineering and the physical sciences including the behavioral sciences and mathematics/statistics.

Curriculum: Degree requirements normally entail successful completion of about 30 credit hours of course work including a core program in "systems safety engineering," comprising the following courses:

- IE 541 - Systems Safety Engineering
- IE 544 - Occupational Biomechanics
- IE 593 - Area Seminar in Ergonomics
- IE 641 - Environmental Factors and Human Performance
- IE 693 - Seminar in Applied Ergonomics

In addition, trainees are expected to acquire a variety of skills and knowledge applicable to identification, measurement, and control of health and safety problems as encountered by the industrial worker. A practicum is included in this terminal degree program.

Address all Communications to:

Dr. Richard G. Pearson
Department of Industrial Engineering
North Carolina State University
Box 5511
Raleigh, North Carolina 27607

OKLAHOMA STATE UNIVERSITY OF
AGRICULTURE AND APPLIED SCIENCE
Stillwater, Oklahoma

Grant Number: 5 T01 OH 00217-02

Program Title: Safety Engineering Technology Baccalaureate Program

Degrees Offered: B.S. (Engineering Technology - Safety Option)

Objectives: This program seeks to prepare technologists qualified to recognize and evaluate occupational safety and health hazards. In concert with scientists and engineers, applies existing equipment and procedures to control safety and health hazards.

Prerequisites: For admission to the program candidates must have graduated from an accredited high school and rank in the upper one-half of the graduating high school class.

Curriculum: The program includes a broad spectrum of related loss control subjects founded upon:

English and Speech	9 Sem. Hrs.
Mathematics (through integral Calculus)	12 Sem. Hrs.
Physical Science (incl. Statics & Str. of Matls.)	20 Sem. Hrs.
Humanities	4 Sem. Hrs.
Social Science	10 Sem. Hrs.
Electives	9 Sem. Hrs.

The balance of the 129-hour degree program includes a core of: Fire Protection, Occupational Safety, Industrial Hygiene, Industrial Security, Fleet and Vehicle Safety, Radiological Safety and System Safety Management.

Address all Communications to:

Mr. Dale F. Janes
College of Engineering
Oklahoma State University of
Agriculture and Applied Science
Stillwater, Oklahoma 74074

OCCUPATIONAL NURSING

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UNIVERSITY OF CINCINNATI
Cincinnati, Ohio

Grant Number: 1 T01 OH 07060-01

Program Title: Masters Program in Occupational Health Nursing

Degrees Offered: Master of Science in Nursing

Objectives: The aim of this program is to prepare nurses to function as practitioners, researchers, teachers, and consultants in occupational health settings. Major emphasis is placed on the nurse's role in recognition control and evaluation of hazards within the work environment.

Prerequisites: All candidates must be registered professional nurses with a baccalaureate degree from an accredited program in nursing. Students holding other degrees may have to complete deficiencies in nursing.

Curriculum: The Masters Program in Occupational Health Nursing requires successful completion of 90 credits.

General Program Courses

First Year

	<u>Quarter Credits</u>
Nursing Theory and Concepts	9
Physiology	8
Physical Diagnosis	9
Statistics	6
Nursing Research	4
Epidemiology	3
Seminar in Clinical Nursing	2
Occupational Health Nursing	4

Second Year

Occupational Health Nursing	18--24
Thesis Research	3--6
Functional Area	12--15
Electives	6--12

Address all Communications to:

Carol F. Silberstein, R.N.
University of Cincinnati
College of Nursing and Health
3110 Vine Street (38)
Cincinnati, Ohio 45219

CLEMSON UNIVERSITY
Clemson, South Carolina

Grant Number: 1 T02 OH 07063-01

Program Title: Safety Management for Industrial Nurses

Objectives: This is a program for short-term training designed to develop a safety management training course for industrial nurses. It is intended to prepare industrial nurses to formulate and administer accident prevention aspects of an industrial safety program. The five topics, which will be given in five, three-hour sessions, will include: accident prevention and loss control, accident investigation and analysis, accident record keeping, safety training, and safety motivation. The effectiveness of this experimental training program will be evaluated in terms of its usefulness as a training guide which other educators may use in developing programs with similar objectives.

Address all Communications to:

Dr. Donald W. Lyons
College of Industrial Management
and Textile Science
Clemson University
Clemson, South Carolina 29631

NEW YORK UNIVERSITY
New York, New York

Grant Number: 5 T02 OH 07028-02

Program Title: Occupational Safety and Health Training for Occupational Health Professionals

Degrees Offered: M.A.

Objectives: This is a graduate multi-discipline area of specialization that seeks to prepare experienced occupational health nurses for advanced positions of administrator, consultant or supervisor in occupational health.

Prerequisites: Recruitment includes experienced occupational health nurses who are graduates of state approved, NLN accredited schools of nursing and who hold a baccalaureate degree with a minimum grade point average of 2.5 from an accredited institution.

Curriculum: The area of specialization may be completed in twelve months by full-time students. Part-time students may complete the degree requirements within two years, although a longer period may be needed for students who are working full-time.

The curriculum provides a strong foundation in occupational health and safety as well as preparation and field work in the functional area of interest (administration, consultation or supervision).

Illustrative course topics include: occupational health administration and consultation; safety and hazard control; industrial hygiene; industrial toxicology; biomechanics; medical surveillance; behavioral psychology; epidemiology and statistics; research methodology. All students are required to do an independent study culminating in a major written report utilizing the principles of research methodology.

Address all Communications to:

Miss Irene Courtenay
New York University
The Center for Safety
329 Shimkin Hall
Washington Square
New York, New York 10003

OHIO DEPARTMENT OF HEALTH
Columbus, Ohio

Grant Number: 1 A14 OH 00007-01

Program Title: Fundamentals of Occupational Health Nursing Practice

Degrees Offered: None. Approved for Continuing Education Units

Objectives: This course is designed for professional registered nurses to increase their knowledge of occupational programs and practices and to apply this knowledge in their work situation.

Prerequisites: Professional registered nurses engaged in direct care of employees are eligible. Priority is given to nurses with five years or less of occupational health nursing practice.

Content: This modified self-instructional course consists of ten units of sequential study material with a seminar at the beginning, mid and end of the course supplemented by local group study and instructor's guidance through toll-free line and written comments. Precourse arrangements may be made for substitution for seminars in selected situations on a limited number.

The program "Fundamentals of Occupational Health Nursing Practice" was developed by the Training Division of the National Institute for Occupational Safety and Health. The course includes definition and scope of occupational health nurse practice including nursing process and plan of care, methods to identify and control industrial safety and health hazards, plans for health maintenance programs, records and reports, legal aspects of occupational health practice including implications of Occupational Safety and Health Act. Projects and exercises are incorporated in each unit to facilitate application of information in the work situation, to evaluate nursing practice and to coordinate services with others on the health team.

Address all Communications to:

Dorothy Benning, R.N.
Division of Occupational Health
Ohio Department of Health
Post Office Box 118
Columbus, Ohio 43216

TULANE UNIVERSITY
New Orleans, Louisiana

Grant Number: 1 A14 OH 00010-01

Program Title: Occupational Health Nursing - Continuing Education

Degrees Offered: None

Objectives: The aim of the program is to enhance the capabilities of over 200 Louisiana occupational health nurses in their expanding roles as members of the industrial health surveillance team.

Prerequisites: All registered nurses who are citizens of the U.S. and employed in Industrial Nursing.

Curriculum: This is a 40-hour course of instruction designed to be presented in bimonthly sessions over a period of three months. Each session will consist of eight hours. The course will be repeated in sequence at each of four selected location sites: New Orleans, Shreveport, Lake Charles, and Baton Rouge, Louisiana.

Nurses attending complete course will be awarded a certificate and CE units by Tulane Medical Center.

Address all Communications to:

Mrs. Edna Treuting
Tulane School of Public Health
and Tropical Medicine
1430 Tulane Avenue
New Orleans, Louisiana 70112

OCCUPATIONAL MEDICINE

UNIVERSITY OF CALIFORNIA, IRVINE
Irvine, California

Grant Number: 1 T01 OH 07053-01

Program Title: Occupational Safety and Health

Degrees Offered: None

Objectives: This residency program is planned both for physicians seeking certification under the American Board of Preventive Medicine and those already engaged in the field who wish to improve their skills.

Prerequisites: Trainees must have as a minimum an M.D. Degree and one year of clinical residency or internship experience.

Curriculum: This will be a two-year program comprised of didactic training, and clinical and field experience in occupational safety and health. Required course work amounts to 52 quarter units. Electives, research and special problems will total an additional 20 units for the full-time resident preparing for certification.

<u>First Quarter</u>	<u>Units</u>
Introduction to Occupational Disease	5
Work Physiology	3
Methods for Health Surveillance	2
Special Problems	2
<u>Second Quarter</u>	
Clinical Occupational Medicine	5
Principles of Toxicology	3
Industrial Hygiene I	2
Special Problems	2
<u>Third Quarter</u>	
Environmental Toxicology	5
Industrial Hygiene II - Sampling and Analysis	3
Principles and Practices of Occupational Health Programs	4
<u>Fourth Quarter</u>	
Biological Statistics I	3
Industrial Hygiene III - Industrial Hygiene Control	3
Analysis of Health Care Systems	2
Special Problems	4

UNIVERSITY OF CALIFORNIA, IRVINE

Fifth Quarter

Units

Introduction to Environmental Epidemiology
Biological Statistics II
Special Problems

3
3
6

Sixth Quarter

General Public Health and Preventive Medicine
Occupational Epidemiology Seminar
Special Problems

3
1
8

Address all Communications to:

B. Dwight Culver, M.D.
Associate Clinical Professor
Department of Community and Environmental Medicine
College of Medicine
University of California, Irvine
Irvine, Ca 91717

UNIVERSITY OF CINCINNATI
Cincinnati, Ohio

Grant Number: 1 T01 OH 07070-01

Program Title: Training Program in Occupational Medicine

Degrees Offered: M.S., Ph.D.

Objectives: The program is designed to provide qualified physicians with a high level of scientific and clinical competence for effective professional services and research in occupational medicine. Some of the goals of the program are to develop proficiency in the diagnosis and treatment of occupational illnesses; the practice of preventive medicine in an industrial setting; the planning and implementation of health care and surveillance programs; the use of epidemiological and biostatistical methods for development of critical information about occupational hazards; the use of industrial hygiene and toxicological studies for effective hazard control; and teaching and research in occupational medicine.

Prerequisites: Graduation from an approved medical school with at least one year internship or residency.

Curriculum: Four segments of training are included:

1. A two-year training program designed for physicians with full-time career objectives in occupational medicine. The curriculum allows for a course of study leading to an M.S. or Ph.D. degree in Occupational Medicine. It also provides the necessary training qualifications for certification by the American Board of Preventive Medicine. The required courses for the first and second year are listed below.
2. A mini-residency for physicians who have a serious interest in the practice of occupational medicine. The mini-residency consists of an intensive training period for four weeks. During the following two years, residents participate in a two-day problem-oriented training session twice a year.
3. Short courses in occupational medicine for general practitioners who are interested in developing some expertise in occupational medicine.
4. Teaching the principles of occupational medicine to medical students.

Required Courses for Two-Year Program:

Summer Quarter

Department Orientation
Practice of Occupational Medicine in Industry

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Occupational Health Clinics
Occupational Medicine Division Conference
Seminar: Perspectives and Critical
Problems in Environmental Health
Pulmonary Conference
X-Ray Conference
Research

Fall Quarter

Environmental Health Seminar
Environmental Hygiene Technology I
Biostatistics
Occupational Dermatology
Occupational Medicine
Topics in Clinical Toxicology
Introduction to Occupational Health
Occupational Health Clinics
Medical Specialty Clinics
Seminar: Perspectives and Critical
Problems in Environmental Health

Winter Quarter

Environmental Health Seminar
Environmental Hygiene Technology I
Occupational Medicine
Topics in Clinical Toxicology
Occupational Dermatology
Industrial Toxicology Practice
Occupational Health Clinics
Medical Specialty Clinics
Introduction to Epidemiology
Seminar: Perspectives and Critical
Problems in Environmental Health

Spring Quarter

Environmental Health Seminar
Environmental Hygiene Technology I
Occupational Medicine
Topics in Clinical Toxicology
Occupational Health Clinics
Medical Specialty Clinics
Seminar: Perspectives and Critical
Problems in Environmental Health
Research - Master's Thesis

Second Year

Summer Quarter

Hazard Evaluations
Practice of Occupational Medicine
in Industry
Occupational Health Clinics
Medical Specialty Clinics
Seminar: Perspectives and Critical
Problems in Environmental Health
Research - Master's Thesis

Fall Quarter

Environmental Health Seminars
Occupational Medicine
Topics in Clinical Toxicology
Applied Psychiatry for
Occupational Physicians
Industrial Safety
Basic Science in Relation to the Skin
Environmental Hygiene Technology II
Occupational Health Clinics
Medical Specialty Clinics
Seminar: Perspectives and Critical
Problems in Environmental Health
Research - Master's Thesis

Winter Quarter

Environmental Health Seminars
Occupational Medicine
Topics in Clinical Toxicology
Applied Psychiatry for
Occupational Physicians
Occupational Health Clinics
Basic Science in Relation to the Skin
Chemical and Biological Effects
of Human Environment
Medical Specialty Clinics
Seminar: Perspectives and Critical
Problems in Environmental Health
Research - Master's Thesis

Spring Quarter

Environmental Health Seminars
Occupational Medicine
Topics in Clinical Toxicology
Applied Psychiatry for
Occupational Physicians

UNIVERSITY OF CINCINNATI

Toxicology II
Occupational Health Clinics
Medical Specialty Clinics
Seminar: Perspectives and Critical
Problems in Environmental Health
Research - Master's Thesis

Address all Communications to:

Dr. Stuart M. Brooks
Division of Clinical Studies
Department of Environmental Health
University of Cincinnati
Cincinnati, Ohio 45267

HARVARD UNIVERSITY
SCHOOL OF PUBLIC HEALTH
Boston, Massachusetts

Grant Number: 1 T01 OH 07064-01

Program Title: Training Project in Occupational Medicine

Degrees Offered: M.S., M.P.H., M.I.H., Sc.D., Dr.P.H.

Objectives: The aim of this program is to prepare physicians who can contribute to the recognition and prevention of occupational disease in the U.S. Products of the program can find employment in academic settings, governmental agencies, private industry or labor groups. In addition, a small number of non-physicians will be trained to play the same role.

Prerequisites: Most candidates will have completed medical school with distinction. Non-physicians with special talent, interest and experience will also be considered even at the baccalaureate level. Non-physicians should have a natural or biological science background.

Curriculum: Physicians - Although physicians can be admitted for a one-year program, a two-year program is recommended. During the first year basic courses in epidemiology, toxicology, biostatistics, industrial hygiene, occupational diseases and policy issues are presented. The second year involves an in-depth experience with an occupational health problem employing the basic skills learned during the first year. Field experiences are emphasized. Clinical and administrative experiences can be arranged.

Non-physicians - The curriculum is again two years following the physician format with the addition of basic biomedical science courses primarily relating to human physiology and pathology.

Depending upon background, the master's degree can be awarded after one or two years. The second year may be used toward a doctorate, but a third year is almost always necessary to complete the doctorate.

Address all Communications to:

Dr. John M. Peters
Professor of Occupational Medicine
Director, Occupational Health Program
Harvard University School of Public Health
665 Huntington Avenue
Boston, Massachusetts 02115

MOUNT SINAI SCHOOL OF MEDICINE
of the
CITY UNIVERSITY OF NEW YORK
New York, New York

Grant Number: 5 T01 OH 00219-02

Program Title: Training in Occupational Medicine

Degrees Offered: None

Objectives: This program seeks to prepare skilled occupational health physicians qualified to design, conduct, and evaluate research investigations in occupational disease problems.

Prerequisites: Trainees are selected from among well-qualified physicians with a variety of medical backgrounds and possessing a social commitment to occupational medicine.

Curriculum: This is a three-year program comprising didactic instruction, which is held to a minimum, clinical work in occupational medicine and general medicine, personal instruction, field experience, and seminars. A core program is designed to prepare specialists in occupational medicine. Laboratory work, field studies, clinical core, and electives complete the program.

General Outline

First Year

Core program (less than 1/4 trainee time) includes:

- review of occupational diseases
- toxicology
- basic epidemiology and biometrics
- broad aspects of public health
- administrative and legal problems
- workmen's compensation
- ethical considerations
- physical sciences

Introduction to field work
Clinical core

Second Year

Introduction to experimental pathology techniques
Advanced study in pathology of selected occupational diseases
Field studies
Clinical care of patients

Third Year

This is about entirely clinical and includes planning, initiation, and management of original studies designed to meet individual trainee's interests.

Address all Communications to:

Dr. Irving J. Selikoff
Mount Sinai School of Medicine of the
City University of New York
Fifth Avenue and 100th Street
New York, New York 10029

OTHER

NEW YORK UNIVERSITY
New York, New York

Grant Number: 1 T01 OH 07009-01A1

Program Title: Practitioner Training in Ergonomics and Biomechanics

Degrees Offered: Diploma (Ergonomics and Biomechanics)

Objectives: The aim of the program is to provide professionals with a balanced training in the fields of ergonomics and occupational biomechanics. It is hoped that this program will become an effective vehicle for the rapid dissemination of occupational health, safety, and productivity know-how to its point of application - the productive enterprise itself.

Prerequisites: Admission is selective and all candidates are interviewed prior to acceptance into the program. Applicants should hold a bachelor's degree in their professional discipline or have equivalent professional experience.

Curriculum: The full program can be completed in two years of evening instruction. Enrollment on an individual course basis is possible for those desiring a working knowledge of a specific area.

First Semester

Z46.0501 Introduction to Biomechanics (3 credits)
Z46.0502 Quantitative Methods in Ergonomics (3 credits)

Second Semester

Z46.0503 Select Aspects of Anatomy and Physiology of Work (3 credits)
Z46.0504 Human Factors and Technology (3 credits)

Third Semester

Z46.0505 Introduction to Environmental Hygiene (3 credits)
Z46.0506 Productivity Aspects of Ergonomics and
Biomechanics (3 credits)

Fourth Semester

Z46.0507 Selected Topics (3 credits)

Address all Communications to:

Dr. Erwin R. Tichauer
The Center for Safety
Ergonomics and Biomechanics Laboratory
New York University
400 East 34th Street
New York, New York 10016

UNIVERSITY OF NORTH CAROLINA
Chapel Hill, North Carolina

Grant Number: 5 T01 OH 07035-02

Program Title: Biostatistical Training in Occupational Health

Degrees Offered: M.S.P.H., M.S., Dr.P.H., Ph.D.

Objectives: This program seeks to prepare biostatisticians to participate in the conduct of research in occupational health and to provide professional statistical support to industrial hygienists, physicians, epidemiologists and other professionals in occupational health.

Prerequisites: Candidates at the master's level are holders of the bachelor's degree with good undergraduate records, competence in mathematics through the calculus, and preferably with some experience and/or education in environmental health. At the doctoral level, the candidate's background preparation may be in one or more of a number of areas in addition to theoretical or applied statistics. These include toxicology, pharmacology, biochemistry, industrial hygiene, biophysics, occupational medicine, epidemiology, engineering and mathematics, among others.

Curriculum: Two degrees at the master's and doctoral level are offered for orientation to industrial and government situations or academic settings. The masters' programs emphasize basic statistical and occupational health skills with varying intensities of statistics and applications to occupational health, depending on the specific master's program. Preparation for positions in an operating agency with projects involving data collection, quality control and analysis is a part of the field training requirements. The programs require two to three semesters of course work, plus ten weeks of field training or consultation experience.

The doctoral programs are directed toward preparing statisticians for higher level research and scientific management positions involving the application of statistics to occupational health problems or the development of new methodology from first principles. A dissertation is required. This generally requires one to two years beyond a master's degree for the completion of the necessary course work and another 12 to 18 months for completion of the dissertation.

The course work at the master's level includes a core of biostatistics with supporting courses from industrial hygiene, epidemiology, physiology, and/or environmental health along with field training or supervised consulting experience. At the doctoral level, the course work includes all of the aforementioned plus greater emphasis on research, theory, and applications for the development

UNIVERSITY OF NORTH CAROLINA

of new methodology and approaches to research problems in occupational health. In the preparation for the conduct of research in occupational health studies and in providing support to other research workers in that field, the background of the trainee is considered and courses selected to accommodate the special talent or interest of the trainee and the needs of his career goals.

Address all Communications to:

Dr. Michael J. Symons
Department of Biostatistics
School of Public Health
University of North Carolina
Chapel Hill, North Carolina 27514

OCCUPATIONAL SAFETY & HEALTH TECHNOLOGY

CATONSVILLE COMMUNITY COLLEGE
Catonsville, Maryland

Grant Number: 5 T02 OH 07026-02

Program Title: Occupational Safety and Health Technology

Degrees Offered: A.A.; Certificate in Occupational Safety and Health

Objectives: The aim of this program is to prepare technicians and technologists qualified for occupational safety and health careers in industry and government. Concomitantly, graduates of this program would be qualified to pursue higher level studies leading to more advanced degrees.

Prerequisites: Candidates are admitted with a high school diploma or the equivalent. Experience and/or desire to pursue a career in occupational safety and health are favorable factors in considering admission.

Curriculum: The program normally is of two-year's duration for full-time study. Sixty-three semester credit hours are required. The Certificate Program requires completion of 34 credit hours at the proficiency of 2.0 or better. Didactic instruction is augmented by field trips. The full curricula are as follows:

OCCUPATIONAL SAFETY & HEALTH TECHNOLOGY PROGRAM

<u>Freshman Year</u>	<u>1st Sem.</u>	<u>2nd Sem.</u>
Orientation to College (ORI 1)	0	
Craft of Composition (ENG 101)		3
Blueprint Reading (AED 141)	2	
Occupational Safety and Health I & II (OST 101-102)	3	3
Introduction to Industrial Hygiene (OST 203)		3
Safety and Health Standards (OST 111)	3	
Physical Science II (CHE 101-102)	4	
Industrial Physics (PHY 121)		4
Construction Safety and Health (OST 121)		3
Technical Mathematics I (MAT 111)	3	
TOTAL	<u>15</u>	<u>16</u>
<u>Sophomore Year</u>	<u>1st Sem.</u>	<u>2nd Sem.</u>
Human Relations (PSY 106)		3
Recognition and Control of Physical and Health Hazards (OST 236)	3	
Accident Prevention and Loss Control (OST 141)		3
Advanced Industrial Hygiene (OST 231)	3	

CATONSVILLE COMMUNITY COLLEGE

Industrial Fire Hazards (FPT 122)		3
Introduction to Literature (ENG 102)		3
Speech Elective	3	
Social Science Elective	3	
Technical Writing (ENG 151)	3	
Life Fitness and Enrichment	1	1
Human Factors in Safety (OST 146)		3
TOTAL	16	16

NOTE: For those desiring to pursue a career in the Industrial Hygiene field, General Chemistry and Qualitative Analysis I & II (CHE 111-114) may be substituted for Physical Science, Industrial Physics, and Construction Safety and Health Courses.

OCCUPATIONAL SAFETY & HEALTH CERTIFICATE PROGRAM

	CREDITS
Occupational Safety and Health I (OST 101)	3
Safety and Health Standards (OST 111)	3
Occupational Safety and Health II (OST 102)	3
Introduction to Industrial Hygiene (OST 203)	3
Construction Safety and Health (OST 121)	3
Physical Science II (CHE 101-102)	4
Recognition and Control of Physical and Health Hazards (OST 236)	3
Advanced Industrial Hygiene (OST 231)	3
Accident Prevention and Loss Control (OST 141)	3
Industrial Fire Hazards (FPT 122)	3
Human Factors in Safety (OST 146)	3
TOTAL	34

NOTE: For those desiring to pursue a career in the Industrial Hygiene field, General Chemistry and Qualitative Analysis I & II (CHE 111-114) may be substituted for Physical Science and Construction Safety and Health courses.

Address all Communications to:

Mr. Francis A. Valentino
Catonsville Community College
800 South Rolling Road
Catonsville, Maryland 21228

FERRIS STATE COLLEGE
Big Rapids, Michigan

Grant Number: 5 T01 OH 00205-03

Program Title: Occupational Safety and Health Undergraduate Training

Degrees Offered: Associate in Applied Science (A.A.S.); B.S.

Objectives: The program aim is to prepare practitioners for service in occupational safety and industrial hygiene, at the technician and technologist levels.

Prerequisites: Candidates are recruited from among holders of high school diplomas or certificates of equivalency.

Curriculum: The two-year curriculum comprises course offerings in the area of occupational safety and health as conducted in the School of Technical and Applied Arts and general liberal arts courses as presented in the School of General Education. The baccalaureate program includes two additional years of didactic instruction as well as an internship program, workshops, and other short-term training activities designed to augment the classroom-laboratory work. The full program which requires 99 quarter hours for graduation includes two summer sessions.

<u>Characteristic technical courses are:</u>	<u>Quarter Hours</u>
Technical Illustration for Occupational Safety and Health	2
Orientation to Industry	3
Occupational Safety and Accident Prevention	4
Occupational Safety and Health Laws and Regulations	5
Chemistry for Occupational Safety and Health Technology	4
Methods and Principles of Safety Training	3
Fire Prevention and Control	3
Ventilation Application and Instrumentation	4

Address all Communications to:

Mr. Robert W. Allen
Industrial Department
School of Technical & Applied Arts
Ferris State College
Big Rapids, Michigan 49307

HOUSATONIC COMMUNITY COLLEGE
Bridgeport, Connecticut

Grant Number: 5 T02 OH 07038-02

Program Title: Occupational Safety and Health Training Program

Degrees Offered: A.S. (Associate in Science in Occupational Safety and Health);
Certificate

Objectives: This program seeks to prepare qualified technicians to support the activities of safety and health professionals.

Prerequisites: A high school diploma or high school equivalency diploma is the entrance requirement, consistent with the College's "open-door" admissions policy. Candidates will be drawn from industry as well as directly from high school

Curriculum: The following represents the Associate in Science Degree Program as accredited and licensed by the Commission for Higher Education, the Certificate Program and course titles.

OCCUPATIONAL SAFETY AND HEALTH

Associate in Science

<u>Course No.</u>	<u>Description</u>	<u>Credit Hours</u>
<u>First Semester</u>		
English 101	Composition	3
Mathematics 104	Introduction to Statistics	3
*Science	Chemistry or Physics	4
OSH 101	Introduction to Occupational Safety & Health	3
OSH 103	Federal and State Codes/Standards	3
TOTAL		16
<u>Second Semester</u>		
English 102	Composition & Literature	3
Mathematics	Math 111 - Finite Mathematics or Math 125 - Quantitative Analysis	3
*Science	Chemistry or Physics	4
OSH 104	Physical Hazards I	3
OSH 201	Fire Protection	3
TOTAL		16

*Chemistry 103 and 104 "Chemistry for the Health Sciences I and II" and Physics 101 and 102 "General Physics I and II" are preferred in satisfaction of this requirement

HOUSATONIC COMMUNITY COLLEGE

Third Semester

English 203	Effective Speaking	3
Psychology 101	Introduction to Psychology	3
Business 209	Management	3
OSH 105	Industrial Hygiene	3
OSH 204	Physical Hazards II	3
TOTAL		<u>15</u>

Fourth Semester

Business 211	Business Communication	3
Business	Bus 117 - Principles of Insurance or Bus 208 - Personnel Administration	3
OSH	Elective	3
OSH	Elective	3
OSH	Elective	3
Psychology 209	Industrial Psychology	3
TOTAL		<u>18</u>

OSH Electives: OSH 202-Motor Fleet Safety
 OSH 203-Human Factors in Safety
 OSH 205-Techniques in Industrial Hygiene
 OSH 206-Safety Program Management

Additional courses will be added when industry demands warrant such additions.

OCCUPATIONAL SAFETY AND HEALTH

One-Year Certificate

<u>Course No.</u>	<u>Description</u>	<u>Credit Hours</u>
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First Semester

English 101	English Composition	3
Mathematics 104	Statistics	3
OSH 101	Introduction to Occupational Safety and Health	3
OSH	Elective	3
OSH	Elective	3
TOTAL		<u>15</u>

Second Semester

Psychology 101	Introduction to Psychology	3
Science	Elective	3
OSH	Elective	3
OSH	Elective	3
OSH	Elective	3
TOTAL		<u>15</u>

HOUSATONIC COMMUNITY COLLEGE

Address all Communications to:

Mr. Richard B. Cooper
Assistant Academic Dean
Housatonic Community College
510 Barnum Avenue
Bridgeport, Connecticut 06608

NORTHERN VIRGINIA COMMUNITY COLLEGE
Annandale, Virginia

Grant Number: 5 T02 OH 07013-02

Program Title: Associate Degree in Occupational Safety and Health

Degrees Offered: Associate in Applied Science

Objectives:

1. Train students at the associate degree level in Occupational Safety and Health and to provide community service workshops for middle and upper level managers and union members in understanding the Occupational Safety and Health Act. More specifically, the objectives are to recruit, train, and graduate paraprofessionals in safety and industrial health.
2. To achieve transferability of graduates of the associate degree program to George Washington University, VPI, and the University of Virginia.
3. To conduct Community Workshops and short-term non-credit courses for middle and upper level management and union personnel to provide them with skills in utilizing paraprofessional and professional personnel in safety programs and implementing the Occupational Safety and Health Act.

Prerequisites: A high school diploma or G.E.D. with two years of mathematics and two years of laboratory sciences are among the requirements for admission.

Curriculum: The program leading to the Associate in Applied Science degree consists of 97 quarter hours in general education, required courses, and electives. Full-time students with completed science and mathematics prerequisites can complete the program in two years.

Address all Communications to:

Dr. Alyce K. Paullin, Chairman
Health and Public Services Division
Alexandria Campus
Northern Virginia Community College
3001 North Beauregard Street
Alexandria, Virginia 22311

TRAINING GRANTS NUMERICAL LISTING

<u>GRANT NUMBER</u>	<u>INSTITUTION AND PROGRAM DIRECTOR</u>	<u>PROJECT PERIOD</u>	<u>FY 1976 FUNDS AMOUNT</u>
A14 OH 00006	Wichita State Univ. DeWhitt, E.L., Jr.	07/01/76-06/30/77	\$ 167,708
A14 OH 00007	Ohio Dept. of Health Benning, D.	07/01/75-04/30/77	21,240
A14 OH 00008	Univ. of Hawaii (Western Consortium) Lovegren, J.P.	05/01/76-04/30/77	25,150
A14 OH 00009	Texas A&M Univ. Vernon, R.J.	06/01/76-05/31/77	33,900
A14 OH 00010	Tulane Univ. Treuting, E.G.	10/01/76-01/31/78	53,766
T01 OH 00020	Univ. of California Spear, R.C.	07/01/71-12/31/76	-0-
T01 OH 00028	Univ. of Cincinnati Saltzman, B.E.	07/01/76-06/30/81	111,020
T01 OH 00037	The Univ. of Michigan Smith, R.G.	07/01/75-06/30/78	132,201
T01 OH 00089	No. Carolina St. Univ. Pearson, R.G.	07/01/75-06/30/78	42,688
T01 OH 00099	Univ. of North Carolina Fraser, D.A.	07/01/75-06/30/80	64,377
T01 OH 00135	Univ. of Minnesota Caplan, K.J.	07/01/75-06/30/80	95,305
T01 OH 00160	Temple University Elkin, S.	07/01/75-06/30/80	57,221
T01 OH 00161	The Univ. of Michigan Chaffin, D.B.	07/01/76-06/30/81	96,571
T01 OH 00162	Auburn University Brooks, G.H.	07/01/75-06/30/78	24,840
T01 OH 00163	New York University Grimaldi, J.V.	07/01/76-06/30/81	78,704

TRAINING GRANTS NUMERICAL LISTING

<u>GRANT NUMBER</u>	<u>INSTITUTION AND PROGRAM DIRECTOR</u>	<u>PROJECT PERIOD</u>	<u>FY 1976 FUNDS AMOUNT</u>
T01 OH 00205	Ferris State College Allen, R.W.	07/01/75-06/30/80	\$ 22,420
T01 OH 00210	Univ. of Arizona Roos, N.R.	07/01/75-06/30/78	117,242
T01 OH 00214	Univ. of Pittsburgh Esmen, N.A.	07/01/75-06/30/80	104,736
T01 OH 00215	Texas A&M Univ. Vernon, R.J.	07/01/75-06/30/78	52,259
T01 OH 00217	Oklahoma State Univ. Janes, D.F.	07/01/75-06/30/78	40,252
T01 OH 00219	Mt. Sinai School of Medicine, CUNY Selikoff, I.J.	07/01/75-06/30/78	106,760
T01 OH 00225	St. Augustine's College Hudson, R., Jr.	07/01/75-06/30/80	59,172
T01 OH 00235	Clemson University Lyons, D.W.	07/01/74-06/30/77	-0-
T02 OH 07003	Montana College of Mineral Sci. & Tech. Bossard, F.C.	07/01/75-06/30/80	56,377
T02 OH 07005	The Johns Hopkins Univ. Levine, M.S.	05/01/76-04/30/81	72,868
T01 OH 07006	California State Univ. Kelly, D.L.	07/01/75-06/30/80	28,436
T01 OH 07009	New York Univ. Tichauer, E.R.	05/01/76-04/30/79	53,507
T01 OH 07012	Univ. of Miami Khalil, T.M.	07/01/75-06/30/78	52,778
T02 OH 07013	Northern Virginia Community College Paullin, A.K.	07/01/75-06/30/78	46,747
T01 OH 07014	Harvard University Burgess, W.A.	07/01/75-06/30/80	77,020

TRAINING GRANTS NUMERICAL LISTING

<u>GRANT NUMBER</u>	<u>INSTITUTION AND PROGRAM DIRECTOR</u>	<u>PROJECT PERIOD</u>	<u>FY 1976 FUNDS AMOUNT</u>
T02 OH 07026	Catonsville Comm. Coll. Valentino, F.A.	07/01/75-06/30/80	\$ 32,562
T02 OH 07028	New York University Courtenay, I.D.	07/01/75-06/30/78	107,779
T01 OH 07035	Univ. of North Carolina Symons, M.J.	07/01/75-06/30/80	70,685
T02 OH 07038	Housatonic Comm. College Cooper, R.B.	07/01/75-06/30/78	67,366
T01 OH 07039	Colorado State Univ. Buchan, R.M.	07/01/75-06/30/77	19,963
T02 OH 07041	Quinnipiac College Van Atta, F.A.	07/01/75-06/30/77	112,247
T01 OH 07044	Central Mo. St. Univ. Jones, H.H.	05/01/76-04/30/81	99,723
T01 OH 07048	Univ. of Washington Breyse, P.A.	07/01/76-06/30/79	77,205
T01 OH 07049	Univ. of Illinois Hermann, E.R.	05/01/76-04/30/81	77,543
T01 OH 07053	Univ. of California Culver, B.D.	06/01/76-05/31/81	86,236
T01 OH 07060	Univ. of Cincinnati Silberstein, C.F.	07/01/76-06/30/79	92,611
T02 OH 07063	Clemson Univ. Lyons, D.W.	07/01/76-06/30/77	4,790
T01 OH 07064	Harvard Univ. Peters, J.M.	07/01/76-06/30/79	82,663
T01 OH 07070	Univ. of Cincinnati Brooks, S.M.	07/01/76-06/30/81	148,362
Total			<u>\$2,975,000</u>

TRAINING GRANTS SUMMARY BY PROGRAM AREA

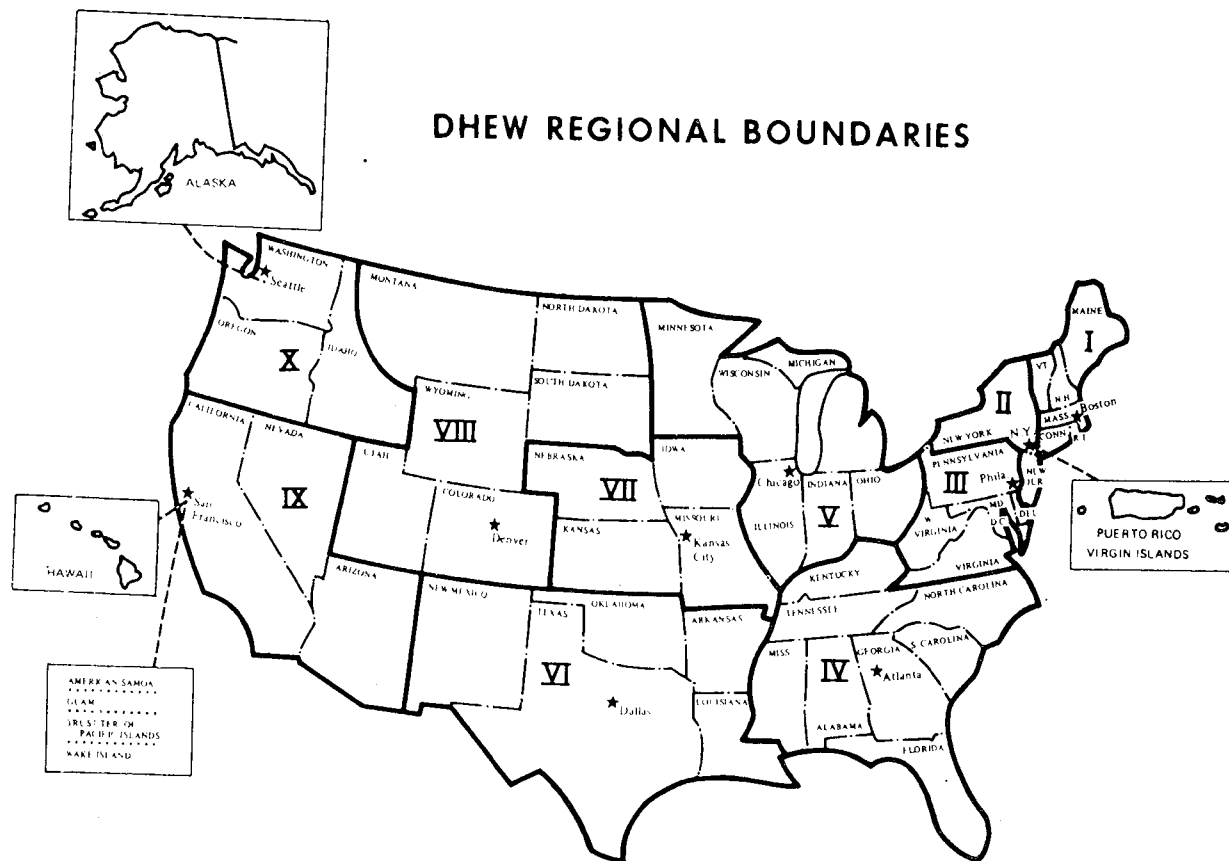
<u>PROGRAM AREA</u>	<u>NUMBER OF GRANT PROGRAMS</u>	<u>FY 1976 FUNDS AMOUNT</u>
Industrial Hygiene	19	\$ 1,368,331
Occupational Safety	10	609,175
Occupational Nursing	5	280,186
Occupational Medicine	4	424,021
Other	2	124,192
Occ. Safety and Health Technology	4	169,095
	44	\$ 2,975,000

Note: Of the 44 grant programs, only 42 received FY 1976 funds in the amount of \$2,975,000. The SOH Study Section received \$25,000 for grant application review activities.

TRAINING GRANTS DISTRIBUTION BY STATES

<u>STATE</u>	<u>NUMBER OF INSTITUTIONS</u>	<u>NUMBER OF GRANT PROGRAMS</u>	<u>FY 1976 FUNDS AMOUNT</u>
Alabama	1	1	\$ 24,840
Arizona	1	1	117,242
California	3	3	114,672
Colorado	1	1	19,963
Connecticut	2	2	179,613
Florida	1	1	52,778
Hawaii	1	1	25,150
Illinois	1	1	77,543
Kansas	1	1	167,708
Louisiana	1	1	53,766
Maryland	2	2	105,430
Massachusetts	1	2	159,683
Michigan	2	3	251,192
Minnesota	1	1	95,305
Missouri	1	1	99,723
Montana	1	1	56,377
New York	2	4	346,750
North Carolina	3	4	236,922
Ohio	2	4	373,233
Oklahoma	1	1	40,252
Pennsylvania	2	2	161,957
South Carolina	1	2	4,790
Texas	1	2	86,159
Virginia	1	1	46,747
Washington	1	1	77,205
	<u>35</u>	<u>44</u>	<u>\$ 2,975,000</u>

TRAINING GRANTS DISTRIBUTION BY REGION



<u>Region</u>	<u>Number of Grant Programs</u>	<u>FY 1976 Funds Amount</u>
I	4	\$ 339,296
II	4	346,750
III	5	314,134
IV	8	319,330
V	9	797,273
VI	4	180,177
VII	2	267,431
VIII	2	76,340
IX	5	257,064
X	1	77,205
	44	\$ 2,975,000

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DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
CENTER FOR DISEASE CONTROL
NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
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