

# Occupational and Environmental Health

## Head

- Peter S. Thorne

**Graduate degrees:** M.S. in occupational and environmental health; Ph.D. in occupational and environmental health

**Faculty:** <https://www.public-health.uiowa.edu/oeh-faculty-list/>

**Website:** <https://www.public-health.uiowa.edu/oeh/>

The Department of Occupational and Environmental Health focuses on assessment of risk factors in the physical environment and their relationship to disease—particularly health problems of agricultural and industrial workers. Students are guided by faculty members whose research interests include rural health care delivery, agricultural health, environmental health, occupational medicine, occupational lung disease, mammalian toxicology, inhalation toxicology, ergonomics, indoor air quality, occupational injury, injury epidemiology, injury prevention programs, aerosol physics, air and water quality, environmental chemistry, analytical toxicology, and environmental health in developing countries.

In addition to the M.S. and Ph.D. degrees in occupational and environmental health, the department offers a subprogram for the Master of Public Health (M.P.H.) degree in occupational and environmental health. The subprogram provides students with a broad perspective on public health and career preparation for a variety of professional positions in occupational and environmental health. Students have the option of selecting focused course work in the following areas: global environmental health, occupational health, rural health and safety, injury and violence prevention, and environmental and occupational epidemiology. For more information about the M.P.H. degree, see Master of Public Health in the Catalog.

The department also offers the College of Public Health's graduate Certificate in Agricultural Safety and Health; see Agricultural Safety and Health in the Catalog.

Individuals who are not enrolled in one of the department's degree programs but wish to take courses offered by the department may apply for professional improvement status.

## Residency Program

In cooperation with University of Iowa Hospitals and Clinics, the department offers residency training in occupational medicine for physicians seeking specialty training in occupational medicine. For information contact the director of the Occupational Medicine Residency Program.

## Programs

### Graduate Programs of Study

#### Majors

- (Occupational and Environmental Health subprogram for the Master of Public Health degree)
- Master of Science in Occupational and Environmental Health

- Doctor of Philosophy in Occupational and Environmental Health

## Facilities

The Department of Occupational and Environmental Health is housed in the College of Public Health Building, on the University's health sciences campus, and at the Institute for Rural and Environmental Health, at the University of Iowa Research Park. College of Public Health-based laboratory facilities give researchers and students access to cutting-edge technologies for the study of occupational and environmental health.

### Pulmonary Toxicology Facility

The Pulmonary Toxicology Facility provides a full array of inhalation toxicology, aerosol science, and bioaerosol assay services. A primary focus of the facility is the study of toxicants found in the agricultural environment and related exposure situations. The facility is particularly well-equipped for studying organic dusts and bioaerosols.

### Industrial Hygiene Laboratory

The Industrial Hygiene Laboratory provides expertise and equipment for exposure assessment in occupational settings. The laboratory offers a range of sample collection capabilities and an extensive inventory of sampling equipment. Field and laboratory services are available through laboratory support exposure-response studies and control technology development studies in a variety of occupational arenas, including agriculture, construction, and indoor environments (home and office).

A computer laboratory is available for student use, and a library collection is located at the Institute for Rural and Environmental Health.

### Heartland Center for Occupational Health and Safety

The Heartland Center for Occupational Health and Safety, one of 18 education and research centers funded by the National Institute of Occupational Safety and Health, provides training, education, and outreach. Its program areas are industrial hygiene, occupational medicine, ergonomics, agricultural safety and health, occupational injury prevention, occupational epidemiology, and continuing education.

## Courses

### Occupational and Environmental Health Courses

**OEH:4240 Global Environmental Health** **3 s.h.**  
Environmental health comprised of aspects of human health determined by interactions with physical, chemical, biological, and social factors in global environment; worldview and survey; focus on issues most relevant today; sustainability; air, water, and soil pollution and remediation; occupational health; injury prevention; food safety and security; risk assessment; environmental health policy.

- OEH:4260 Global Water and Health** 3 s.h.  
Overview of global water and health; microbial and toxicant identification, water-related adverse health effects, risk assessment, approaches to reduce water-related disease, distal water-related influences (e.g., global warming), and historic cases. Same as GHS:4260.
- OEH:4310 Occupational Ergonomics: Principles** 3 s.h.  
Fundamentals of ergonomics in context of occupational safety and health practice; topics include work-related musculoskeletal disorders (MSDs), physical risk factors for MSDs, basic occupational biomechanics, office ergonomics and sedentary work, work organization, and task design; emphasis on exposure assessment, with particular attention to methods used commonly in the field; laboratory exercises are used to reinforce key concepts, and students work in teams on an applied project with an area employer.
- OEH:4510 Injury and Violence Prevention** 3 s.h.  
Theory, research, and practice of injury control; unintentional and intentional injuries; local, national, international injury issues. Same as CPH:4230, EPID:4510.
- OEH:4530 Global Road Safety** 3 s.h.  
Road safety problem, data sources, research methods used in field, and how intervention and prevention programs are developed and evaluated; lecture, hands-on approaches. Same as CPH:4220, GHS:4530.
- OEH:4540 Statistics for Experimenters** 3 s.h.  
Application of statistical techniques to evaluate data derived from experimental samples designs; use of spreadsheets, statistical software; design and analysis of experiments; regression analysis; model building; practical applications. Same as CEE:4187.
- OEH:4920 Solid and Hazardous Wastes** 3 s.h.  
Sources, characteristics, collection, disposal of solid and hazardous wastes; environmental impacts of hazardous waste management; resource recovery systems. Requirements: for CEE:4158—CEE:2150, for OEH:4920—OEH:4240. Same as CEE:4158.
- OEH:5010 Occupational and Environmental Health Seminar** 0-1 s.h.  
Contemporary topics in occupational health, agricultural and comparative medicine, environmental health.
- OEH:5410 Occupational Safety** 3 s.h.  
Principles and practices of occupational safety; applications in industrial and other occupational settings; interactions with other disciplines.
- OEH:5530 Interpreting Occupational and Environmental Health Research** 2 s.h.  
Tools necessary for making critical assessment of published scientific research reports from a methodological perspective; examples from recently published research studies in occupational and environmental health. Corequisites: EPID:4400.
- OEH:5620 Occupational Health** 3 s.h.  
Principles, practice of occupational medicine, fundamentals of industrial hygiene and safety, occupational health management, ergonomics, occupational health nursing. Offered fall semesters.
- OEH:6110 Rural Health and Agricultural Medicine** 3 s.h.  
Clinical orientation of specific health problems of rural residents, agricultural workers; rural health care delivery, socioeconomic issues in agriculture and their effects on health and safety of the agricultural population; occupational health problems, environmental health hazards in rural areas. Requirements: enrollment in College of Public Health or health sciences.
- OEH:6120 Current Topics in Agriculture and Rural Health** 0-1 s.h.  
Issues that affect the health of agricultural populations, such as agro-terrorism, antibiotic resistance, genetically modified organisms; current scientific literature.
- OEH:6130 Agricultural Safety and Health: Practice, Research Methods, and Policy** 3 s.h.  
Comprehensive overview of regional, national, and global agricultural production and associated public health hazards; solutions to identified hazards. Corequisites: OEH:6110, if not taken as a prerequisite.
- OEH:6310 Occupational Ergonomics: Applications** 3 s.h.  
Advanced course in occupational ergonomics, with emphasis on laboratory measurement and field-based assessment of physical risk factors for work-related musculoskeletal disorders; laboratory exercises build skills in use of surface electromyography to assess muscular load; electrogoniometry, inertial sensors, and optical motion capture to assess human motion; accelerometers to assess whole-body and hand-arm vibration; instruction in data collection methods and digital signal processing; students complete a field-based measurement project in collaboration with an area employer. Prerequisites: OEH:4310 or IE:3450 or BME:5640.
- OEH:6420 Methods in Exposure Science** 3 s.h.  
Principles, with emphasis on recognition of chemical health hazards, physical health hazards at work. Corequisites: OEH:5620, if not taken as a prerequisite.
- OEH:6430 Assessing Physical Agent Hazards** 3 s.h.  
Basic principles of recognizing and evaluating hazards presented by physical agents in occupational environments. Prerequisites: OEH:6420.
- OEH:6431 Assessing Noise Hazards** 1 s.h.  
Scientific methods to measure noise, assess human noise exposure, and implement technology to control noise exposure.
- OEH:6432 Assessing Nonionizing Hazards** 1 s.h.  
Scientific methods to measure nonionizing, assess human nonionizing exposure, and implement technology to control nonionizing exposure.
- OEH:6433 Assessing Ionizing Radiation Hazards** 1 s.h.  
Scientific methods to measure ionizing radiation, assess human ionizing radiation exposure, and implement technology to control ionizing radiation exposure.
- OEH:6440 Control of Occupational Hazards** 3 s.h.  
Physical science concepts applied to control of occupational hazards ranging from dusts to mists to vapors; strategies, management issues, personal protective equipment, implementation skills; in-depth instruction on local exhaust ventilation system design.
- OEH:6450 Aerosol Technology** 3 s.h.  
Particle statistics and physics of aerosols, including inertia, diffusion, nucleation, evaporation, condensation, optics, electrical properties; relationship to fields such as agriculture, nanotechnology, environmental and occupational health, atmospheric chemistry, drug delivery.

**OEH:6460 Quantitative Exposure Assessment: Study Design and Evaluation 3 s.h.**

Principles of designing occupational and environmental exposure assessment studies, analyzing exposure data, and conducting exposure-response evaluations. Prerequisites: OEH:4540.

**OEH:6510 Environmental and Occupational Epidemiology 3 s.h.**

Overview of methods to interpret and perform environmental and occupational epidemiologic studies with focus on exposure assessment; valuable insights into identifying regional, national, global environmental, and occupational health-related issues. Prerequisites: EPID:4400. Same as EPID:6200.

**OEH:6520 Injury Epidemiology 3 s.h.**

How epidemiology can be applied to injury prevention and control: epidemiology literature, specific methodological problems involved in the epidemiology of injuries, critical evaluation of research articles. Offered spring semesters of odd years. Prerequisites: EPID:4400. Same as EPID:6510.

**OEH:6530 Epidemiology of Occupational Injuries 3-4 s.h.**

Epidemiological literature on occupational injuries and their prevention; focus on research methods. Offered spring semesters of even years. Prerequisites: EPID:4400. Same as EPID:6530.

**OEH:6610 Advanced Topics in Occupational Medicine 2 s.h.**

Skills and knowledge for evaluating and treating patients with work-related illness.

**OEH:6710 Environmental Toxicology 3 s.h.**

Sources, routes of absorption, effects of environmental toxicants affecting man; pathophysiology of toxicant actions, including those of air and water pollutants, metals, pesticides, solvents, food toxicants, chemicals. Requirements: college chemistry and biology.

**OEH:6720 Advanced Toxicology 4 s.h.**

Hepatic metabolism and toxification mechanisms, pulmonary and immunotoxicology, nervous system poisons and their mechanisms of action, general and molecular concepts of chemical carcinogenesis. Prerequisites: OEH:6710.

**OEH:7000 Thesis/Dissertation arr.****OEH:7010 Problems in Occupational and Environmental Health arr.**

Didactic material in occupational and environmental health; may include tutorial, seminar, faculty-directed independent work (e.g., literature search, project, short research project).

**OEH:7020 Independent Study in Occupational and Environmental Health arr.**

In-depth pursuit of an area in occupational and environmental health requiring substantial creativity and independence.

**OEH:7040 Preceptorship in Occupational and Environmental Health arr.**

Work experience using knowledge and skills acquired in the classroom; arranged in conjunction with departmental or collegiate activities or with governmental agencies or private industry.

**OEH:7050 Occupational and Environmental Health Internship 0,3 s.h.**

Comprehensive and integrated application of knowledge acquired in a workplace setting; structured approach to demonstrate skills and knowledge obtained through a workplace experience. Corequisites: OEH:5620 or OEH:4240, if not taken as a prerequisite.

**OEH:8610 Occupational Medicine 2,4 s.h.**

In-depth study of an area in occupational and environmental medicine, with clinical experience in an outpatient community setting. Requirements: M.D. enrollment.