

# Occupational and Environmental Health

## Head

Nathan B. Fethke

**Graduate degrees:** MS in occupational and environmental health; PhD 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 is dedicated to advancing knowledge and practice in the protection of human health at home, on the job, and in our communities. Students are guided by faculty with broad research interests, including rural and agricultural health, environmental health sciences, occupational safety and health, occupational and environmental epidemiology, injury and violence prevention, and environmental chemistry and toxicology.

The department offers Master of Science (MS) and Doctor of Philosophy (PhD) degrees in occupational and environmental health. The MS degree options include an ABET-accredited MS in Industrial Hygiene and the nation's only MS in Agricultural Safety and Health. Many of our MS and PhD students are eligible for financial support through the Heartland Center for Occupational Health and Safety.

The department also offers an occupational and environmental health subprogram of the Master of Public Health (MPH) degree. 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. The College of Public Health's graduate certificate in Agricultural Safety and Health is also an option for both departmental and non-departmental students.

## Programs

### Graduate Programs of Study

- 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. Research groups and laboratories are located around campus in the College of Public Health Building, the Bowen Science Building, and the Iowa Bioscience Innovation Facility. College of Public Health-based laboratory facilities give researchers and students access to cutting-edge technologies for the study of occupational and environmental health problems.

## Pulmonary Toxicology Facility

The Pulmonary Toxicology Facility (PTF) is one of the premier inhalation toxicology laboratories in the U.S. It provides a full array of inhalation toxicology and aerosol science capabilities to support research in air pollution, lung biology, pulmonary disease, and advanced therapeutics. Capabilities exist for acute, chronic, and perinatal exposure studies in rodent and larger animal models. Assay services for biological agents (inhalant allergens, endotoxins, and glucans) are provided to support epidemiological studies of asthma, allergy and other pulmonary conditions. The PTF has special expertise for the study of inhaled nano/micro particles, chemical threat agents, and toxicants found in the agricultural environment including organic dusts, bioaerosols, and pesticides.

## Industrial Hygiene Laboratory

The Industrial Hygiene Laboratory provides expertise and equipment to support assessment and control of contaminant exposures in a variety of settings, including agriculture, construction, homes, and offices. The laboratory houses an extensive inventory of sampling equipment for a variety of gases and particle exposures.

## 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.**

Fundamental topics of occupational ergonomics important to future industrial hygienists, engineers, and other occupational safety and health practitioners; introduction to principles of ergonomics with focus on physiological and anatomical capabilities of the worker and interaction of workers with their environments; topics include anthropometry, physiological and biomechanical basis of work, occupational musculoskeletal disorders, risk factors for musculoskeletal disorders, workplace and tool design, manual materials handling, workplace environment, job analysis, and elements of ergonomics process to improve job design.

#### **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: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 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:5110 Managing and Sharing Your Research Data** 1 s.h.  
Overview of essential practices in managing the data you collect and generate during research. Topics include file organization; documenting your work and lab notebooks; optimizing spreadsheet data and cleanup tools; reproducibility; funder and publisher requirements; and conclude with how and where to share and publish data, from choosing a repository to creating a data record, including licensing, ownership, preservation of access, reuse, and citation. Applicable for any student currently doing research, or planning to do so. Same as CEE:5110.
- 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:5620 Occupational Health** 3 s.h.  
Introduction to occupational health and safety; for graduate students in agricultural health and safety, environmental health, ergonomics, industrial hygiene, injury prevention, occupational epidemiology, and occupational medicine.
- OEH:6110 Rural Health and Agricultural Medicine** 3 s.h.  
Comprehensive foundation of rural and agricultural safety and health; emphasis on the unique health challenges, environmental hazards, and care delivery issues affecting rural and agricultural communities.
- OEH:6120 Current Topics in Agriculture and Rural Health** 0-1 s.h.  
Current issues that affect the health of rural populations including agricultural hazards, pesticide exposure, mental health, global agricultural health, and food safety.
- OEH:6230 Applied Environmental Health** 3 s.h.  
Advanced concepts in environmental health, from current issues to policy and risk management; application of methods to minimize health outcomes and disparities resulting from exposure to environmental hazards found in water, food, soil, and air. Prerequisites: OEH:4240.
- 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: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 Radiation 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** 1,3 s.h.  
Principles of designing occupational and environmental exposure assessment studies, analyzing exposure data, and conducting exposure-response evaluations. Requirements: prior experience in statistics.
- 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:6710 Human Toxicology and Risk Assessment** 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 or PHAR:6501.
- 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:7060 Research Design in Occupational and Environmental Health** **3 s.h.**

Development of a research grant proposal based on student's independent research aims and hypotheses, preparation of accompanying documents for a grant proposal submission, and development of a comprehensive dissemination plan that articulates how academic and lay audiences will be reached with research findings.

**OEH:7070 Interpreting Occupational and Environmental Health Research** **3 s.h.**

Systematic evaluation of methodological strengths and weaknesses of published research studies in occupational and environmental health. Prerequisites: (OEH:5620 or OEH:4240) and BIOS:4120 and EPID:4400.