

**SOUTHERN CALIFORNIA
EDUCATION AND RESEARCH
CENTER FOR
OCCUPATIONAL SAFETY AND
HEALTH**

**ANNUAL REPORT
July 1, 2006 – June 30, 2007**

**NIOSH Training Grant
No. T42 OH 008412**

**SUBMITTED BY: William C.
Hinds CENTER DIRECTOR**

UCLA, Los Angeles, CA 90095-1772

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Southern California Education and Research Center

II. Introduction and Executive Summary

CENTER OVERVIEW

Composition of the Center - The Region IX NIOSH ERC for Southern California is directed by Dr. William Hinds of UCLA. The Associate Director is Dr. Dean Baker of UC Irvine. NIOSH Region IX includes Arizona, California, Hawaii, Nevada, Quam, and the US Trust Territories. The Center is composed of four core academic programs, five correlated programs, and Center Administration. The core programs are one each in industrial hygiene and occupational health nursing and two in occupational medicine. The correlated programs are Continuing Education that cuts across the four core programs, Hazardous Substances Training, Hazardous Substances Academic Training Program, Pilot Project Research Training Program, and NORA Research Support Program that also involves the four core programs.

Institution	Program	Program Director	Degree(s) Offered
UCLA	Industrial Hygiene Includes Hazardous Substances Academic Training	Dr. William Hinds	MPH/MS/PhD
UCLA	Occupational and Env. Health Nursing	Dr. Wendie Robbins	MSN
UCI	Occupational Medicine	Dr. Dean Baker	MS/certificate
UCLA	Occupational Medicine	Dr. Phillip Harber	MPH/certificate
UCLA	Center Administration	Dr. William Hinds	-
UCLA	Continuing Education/Outreach Includes Hazardous Substance Training	Ms. Cass Ben-Levi	-
UCLA/UCI	NORA Research Support	D.Baker/W. Hinds	-
UCLA/UCI	Pilot Project Research Training	W. Hinds/D. Baker	-

SCERC Values and Vision

The SCERC has as its **core values** a commitment to worker health, scientific integrity, and excellence in teaching.

The **core purpose** of the SCERC is to improve worker health through education, research, and service.

The **mission** of the SCERC is to accomplish our core purpose by educating professionals in the fields of occupational medicine, industrial hygiene, and occupational health nursing through academic programs and continuing education; conducting research in occupational and environmental health and related areas;

and providing outreach and resources to educational and professional organizations.

The **vision** of the SCERC is to be recognized as a leader in education and research in occupational and environmental health.

Center Goals and Objectives - The goals of our Southern California Region IX Educational Resource (ERC) Center are:

1. To educate professionals in the disciplines of occupational and environmental medicine, industrial hygiene and occupational health nursing. We believe the biggest impact our ERC can have is to attract and train bright, energetic leaders in the primary occupational health fields.
2. To provide continuing education for professionals in the field or other person with responsibilities in the occupational safety and health area. We believe that it is extremely important to provide stimulation, updates of information, promotion of interdisciplinary activities and training of professionals and non professionals on occupational health and safety issues.
3. To proliferate occupational safety and health activities through outreach to other educational institutions, other parts of universities and to organizations in a position to influence positively the occupational safety and health area.
4. To provide a focus for research activities in occupational safety and health. The results of this research can be disseminated to organizations and agencies in a position to implement preventive action.
5. To be an occupational safety and health resource to organizations (such as companies and unions) and agencies that need the expertise on occupational safety and health that our ERC possesses.
6. To act as a focus to marshal all types of community resources in occupational safety and health to identify and solve problems in the work setting and environment.
7. To respond to the changing nature of occupational health and safety problems and to develop educational programs to deal with emerging problems and issues.

Faculty

A total of 39 faculty members are involved with ERC academic programs. This includes 18 core faculty members and 21 supporting faculty members. Most faculty are established researchers with national or international reputations.

Trainees

The selection criteria for trainees are described in the individual programs. We believe that we can characterize our trainee population as academically well qualified with high potential for professional and research leadership. During the reporting period we had 33 students in our four core academic programs. Twenty-two students are ERC supported trainees. Fifteen of the 23 (65%) are minority students as defined by the EEOC.

Center Environment

Southern California has many petroleum refineries, aerospace industries, service industries, and a large manufacturing base of small and medium-sized companies that represents more than 60% of the manufacturing in California. The workforce is very diverse with many immigrant and non-English-speaking groups. This large concentration of industries in Southern California provides an ideal environment for occupational health education and many opportunities for field trips and internships.

The ERC also has close ties to the **UCLA Labor Occupational Health Program (LOSH)** with its close connection to organized labor in Southern California. The UCLA-Labor Occupational Safety and Health (LOSH) Program is a nationally recognized center in Southern California for worker health and safety training, educational materials development, technical assistance and policy information in the area of workplace health and safety. The ERC is also closely connected with the UCLA and UCI Centers for Occupational and Environmental Health (**COEH**). These are state supported centers for research and teaching in occupational safety and health. Together the ERC and COEHs represent a unique and effective partnership between state and federal funding.

Advisory Committee - We have selected a distinguished and experienced set of advisors to assist us on a continuing basis. During the reporting period the committee consisted of 12 members representing each of the core disciplines of our ERC plus labor and continuing education. The committee is charged with reviewing the educational programs and activities of the Center and advising on modifications that would enhance the impact of the Center in achieving its goals and objectives in Region IX. Annette Haag is Chair of the committee. The committee is convened at least once a year.

Administrative Procedures - Five persons constitute our executive committee. They are the four academic program directors plus the director of continuing education and outreach. The executive committee meets regularly. General problems are considered at each meeting. Interdisciplinary activities are planned by the executive committee. Members of the external advisory committee are consulted and/or invited to the executive committee meetings as needed. The pilot project program is discussed at nearly every meeting. Community views have been sought to guide the ERC toward new or improved educational programs for both professional training and continuing education.

A. MAJOR ACCOMPLISHMENTS

During the reporting period, July 1, 2006 to June 30, 2007 the Southern California ERC and its programs had the following major accomplishments and activities.

- During the reporting period faculty members in the core ERC programs published or co-authored 63 papers that included 14 student authors.
- During the reporting period five IH trainees graduated.
- The IH Program was reaccredited by ABET/ASAC for two years. We submitted an interim progress report on June 30, 2007.
- The six IH doctoral students focused their research in the following areas: an intervention study of computer terminal users; a laboratory study of permeation of Captan formulations through gloves; a study of ultrafine particles from welding in the occupational environment; a study of secondary contamination by respirators; and a study of improved measurement of nanoparticles in occupational exposure settings. One is developing a research program to study ultrafine particle exposure associated with cooking processes.
- One doctoral student Wenhai Xu received the Dean's Outstanding Student Award and the Wayne Soohoo Memorial Award.
- Recent graduate Yifang Zhu was awarded an HEI New Investigators Grant.
- Masters Student Khadeeja Abdullah received a California Wellness grant and the Tony Norton Award.
- Doctoral student Nancy Jennerjohn received a Toxic Substances Research and Training Program partial fellowship.
- Shane Que Hee was awarded the Biological Monitoring Service Award in Recognition of Exemplary Contribution to the Committee and the BEELs Project Team, Biological Monitoring Committee, American Industrial Hygiene Association June, 2007.
- Shane Que Hee is Chairperson, Biological Environmental Exposure Level Project Team, AIHA Biological Monitoring Committee, 2007-8.
- John Froines was appointed NAS Member, Committee to Evaluate NIOSH Health Hazards Evaluation Program

The UCLA OEHN program has been successful implementing their objectives during '06-'07. Thirteen Masters level nursing students were enrolled in OEHN specialty courses Fall 2006, seven of these were NIOSH trainees. Four NIOSH trainees graduated in the OEHN specialty June 2007. Three of these graduates accepted employment in traditional occupational health settings in Southern California, one married and moved to England and is not employed at this time.

- OEHN trainee Jacqueline Masih was elected Graduate Students in Nursing Association (GSNA) President
- OEHN trainee Jacqueline Masih was appointed to the Deans Alumni Advisory Board for UCLA School of Nursing
- OEHN trainee Samta Bhakta was elected Graduate Students in Nursing Association Treasurer (GSNA) and represented the association in the Forum for Nursing (2006).

- Dr. Robbins was named the Audrienne H. Mosley Endowed Chair in Biological Nursing Research
- Dr. Robbins was appointed as an Executive Committee member, UC Toxics Substances Research & Teaching Program (UC TSR&TP)
- The UCI occupational medicine residency graduated three residents, all of whom obtained full-time positions as occupational medicine specialists.
- The UCI program continued to provide national and international leadership in the field of work organization and cardiovascular disease. Dr. Schnall serves as president of the committee on work and cardiovascular disease of the International Commission on Occupational Health.
- During the past year, the UCLA occupational medicine residency underwent its five-year reaccreditation evaluation by the Accreditation Council for Graduate Medical Education (ACGME). This involved preparation of an extensive Program Information Form as well as an on-site survey. The review was successfully completed, and we were recently notified that the UCLA program has been given full accreditation for a full-term five-year term until 2012.
- Faculty members of UCLA OMR program are active in professional organizations. Dr. Craig Conlon is Chairman of the Board, and Dr. Paul Papanek is Second Vice President of the Western Occupational and Environmental Medical Association. Dr. Philip Harber serves on numerous committees of the American College of Occupational and Environmental Medicine (including the academic section, respiratory disease, maintenance of certification, evidence based medicine, and "academic summit"). In addition, last year, he became the Web editor for Environmental and Occupational Health of the American Thoracic Society. In this role, he has endeavored to further increase the impact of Internet resources. Harber also serves as a member of the Institute Medicine committee on Gulf War Health Effects-Depleted Uranium.
- UCLA occupational medicine as part of the ERC implemented a national symposium on Health Effects of Surface Goods Movement. This meeting viewed the health effects on workers and the environment from a very broad perspective. Speakers included epidemiologist, toxicologist, clinical investigators, economist, governmental organization representatives, community representatives, engineers, and others. The meeting will lead to a published monograph. In addition, as an outgrowth of this meeting, we will participate in a session on this topic at the national occupational medicine meeting in the spring of 2008. The ERC continuing education program served as cosponsor.
- In 2007 the partnership between our Continuing Education program and OSHA Training Institute (OTI) at the University of California, San Diego was expanded to include California State University, Dominguez Hills. The number of classes increased to eight (nearly all are four-day courses). (Goals, 1, 2, 3, 4)
- The SCERC and the CE/O Program were awarded a Grant from the California

Wellness Foundation to train 1) health care practitioners in ambulatory care facilities about occupational health and safety and 2) owners and supervisors of businesses and agencies involved in the tourism industry about health and safety for low wage service workers. The grant began July, 2006. (Goals 1, 3, 4, 5, 6)

- The SCERC and the CE/O Program were awarded a Susan Harwood Grant from OSHA to train business owners, supervisors and workers in injury and illness prevent for groundskeepers. The grant period is October 2006 through September 2007. (Goals 1, 3, 4, 5, 6)
- The NRS Program provided full or partial stipend support and technical support to four doctoral students in the Industrial Hygiene research training program. In addition, the Program provided partial support for a student research assistant for one of the research projects, research supplies (e.g., respirators, latex spears, and laboratory supplies), and machine shop services. This support enabled the doctoral students to make substantial progress on their dissertation research.
- NRS supported graduate **Robert Phalen** completed his doctoral degree program and now directs an Industrial Hygiene and Safety program at CalState San Bernardino.

B. SIGNIFICANT CHANGES

The Southern California ERC has a stable faculty and trainee population and well established programs so there were few significant changes.

- During the reporting period IH faculty member Dr. Nola Kennedy took over as Program Director of the Hazardous Substances Academic Training Program from Dr. Hinds.
- A recruitment is underway in the UCLA School of Nursing for a doctorally prepared faculty member with nurse practitioner certification to help with the OEHN program. This is a tenure track position.
-

C. ERC WEBSITES

The website was improved to be able to accept credit card payments for continuing education courses.

The ERC website (<http://www.ph.ucla.edu/erc/>) includes links to pages for each program:

- Industrial Hygiene (<http://www.ph.ucla.edu/erc/indhyg.html>)

- Occupational Health Nursing (<http://www.ph.ucla.edu/erc/ohn.html>)
- Occupational and Environmental Medicine at UCLA (<http://www.ph.ucla.edu/erc/om-ucla.html>)
- Occupational and Environmental Medicine at UC Irvine (<http://www.ph.ucla.edu/erc/om-uci.html>)
- Continuing Education/Outreach (<http://www.ph.ucla.edu/erc/ced.php>).
- UC Irvine Occupational Medicine Residency: www.ucihs.uci.edu/som/oem/residency/overview.htm

The link to the faculty directory (<http://www.coeh.ucla.edu/faculty.html>) is the same as the faculty directory of the Center for Occupational and Environmental Health (COEH) with which there is a great deal of overlap.

In addition to Center programs, the website also links to:

- COEH at UCLA
- COEH at UC Irvine
- UCLA School of Public Health
- UCLA School of Nursing
- UCLA Department of Environmental Health Sciences
- UCLA Institute of the Environment
- UCLA Environmental Science and Engineering
- UCLA Mednet
- UCI School of Medicine
- National Institute for Occupational Safety and Health
- Centers for Disease Control and Prevention
- Occupational Safety and Health Administration
- National Institute of Environmental Health Sciences
- Environmental Protection Agency
- Cal/OSHA
- CalEPA

The Continuing Education site includes web pages for the CE Schedule, Hazardous Substance Training, OSHA Training, Hazardous Substance Subsidies, On-Site Training, and On-Line Training (in development).

The number of hits per month ranged from a low of 308 to a high of 545.

CENTERWIDE PROGRAMS

Program Title: Center Administration**Program Director: William C. Hinds, ScD****Program Description:****1. Goals and Objectives**

The objectives of the Southern California ERC Center Administration are (1) the financial management and reporting of the ERC, (2) coordination of activities within the Center, (3) coordination of Center activities with NIOSH OEP, (4) interaction with the SCERC external advisory committee, and (5) responding to information requests from the public.

Center Administration consists of Professor William Hinds, ERC Director; Professor Dean Baker, ERC Deputy Director; and D.T. Evans, ERC Administrator. Center Administration is housed in an office suite on the fifth floor of the UCLA School of Public Health.

Core Values, Purpose, Mission, and Vision of the Southern California ERC

The SCERC has as its **core values** a commitment to worker health, scientific integrity, and excellence in teaching.

The **core purpose** of the SCERC is to improve worker health through education, research, and service.

The **mission** of the SCERC is to accomplish our core purpose by educating professionals in the fields of occupational medicine, industrial hygiene, and occupational health nursing through academic programs and continuing education; conducting research in occupational and environmental health and related areas; and providing outreach and resources to educational and professional organizations.

The **vision** of the SCERC is to be recognized as a leader in education and research in occupational and environmental health.

Our ERC is composed of four core academic programs: two in occupational medicine (OM) (one at UCLA and one at UC Irvine), one in industrial hygiene (IH) at UCLA, and one in Occupational and Environmental Health Nursing (OEHN) at UCLA. The Center also includes a continuing education/outreach (CE/O) program, Center Administration, Hazardous Substances Academic Training Program (HSAT), a Pilot Project Research Training Program (PPRT), and a Hazardous Substances Training (HST) Program and a Targeted Research Training (TRT) Program [previously called NORA Research Support (NRS) program].

Our Advisory Committee consists of 12 members representing each of the core disciplines of our ERC plus labor and continuing education.

Activities and Accomplishments

During the reporting period, July 1, 2006 to June 30, 2007 Center Administration had the following accomplishments and activities.

Center Administration personnel and Program Directors met with the ERC External Advisory Committee on November 13, 2006.

Center Administration coordinated a meeting of Center Administration personnel and Program Directors on May 10, 2007.

Center Administration coordinated an interdisciplinary dinner meeting for all ERC Trainees and Faculty, November 13, 2006.

Center Administration coordinated an interdisciplinary plant visit and workshop for all ERC Trainees and Faculty at Northrop Grumman Company on May 10, 2007.

Center Administration continued to foster the development of the ERC-wide initiative on psychosocial stress in the work environment. The program includes three elements. (1) The development of educational materials and presenting three lectures on this topic in the required curriculum of the IH, OEHN, and OM programs. (2) Giving an elective course for ERC students (Work and Health (CHS 278), an introductory course of the psychosocial aspects of the work environment.

Outreach and Interdisciplinary coordination

Outreach and Interdisciplinary coordination are covered in separate sections.

Program Products

We submitted all financial and progress reports on time for 2006-07, except for the FSR report, which was delayed by administrative problems outside of our control.

Meetings are outlined in Activities and Accomplishments Section.

Future Plans

We plan to continue the development of the ERC-wide initiative on psychosocial stress in the work environment.

We plan to become proficient in electronic submission of grants through SF 424 and grants.gov workshops.

We plan to offer one day business/management course to all ERC students.

Center administration will continue to participate in the planning process for restructuring the UCLA OMR program.

Specific Improvements in OS&H

IH Program

- Nine program graduates now work for CalOSHA.
- Two recent doctoral graduates have faculty positions and one directing an IH Program at CSU San Bernardino.
- As a result of our ABET accreditation we have started a process which will indirectly evaluate the impact of our program on the professional IH community. We are surveying our graduates two and three years after graduating from our program as to the value of our 17 program outcomes

and their proficiency in those outcomes at the time of their graduation.

UC Irvine OM Program

- The UCI Occupational Medicine program provides medical surveillance, health assessments and fitness evaluations for firefighters in the Orange County Fire Authority. These evaluations are conducted by program physician faculty at the COEH OEM clinic with the participation of the occupational medicine residents. The program is related to the national Wellness-Fitness Initiative of the International Association of Fire Chiefs (IAFC) and International Association of Fire Fighters (IAFF). This program has had a positive impact on increasing awareness of workplace safety and cardiovascular fitness among the OCFA fire fighters. The program is now tracking cardiovascular fitness indicators and will be able to report on quantitative impact measures during the next annual report.

UCLA OM Program

- The UCLA program works closely with CalOSHA. UCLA residents actively support the activities of the CalOSHA, which relies upon their expertise since the CalOSHA office is limited to a single physician and nurse.
- The UCLA program was the first to identify California cases of bronchiolitis obliterans due to diacetyl and has worked closely with numerous agencies to facilitate the public health response. In addition, by educating numerous physicians via lecturers and presentations, the awareness of this problem has been significantly increased.

CE/O Program

- Beginning with classes offered in 2006, the Program began to send out on-line impact surveys to course participants 90 days after the completion of most courses. Below are examples of impacts cited by respondents to the question “Is there a specific occasion in which you have been called upon to use your new knowledge/skills?”
 - Mold: State of the Medical and Environmental Science –
 - “Deposition. Air testing.”
 - “QME on pt claiming mold caused health problemsQME on pt claiming mold caused health problems”
 - “As a medical expert witness”
 - “Environmental health consulting.”
 - “Mould contamination of the HVAC system.”

Effective Cleaning and Contamination Control –

- “In trying to develop a new cleaning procedure.”

OSHA 511 –

- “For incident reporting on the OSHA log”

Risk Assessment (offered June 2006) –

- “The site needed documented Job Hazard Analysis completed for tasks. That is now happening.”

OSHA 510 –

- “Everyday with scaffold inspection and training.”

OSHA 501 –

- “Training our employees on a recurring basis”
- “machine guarding, fall protection, flashpoint samples”

Preventing Injury and Illness of Groundskeepers –

- “I was not aware of the new Heat Stress Standards until I took this class. I also gained some more insight into the hazards faced by groundskeepers. If and when I conduct training for groundskeepers I use the knowledge gained from the class as well as make use of the study book you provided”
- “I am in charge of safety so many employees call me about different incidents. After investigating the accident, I develop tailgate meeting material based to prevent the accident from happening again.”
- “Gave a class on working in temperature extremes.”
- “Soon after this training class, two new grounds maintenance workers were hired. I eased them into the position by gradually increasing their work load to get them into physical shape for the summer heat.”
- Of the 43 responses received to date for the non-grant supported classes:
 - 12 agreed that they have changed their work practices since receiving training
 - 14 stated that there was a specific occasion for using their new knowledge/skills
 - 16 agreed that they are more like to approach their supervisor concerning employee rights and/or health ad safety issues because of their training
 - 16 said that they had often looked up information in or referred to the course materials provided; 9 others said they had looked up information at least once.

HST Program

- Follow-up contact with participants who completed the CHMM Review Courses and then took the CHMM exam indicate that more than 90% of participants passed the exam.

Program Title: Outreach Activities**Program Director: Cass Ben-Levi****Program Description:** Outreach activities for the Southern California ERC are given below by program.**INDUSTRIAL HYGIENE PROGRAM**

Given below are the outreach activities for the core faculty of the Industrial Hygiene Program for the period 7/1/06 to 6/30/07. Except where noted activities are extramural activities.

EDUCATIONAL DEVELOPMENT

Dr. Hinds

Served on the Interdepartmental Committee for the UCLA Environmental Science and Engineering Program.

Served on the Editorial Board of UCLA School of Public Health magazine.

Dr. Kennedy

Worked with the UCLA Labor Occupational Safety and Health Program (LOSH) to develop a workshop on industrial hygiene for summer interns from non-IH disciplines conducting field assessments of workplaces, 2007

PRESENTATIONS, LECTURES, AND AWARENESS SEMINARS

Dr. Hinds

Gave presentation on ultrafine particle measurement near traffic sources to P-Trak Community Summit, Los Angeles, CA, July 7, 2006

Gave two tutorial on Fundamentals of Aerosol Mechanics (I and II) – September 10, 2006 at the International Aerosol Conference, St. Paul, MN.

Dr. Froines

Ultrafine Particles: Exposure, Toxicity and Health Studies. Presentation to the Board of Harbor Commissioners (at their invitation), Port of Los Angeles, 8/3/06

Research Progress of the Southern California Particle Center: Health and Mechanisms Studies. Presentation to the Columbia NIEHS External Advisory Committee. New York, NY, 6/11/07.

Interview with *Fresno Bee*, Health Effects of Ultrafine Particles, 7/2/07

Dr. Kennedy

Presented instruction on industrial hygiene, radiation safety, toxicologic principles for Certified Hazardous Materials Manager (CHMM) review course, August 2006.

Presented instruction on ventilation, noise physics and control for Certified Industrial Hygiene (CIH) review course, August 2006 and March 2007.

Presented instruction on industrial hygiene measurement of noise and control methods in a continuing education course for nurses, September 2006 and March 2007.

Presented a half-day workshop on industrial hygiene to UCLA LOSH summer interns from non-IH disciplines conducting field assessments of workplaces, June 2007.

CONSULTATIONS

Dr. Froines

Consultant – ALCOA USA

OTHER

Dr. Hinds

Briefing California congressional legislators on NIOSH and ERCs, February 7-8, 2007.

Dr. Que Hee

Interview for an article in *Inside OSHA* 14 (13): 2007 p1,2: Interview on Biological Environmental Exposure Level concept.

Prepared display for 2007 AIHCE for Biological Monitoring Committee.

Prepared newsletter for Biological Monitoring Committee, 2007

Prepared flyer for AIHA BEEI Committee, 2007

OCCUPATIONAL HEALTH NURSING PROGRAM

1. Educational Development -none
2. Presentation - Lectures - Awareness Seminars

Robbins WA, Wei F, Elashoff DA (2007) Influence of work and environment on sperm: A study in northeast China, XI International Congress of Toxicology, Montreal, Canada

Robbins WA (2007) Atrazine effects on human menstrual cycle, 38th Annual Environmental Mutagen Society Meeting, Atlanta

Environmental Risk Factors in Community Based Nursing, lecture for 21 undergraduate nursing students at UCLA

Occupational Issues in Pregnancy, lecture for 58 Family Nurse Practitioner Students, UCLA

Occupational and Environmental Health, lecture for 60 Advanced Practice Nursing Students (Family and Gerontology specialties)

Work and Environmental Health Policy, lecture to 48 Health Care Policy Students at UCLA

Meeting Sponsored

Dr. Robbins was Chair of the NIOSH Occupational Health Nursing Directors meeting, Albuquerque, New Mexico, funded by the UCLA Center for Occupational and Environmental Health

3. Consultations

US EPA "Development of Environmental Health Outcome Indicators", grant review panel

4. Other – none

UCLA OCCUPATIONAL AND ENVIRONMENTAL MEDICINE

Educational Development

Our program has assisted the development of curricular activities at UCLA and elsewhere. At UCLA, we collaborate with the schools of public health and nursing in educational programs going with occupational health. In addition, we're actively involved with primary care and pulmonary medicine curricula for postgraduate trainees. We have also worked with the department of Urban Planning in the development of the Health Effects of Surface Goods Movement Symposium.

Activities also have potential national impact. Dr. Harber serves as the vice chair of the Accreditation Council for Graduate Medical Education (ACGME) residents review committee for preventive medicine. This committee is responsible for reviewing and

certifying all of individual residency programs. In addition, the committee establishes the curricular criteria and competency assessments. Over the past year, as for several prior years, the ACGME has placed considerable emphasis upon establishing specific competencies and developing methodologies for ensuring adequate resident training in these areas.

The faculty also is very active in the several occupational health and other organizations. Drs. Conlin and Papanek of our faculty serve as officers of the Western Occupational and Environmental Medical Association and/or responsible for the annual program. Dr. Harber has served in several capacities including on the program and other committees for the national meeting of the American college occupational and environmental medicine.

Dr. Harber is the Web editor for occupational- environmental health for the American Thoracic Society. This provides a major outreach opportunity in the field of occupational health. Through this venue, he is arranging for the faculty member at the University of California Irvine in the ERC there to publish a case report of diacetyl induced disease detected by surveillance. In addition, one of these residents is preparing a guide to patients for the recognition control of occupational lung disease; if successful, this will be distributed widely through the American thoracic society.

Presentations, lectures and awareness seminars

We work closely with the continue education program of the ERC to help acquaint primary care practitioners with occupational health issues. For example, we collaborate in producing a series of short video educational products. (Indeed, one of our residents has appeared as an actor in several).

We have sponsored a significant national symposium on Health Effects of Surface Goods Movement, which was broadly interdisciplinary including government, community, corporate, and academic components. This included representatives from the perspectives of medicine, epidemiology, toxicology, economics, urban planning, policy, engineering, and other areas.

Consultations

As part of our service, we provide consultation to numerous industries companies, unions, and public interest groups.

Other

Dr. Harber and other faculty members are periodically interviewed and have quotes appearing in the newspapers, particularly concerning occupational health topics.

UC IRVINE, OCCUPATIONAL MEDICINE PROGRAM

Dean Baker, MD, MPH*1. Educational Development*

Participated in campus-wide committee to develop proposal for masters of public health degree program at UC Irvine. This degree will have an environmental health sciences concentration that will provide courses on occupational health for graduate and professional students outside of the occupational medicine residency program.

Updated lectures on occupational and environmental epidemiology in medical students core course. Developed educational materials to be used for web learning.

Co-editor for a textbook on Environmental Epidemiology for Oxford University Press.

Participated on program committee with Continuing Education/Outreach Program to develop a symposium on assessment and management of mold.

2. Presentation - Lectures - Awareness Seminars

Invited Presentation: Latent Effects of Gestational Exposure Pesticide. US Environmental Protection Agency, North Carolina – July 2006

Invited Presentation: Children's Environmental Health. First Five Commissions Training Program, Lake Tahoe, California – August 2006

Invited Presentation: National Children's Study. Children and Families Commission of Orange County, Irvine, California – November 2006

Lecture for medical students: Occupational and Environmental Epidemiology – March 2007

Lecture for preventive medicine residents: Children's Environmental Health, University of California San Diego, California – March 2007

3. Consultations

First Five, Kern County (county commission) – on development of a children's environmental health program for Kern County, CA (meetings in March 2007)

4. Other

Press Interviews (multiple): Effects of Long Work Hours on Blood Pressure – August and September 2006

Television Interview: Health Effects of Long Work Hours: Canadian National Television – August 2006

Secretary-Treasurer, International Society for Environmental Epidemiology, 2001-2006

Media interviews and stories internationally on work organization research.

Member, Health and Environment Program Committee, Physicians for Social Responsibility, Los Angeles

Stephen Bondy, PhD

1. *Educational Development*
2. *Service to professional societies*

Local Organizing Committee, International Neurotoxicology Association Meeting, 2007 Asilomar.

3. *Committees*

Library Committee, UCI School of Medicine (Chair 2003-2004, 2005-2006).

2006 UCI Committee on Formation of a Program in Public Health

2007 NIEHS Special Emphasis Panel of the Extramural Loan Repayment Program for Clinical Researchers.

5. *Invited lectures*

"Slowing of events associated with brain aging, by dietary supplementation" 3rd Annual Meeting of the Global Colloquium on Neuroprotection and Neuroregeneration. Uppsala, Sweden, 2006.

"Red wine, alcohol and resveratrol: effects on methamphetamine-induced dopaminergic neurotoxicity". 1st Annual International Drug Abuse Research society Meeting, Merida, Mexico, 2007.

"Slowing Brain Aging" 1st Nutritional Sciences Symposium, , Irvine, CA, 2007.

Winter Conference on Brain Research Outreach Program. Lectures to High School audiences in Colorado on "Biology of Brain Aging" 2007.

7. *Graduate students*

Was primary mentor for HuiHui Li (M. S. graduated 2007)

Served on Ph. D. Committee of 2 UCI graduate students at UCI and 3 students at Quaid-e-Azam Campus, Punjab University, Lahore, Pakistan.

Wayne Chang, MD, MPH

1. *Educational Development*

Preceptor, UCI Medical Center Occupational Health Clinic; and COEH Occupational and Environmental Medicine Clinic - residents in Family Practice, Internal Medicine and Occupational Medicine. Family Medicine residents 2 half days per week. Internal Medicine residents in 2 to 4 week blocks 3 to 4 per year. Occupational Medicine residents half day per week.

M. Joseph Fedoruk, M.D., C.I.H.

1. *Educational Development*

Preceptor, COEH Occupational and Environmental Medicine Clinic (weekly)

2. *Presentation (including abstracts) – Lectures*

Fedoruk, M Indoor air and building related health issues: the 2006 perspective presented at a Scientific Meeting.

Fedoruk M. Building-related health problems: The 2006 perspective. Presented at UCLA Occupational - Environmental Preventive Medicine Conference May 30, 2006. Los Angeles, California.

Fedoruk M. Building associated health problems 2007: what are the issues? Presented at Grand Rounds, Center for Occupational and Environmental Health, UCI. August 22, 2006. Irvine, California.

Fedoruk M. Health Effects of Bioaerosols. Presented at annual AIHce (American Industrial Hygiene Association) Professional Development Conference. May 5, 2007. Philadelphia

3. *Other*

American College of Occupational Medicine, Chicago, IL. Developed questions for the national Medical Self-Assessment Program 2 for physicians to test their knowledge base in occupational medicine.

American Lung Association. Prepared "Solvents in the Workplace" fact sheet for ALA publication Lung Hazards at Work, a program developed to inform employers and employees on the control of harmful occupational exposures that can lead to lung disease.

Leslie Israel, DO, MPH

1. *Educational Development*

Associate Residency Program Director:

Ongoing evaluation of resident journal club, case conference and didactic sessions. Review and expansion of rotation sites. Biannual evaluations of each resident's educational plan and their progress.

Preceptor: COEH Occupational and Environmental Medicine Clinic and UCI Medical Center Occupational Health Clinic - residents in Family Practice, Internal Medicine and Occupational Medicine.

Preceptor: COEH/Occupational Medicine Resident "Rotating On-Call" Services - Telephone Consult Service, Radiographic/Laboratory Result Review Service, and Respirator Questionnaire Review.

2. *Presentations*

"Cardiopulmonary evaluations by the occupational medicine physician" 10/25/06

"Hearing Loss" 11/08/06

"Hepatitis C" 11/15/06

3. *Other*

Supervision of wellness and fitness medical evaluations for the Orange County Fire Authority Wellness and Fitness (WEFIT) Program.

Established COEH, UC Irvine as one of two AOEC sites for National Asbestos Program, an ATSDR Study.

Implemented the clinic protocol for evaluation of diacetyl exposed employees in the Food Flavoring Businesses located in Orange County. Supervise and perform the medical surveillance evaluations. Communicate with CDHS, CAL-OSHA, employers and employees.

Elliott Kornhauser, MD, MBA, MPH

1. *Educational Development*

Preceptor, UCI Medical Center Occupational Health Clinic; and COEH Occupational and Environmental Medicine Clinic - residents in Family Practice, Internal Medicine and Occupational Medicine. Family Medicine residents 2 half days per week. Internal Medicine residents in 2 to 4 week blocks 3 to 4 per year. Occupational Medicine residents half day per week.

2. *Other*

Serves under UCIMC Medical Center, Safety Committee and Infection Control Committee

Ulrike Luderer, MD, PhD, MPH**1. Educational Development**

Updated course material for graduate Target Organ Toxicology course on (1) endocrine toxicology, (2) reproductive toxicology, and 3) developmental toxicology.

Course Director for monthly UC Irvine Occupational and Environmental Medicine Grand Rounds, 1/07-present

2. Presentations – Lectures – Awareness Seminars**A. Lectures**

Series of six lectures totaling 15 hours on reproductive, developmental, and endocrine toxicology in *Target Organ Toxicology*, UC Irvine, Winter quarter 2006-07.

“Environmental and Occupational Lung Disease: Hypersensitivity Pneumonitis as a Case Example.” Medicine Grand Rounds, UC Irvine, 12 December 2006.

B. Presentations

Tsai-Turton M, Nakamura B, Luderer U. Modulation of 7,12-dimethylbenz(a)anthracene (DMBA) Induced Apoptosis in Cultured Antral Rat Follicles by Glutathione (GSH). Presented at the University of California San Francisco - Collaborative on Health and the Environment Summit on Environmental Challenges to Reproductive Health and Fertility, January 2007.

Cortes M, Luderer U. Overexpression of Glutamate-Cysteine Ligase Catalytic Subunit Protects Granulosa Cells against Oxidant Injury. Abstract #45 presented at the annual meeting of the Society for the Study of Reproduction, San Antonio, TX, July 2007.

Hoang Y, Luderer U. Follicle Stimulating Hormone Stimulates Glutathione Synthesis in Primary Rat Granulosa Cells by Upregulating Glutamate Cysteine Ligase: Role of Cyclic AMP. Abstract #48 presented at the annual meeting of the Society for the Study of Reproduction, San Antonio, TX, July 2007.

Nakamura BN, Flores VN, Cortes M, Chan JY, Luderer U. Mice with Decreased Antioxidant Response Due to Deletion of the Transcription Factor Nrf2 Do Not Have

Increased Ovarian Sensitivity to Benzo[a]pyrene. Abstract P-24 presented at the XVIth Ovarian Workshop, San Antonio, TX, July 2007

University of California Irvine, Dept of Pathology. “Opposing roles of oxidative stress and glutathione in ovarian follicular toxicity.” 26 January 2007

3. Advisory Committees

U.S. Environmental Protection Agency Science Advisory Board Review Panel on the Carcinogenicity of Ethylene Oxide, member. Nov 2006-Sep 2007.

4. Other

Mentored visiting scholar in my laboratory, Youming Tan, PhD, Assistant Professor, Dept. of Environmental Health, School of Public Health, Shanghai Jiaotong University, Shanghai, China. 6/06-12/06.

Mentor, UCI Minority Science Programs/ Minority Biomedical Researchers Program, 2000-present

Faculty of 1000 Medicine, member of Evaluation Board in the Public Health and Epidemiology Faculty, Dec 06-present.

Reviewer of manuscripts for Journal of Occupational and Environmental Hygiene, Toxicological Sciences, Industrial Health, Theriogenology.

External peer reviewer of manuscript for National Institute of Occupational Safety and Health, 2007

Society for the Study of Reproduction, Membership Committee, 2007-08

American College of Occupational and Environmental Medicine committee to update guidelines on reproductive health in the workplace, 5/07 to present.

Media interview and story on having a green pregnancy (*Fit Pregnancy* magazine).

Robert Phalen, PhD

1. Educational Development

Co-taught CEMX 492.41 (University Extension) Biological Principles of Environmental Management

2. Presentations – Lectures – Awareness Seminars

Lecture on Animal Studies/Particles on Air & Waste Management Association

Provided training on ethics for high school honors science students for So. Calif. Jr. Academy of Science.

Lecture on Methods/Aerosol Models for National Academy of Sciences.

Presented talk on In-Vitro Dosing of Particles at Dosimetry Conference.

3. Consultations

National Academy of Sciences – Member on Committee for Bioterrorism.

Society of Toxicology – Prepared educational exhibit for students at annual meeting.

Cal State University of Long Beach participated in reviewing & editing Undergraduate textbook on Environmental Epidemiology.

CDC/NIOSH – participated in planning a conference on inhaled particles.

4. Other

American Association for Aerosol Research, Plan, and Conduct and guide peer review publication for PM Conference, Organizer, and Executive Committee Member

Southern California Jr. Academy of Sciences, Chair, Judging at Annual Meeting

Chair – Conference on “Frontiers in Aerosol Dosimetry Research”

Guest editor – Dedicated peer-reviewed issue of Journal Inhalation Toxicology

Co-author – National Research Council report “Overcoming Challenges to Develop Countermeasures Against Aerosolized Bioterrorism Agents”

Peter Schnall, MD, MPH

1. *Educational Development*

Taught revised course in “Work and Health” at UCLA School of Public Health Spring 2007.

Prepared and delivered 2 hour lecture for EHS 200a at UCLA School of Public Health.

Convener and Organizer FIFTH INTERNATIONAL CONFERENCE ON WORK ENVIRONMENT AND CARDIOVASCULAR DISEASES – Cracow, Poland September 27-30, 2009

Chairperson, ICOH Scientific Committee, Cardiology in Occupational Health 2005-2008

2. *Presentations – Lectures – Awareness Seminars*

Presenter: A Training Program on the Organization of Work and Its Impact on Health in China – September 24-28th 2007. 3 lectures of 2 hours each on September 24,25,26th 2007

Editor, Unhealthy Work: causes, consequences and cures. Baywood Publishing. In Press 2008. Book is based on 2004 Conference – “The Way We Work and its consequences for our health” held at UCLA, sponsored by SC ERC.

3. *Consultations*

Consultant: Southern California STEP Project (STEP Program: Surveillance, Treatment and Early Prevention). A UCLA/UCI university centered initiative for a public health approach to the surveillance and early detection, treatment and prevention of workplace related injury and cardiovascular disease.

Consultant to the Portland State U. research project - Workplace, Family Health and Well-being Network, funded by the National Institute of Occupational Safety and Health.

4. *Grants*

NIOSH Grant Recipient 2007-2008 - A Training Program on the Organization of Work and Its Impact on Health in China – conducted September 24-28th 2007

Co-Investigator with Dr. Paul Landsbergis (PI) 9/6/01-9/30/07 - UAW-DaimlerChrysler National Safety and Health Committee Job Stress, Hypertension and Cardiovascular Disease Risk. This study is designed to characterize the sources of stress in the work environment of autoworkers, and to determine their possible association with hypertension and CVD risk.

Principle Investigator with Dr. Marnie Dobson, CWA Project Work, Ergonomics and Health Outcomes 2007-2008. A survey of 4000 Southern California CWA Verizon Employees

4. *Other*

Maintain a web site (www.workhealth.org) dedicated to the education of the public on health risk associated with work.

Director, Center for Social Epidemiology, Venice, Ca.

James Seltzer, MD

1. *Educational Development*

Interview series regarding issues in pediatric environmental health on Saigon Broadcasting Television Network, 2006 – currently discussing pediatric asthma.

2. *Presentations – Lectures – Awareness Seminars*

“Case issues”, Mealey’s Construction Defect and Mold seminar, Scottsdale, Arizona, November 6, 2006.

“Environmental Evaluation of Mold, Moisture and Litigation”, 2006 Annual conference of the American College of Allergy, Asthma, & Immunology, Philadelphia, November 11, 2006.

"The Environmental Evaluation of a Home: Evaluating Methods and Results", 2006 Annual conference of the American College of Allergy, Asthma, & Immunology, Philadelphia, November 13, 2006.

“Air Filtration and Health Effects of Indoor Air Pollution”, 2006 Annual conference of the American College of Allergy, Asthma, & Immunology, Philadelphia, November 12, 2006.

Panel participant, session on asthma, National Institute of Environmental Health Sciences workshop: "Children's Environmental Health Research: Past, present, and future" meeting - Research Triangle Park, NC, January 22, 2007.

Participant, American Academy of Pediatrics Advocacy training program, Washington, D.C., February 12-13, 2007.

Presentation at workshop at 2007 AAAAI annual meeting, San Diego, "Adverse effects of active and passive smoking on asthma and rhinitis", February 24, 2007.

"Evaluation of Occupational and Environmental Allergic Disease", Presentation at University of California, School of Medicine, Division of Occupational & Environmental Health, Irvine, California, March 28, 2007.

"Healthy Homes", Grand Rounds, University of California, School of Medicine, Division of Occupational & Environmental Health, Irvine, California, March 28, 2007.

"Health Effects of Mold", Presentation at 2007 Annual Michigan Safety Conference, Grand Rapids, Michigan, April 17, 2007.

3. *Other*

"Molds in Schools", Mid-Atlantic Conference on Children's Health and the Environment. Reston, Virginia, October 6, 2007.

Sat on an asthma panel and gave a short presentation at "The 2007 Children's Environmental Workshop: Discover, Treat, Prevent, Prepare", Washington, DC, October 11, 2007

Program Co-chairman of Healthy Indoor Environments Forum, American College of Allergy, Asthma, & Immunology, Dallas, November 8, 2007.

"Building-related health effects and taking a health-related environmental history", Healthy Indoor Environments Forum, American College of Allergy, Asthma, & Immunology, Dallas, November 8, 2007.

"Selecting an indoor environmental quality consultant and interpreting environmental reports", Healthy Indoor Environments Forum, American College of Allergy, Asthma, & Immunology, Dallas, November 8, 2007.

"Mold, moisture, and litigation" workshop, American College of Allergy, Asthma, & Immunology, Dallas, November 10, 2007.

CONTINUING EDUCATION/OUTREACH PROGRAM (CE/O)

c. Outreach Progress Report and Future Plans for Each Program Area

i. Educational Development

Occupational Medicine

- Working with UC Irvine School of Medicine, offered the first Southern California ERC-developed course with CME accreditation – Mold: State of the Medical and Environmental Science.

- Working with executive directors and medical directors of community clinics, the Community Clinic Association of Los Angeles County, County primary care and emergency clinics and other primary care sites to develop program of on-site occupational health training for physicians, nurses and physicians assistants working in primary care settings.
- UCLA School of Medicine Occupational Medicine residents assisted in development of curriculum for health care practitioner training.
- UCLA School of Medicine Occupational Medicine residents assisted in production of video presentation that is part of health care practitioner training.
- Co-sponsored UCLA School of Medicine Occupational Medicine symposium on Health Effects of Surface Goods Movement

Occupational Health Nursing

- Outreach to Occupational Health nursing associations and nursing schools with courses previously identified as meeting their needs and interests. New contacts include the Hispanic Nurses Association.
- The Occupational Health Nursing program and Occupational Medicine Program assist in providing skills-based occupational health and safety training to physicians and nurses in the community providing episodic care. First and second-year students were involved in curriculum development and as on-site training facilitators.
- The Occupational Health Nursing program and Occupational Medicine Program will assist in providing training to owners and supervisors of businesses and agencies involved in tourism to prevent injuries and illness to low wage service workers.
- Partnering with California Department of Health Services and UC Berkeley's ERC to host two Sharps conferences in Fall 2006, one at Berkeley and one at UCLA.

Safety

- A part-time consultant continues to contact state and local government agencies and businesses to make them familiar with our offerings and to find out what courses they would like us to offer.
- Continued relationship with Cal-CUPA (Certified Unified Program Agency) to promote courses and other SCERC activities and solicit needs assessments.
- Expanded partnership with OSHA Training Institute at UC San Diego to include California State University, Dominguez Hills in order to offer a variety of OSHA courses including on-site courses that may be given throughout Southern California.
- Expanded partnership with University of Michigan's Center for Occupational Health and Safety Engineering to host a conference on ergonomics with the goal of establishing an ergonomic resource network with the goal of better providing ergonomics training and consultation.
- Developed a series of classes for Workplace Safety Week including Developing an IIPP; Incident Investigation and Root Cause; Communications Skills for Supervisors and Preventing Workplace Violence
- Received support of California Landscape Contractors Association and Landscape Contractors Insurance Service for Groundskeeper Safety training.

- Received input from California Landscape Contractors Association and Landscape Contractors Insurance Service in development of Groundskeeper Safety curriculum and Ergonomic Fact Sheets

Industrial Hygiene

- Developed ergonomics courses previously identified through needs assessments sent to AIHA members as high need and interest for this program area.
- Increased CIH Review from one time per year to twice.
- Receive co-sponsorship of courses from local sections of AIHA
- Industrial Hygiene students have been involved in curriculum development and facilitating courses for businesses owners and supervisors in tourism industry.

Assisting Schools Outside the Parent Institution

- Held Groundskeeper Safety Classes on the campuses of UC Irvine, UC Santa Barbara, UC San Diego, UC Riverside, California State University Dominguez Hills, California State, University Northridge, Kamehameha School, Arizona State University – all schools sent substantial numbers of attendees to training sessions.
- Established relationship with Extended Studies Program at California State University, Dominguez Hills to jointly develop and present courses with OSHA Training Institute at UC San Diego.

Assisting professional societies and associations, unions, industry, with the development and/or co-sponsorship of safety and health courses, seminars, etc.

- Assisted California Landscape Contractors Association and Landscape Contractors Insurance Service by providing free training to their members.
- Assisted UniteHERE and other unions by developing safety training for service workers in tourism industry including hotel housekeepers and janitors.
- Continued to outreach to local associations – several local AIHA, AAOHN, ASSE and ACHMM sections in courses development.
- Continued relationship with Los Angeles Office of Housing and Urban Development to present course in Orientation to Environmental Assessment.
- Redesigned website to make it more accessible. Improving on-line registration and credit card processing.
- Improved relationship with UCLA-LOSH. Collaborate when possible on projects such as Clinics Project.
- Developing series of on-line web seminars on ergonomics.

ii. Presentations/Lectures/Awareness Seminars

Participated in and/or disseminated information at:

- AIHA Technical Symposium, Long Beach, CA
- Mary Gene Ryan presented a Risk Assessment lecture at the national AAOHN Conference.
- Annual Landscape Trade Show, Los Angeles Convention Center

• Consultations

n/a

- **Other**
n/a

Program Title: INTERDISCIPLINARY COORDINATION

Program Director: William C. Hinds, ScD
UCLA School of Public Health

Program Description:

The SCERC is committed to the idea that a multidisciplinary team approach is the best way to address complex occupational and environmental health problems. The SCERC has continued its programs of specific activities designed to foster interaction among occupational health disciplines. This is in addition to trainees taking courses together with trainees from other disciplines and trainees working as a team on projects and reports. The specific activities include an annual dinner meeting and an annual plant visit with an interdisciplinary workshop.

Program Activities and Accomplishments:

During the reporting period the annual interdisciplinary dinner meeting was held on November 13, 2006. At the meeting an overviews of the ERC, UCLA COEH, and LOSH programs were presented. Professor Anthony Robbins from Tufts University was the featured speaker. He spoke on the importance of communicating occupational health science to the public.

The SCERC annual plant visit and interdisciplinary workshop was held at the Northrop Grumman Company in El Segundo, California on May 10, 2007. This was an all-day affair in which students toured the facility and then were divided into four teams each missing one of the core academic disciplines. The teams discuss and develop what the role of the missing discipline should be; critique the plant in that area; and present their critique to whole group. This activity requires students to work on a problem as an interdisciplinary team and to think seriously about the roles of disciplines other than their own. Both the interdisciplinary dinner meeting and the interdisciplinary plant visit and workshop are required for all ERC students and faculty. Non-supported students in ERC Programs are encouraged to attend and participate in these activities.

The UCLA occupational medicine residents take their MPH course work at UCLA School of Public Health with industrial hygiene and occupational health nursing students. Many of the courses at UCLA have multi-disciplinary focus. Fourteen courses are required for at least two disciplines and four courses are required for all three disciplines in our ERC. While this is important, what is more important is that the trainees in our Center are taking courses, making field trips, solving problems, and writing reports with trainees in other disciplines.

As an example, EHS 259A Occupational Safety and Ergonomics is a required course for all IH, OEHN, and OM/UCLA students. It includes a final project where students from each of the disciplines work together as an interdisciplinary teams to solve problems and prepare a report. Another example, an

occupational nurse supervises the CalOSHA internship and residency rotation where nursing, medicine, industrial hygiene, and safety students and professionals address real problems as a team. In EHS 454 Health Hazards of Industrial Processes two of the six field trip reports are team field trip reports.

Program Products:

We believe our trainees finish our programs with excellent appreciation for the roles and contributions of all the disciplines in occupational health and safety and the value of working with other disciplines.

Future Plans:

We plan to continue our interdisciplinary activities in much the same way as we have done in the past. We vary the type of facility where we conduct the interdisciplinary workshop each year. We plan to involve all OH disciplines in our California Wellness grant to train health care practitioners in ambulatory care facilities about occupational health and safety.

Program Title: PILOT/SMALL PROJECTS PROGRAM

B. Program Directors - William C. Hinds, Sc.D. and Dean Baker, M.D., MPH

C. Program Description:

- **Goals and objectives** – To enhance the research training opportunities for ERC and TPG trainees, junior faculty and young investigators in Region IX – ideally within one or more of the designated NORA subject areas. –

C. Program Activities and Accomplishments:

- **Selection of pilot project research projects**

In June 2006, proposals were solicited through a Request for Applications (RFA) disseminated to institutions throughout northern and southern California involved in occupational health research, and to key faculty members at research training institutions within Region IX (e.g., University of Arizona, University of Hawaii, USC, UC San Francisco, UC Berkeley, UC Davis). This year’s application pool consisted of five proposals covering a broad array of topics. Applicant organizations included Embry-Riddle Aeronautical University, University of Arizona, University of California – Berkeley, University of California – Los Angeles.

These proposals were assessed by two independent reviewers, in accordance with the “Guidelines for Reviewers,” and were ranked in six categories to derive a final score on an NIH scale from 1 to 5, with 1 being outstanding and 5 being acceptable. Based on this confidential peer review, proposals were rank ordered and we funded the top four applicants.

At the end of Appendix C is the Pilot Project RFA for the current funding cycle.

- **Funded pilot project research activities**

Of the four funded projects awarded during the 06-07 cycle, three were awarded to trainees, and one to a junior faculty member. Due to delays in Human Subjects approval, all recipients received agency approval late in the project period (i.e., one in May 2007 and three in June 2007); therefore, project completion is contingent upon request for and approval of carryforward requests for all four pilot projects.

This FY06-07 award recipients were:

<u>Name</u>	<u>Report Title</u>
Maxwell Fogleman	Evaluation of Biomechanical Stressors of Baggage Handlers
Jennifer Currie	Does Rapid Lung Function Decline in Firefighters Predict Respiratory Morbidity during their Retirement
Kathleen Mullen	Motivations and Obstacles to Returning to Employment for Nurses
Gerald Poplin	Injuries among the Tucson Firefighting Population: Identifying Root Causes and Areas of Intervention

Additionally, for two of the five funded projects awarded during the 05-07 cycle, we requested and received approval to carryforward funds to facilitate project

completion. These two projects were completed during the 06-07 period, thus final project reports and graphics presentations are included in this section as well. Final reports are provided in Appendix C.

This FY05-06 award recipients are:

<u>Name</u>	<u>Report Title</u>
Jeffrey Birkner	Release of Particle form Commonly Used Respirator Filters
Karen Young	The Effects of Occupational Nickel Exposure on Human Sperm DNA Integrity

- At the annual **ERC Interdisciplinary Dinner** on November 13, 2006, five Pilot Project awardees presented posters from the prior, FY 05-06, pilot project cycle:
 - Graduate Student, UC Los Angeles
 - project title: "Release of Particles from Commonly Used Respirators Filters" (See poster graphic at the end of this section.)
 - Graduate Student, UC Los Angeles
 - project title: "The Effects of Occupational Nickel Exposure on Human Sperm DNA Integrity" (See poster graphic at the end of this section.)
 - Graduate Student, UC Los Angeles
 - project title: "Influence of Biomechanical Work Factors on the Permeation of Captian through Nitrile Gloves using Robotic Hands" (See poster graphic at the end of this section.)
 - Graduate Student, UC Los Angeles
 - project title: "Exposure of Manufactured Nano-particles in the Workplace" (See poster graphic at the end of this section.)
 - Graduate Student, UC Los Angeles
 - project title: "Permeation of Metal Working Fluids through Disposable Gloves" (See poster graphic at the end of this section.)

E. Program Products

- **Publications resulting from Pilot Projects**
The research activities of Kathleen Mullen, PPRT award recipient, were published in two different peer-reviewed journals. The citations are listed in Appendix B.

F. Future Plans

We plan to continue the PPRT program as we have done in the past by sending out the RFA in May or June, soliciting proposal in July or August, and making awards in September or October. In the 07-08 cycle, we have received four proposals, have made awards to two of them, and are reviewing revised versions of two others.

IV. Report on Specific Improvements in OS&H Resulting from ERC Programs

Doctoral candidate, Kathleen Mullen, successfully defended her dissertation and was appointed to an Assistant Clinical Professor position at a University of California San Francisco.

Additionally, listed below are grants, awards received by Kathleen Mullen (in addition to the ERC grant):

NORA Research Grant –dissertation support 12/30/2006	\$3,000
<i>National Recipient of the 2006-07</i> American Association of Occupational Health Nurses 1/30/2007 Foundation Award	\$10,000
Lanctot Scholarship for Native American Students at UCSF 9/2002-2007	\$1,500 per year

The following sections include:

- An expanded chart presenting data for all five submissions including applicant institution, NORA area, and budgetary requests
- Poster summaries for three projects.
- Current progress reports for all award recipients are provided in Appendix C.

Summary of PPRT awards for 2006-07.

#	Institution	Title	NORA Area(s)	Direct Costs Requested	Human Subjects	Funded
1.	UCSF/ Occupational and Environmental Health/ School of Nursing	“Motivations and Obstacles to Returning to Employment for Nurses”	social and economic consequences	\$18,700	Yes	Yes
2.	Univ. of AZ/ Environmental and Community Health/ Zuckerman College of Public Health	“Injuries among the Tucson Firefighting Population: Identifying Root Causes and Areas of Intervention”	(1) musculoskeletal disorders; (2) risk assessment methods; and (3) traumatic injuries.	\$18,585	Yes	Yes
3.	Embry-Riddle Aeronautical University/ Dept of Safety Science	“Evaluation of Biomechanical Stressors of Baggage Handlers”	musculoskeletal disorders	\$19,000	Yes	Yes
4.	Univ. of AZ/ Environmental and Community Health/ Zuckerman College of Public Health	“Does Rapid Lung Function Decline in Firefighters Predict Respiratory Morbidity during their Retirement”	asthma and COPD.	\$18,578	Yes	Yes
5.		“Influenza-A Virus Transmission via Surface-to-Hand-to Mucous Membrane Contact in Share Office Work Situations”	TBD	\$19,000	Yes	No

Release of Particles from Commonly Used Respirator Filters

Jeffrey S. Birkner, MS, CIH

Advisors: Dr. Kennedy, Dr.Hinds

Background

- It has been believed that adhesion forces on particulate filters will not allow the release, resuspension and/or re-aerosolization of a significant number of particles under typical respiratory flows.
- Handling and Disposal of respirators with release in mind has generally not been addressed by users except in the nuclear industry and by some respirator manufacturers in their instructions.
- A pilot study performed by Hinds and Kennedy showed that particles may be released from respirator filters when dropped.
- Release of particles from filters are of particular interest in light of pandemic flu, terrorism (such as the anthrax scare) and highly toxic particles.

Hypothesis:

- Particles are released from fibrous filters in concentrations that could have significant health effects on individuals exposed to these contaminants if these devices are not properly handled.
- Particles may be released by fibrous filters under various handling scenarios including dropping from various heights, typical doffing procedures.
- Differences in particle release may be effected by factors including particle size, drop height, filter loading and type of handling.

Objectives:

- Laboratory based study to quantify fractional release of particles from respirators dropped on a hard surface, flexed in a way that simulates respirator removal.
- Determine if differences exist between respirator types
- Investigate the mechanisms behind particle release.

Preliminary Results-Mean Percent of Particles (S.D.) Released for 20million Particles Load Condition

Respirator Type	Particle Size (µm)	Drop Height (ft)		
		1	3	5
A	0.6	0.003 (.002)	0.011 (.007)	0.016 (.008)
	1.0	0.001 (.0006)	0.029 (.02)	0.048 (.02)
	2.0	0.002 (.002)	0.106 (.07)	0.338 (.18)
B	0.6	0.002 (.002)	0.005 (.002)	0.004 (.002)
	1.0	0.001 (.0007)	0.013 (.006)	0.013 (.008)
	2.0	0.002 (.002)	0.079 (.038)	0.065 (.030)

Experimental Setup/Respirators Investigated:



Methods:

- 0.6, 1.0 and 2.0 micrometer particles used to load filters
- Respirators are loaded to 10, 20 or 40 million particles
- Respirators are Dropped from a height of 1, 3 and 5 feet
- Respirators are loaded with 1.0 micrometer particles and then flexed to simulate respirator removal after use
- Respirators are analyzed for different characteristics to attempt to explain release differences amongst respirators
- Aerosol Particle Sizer (APS) is used to count particles for loading and during various treatments
- Breathing machine is utilized to simulate the loading of respirator filters in work environment

Conclusions to Date

- There appears to be a significant difference between particles release and respirator type.
- Differences appear to be related to the type coverstock used on each mask and possibly other characteristics some of which have not yet been identified or quantified.
- Other respirators will be tested to attempt to determine if this theory is correct.
- Although particles are released from respirators, calculations show that the amounts released under normal use conditions will never exceed a PEL based on the fact that you may use half mask respirators up to 10x the PEL.
- Consideration may have to be given to the proper handling of respirators in health care environments.

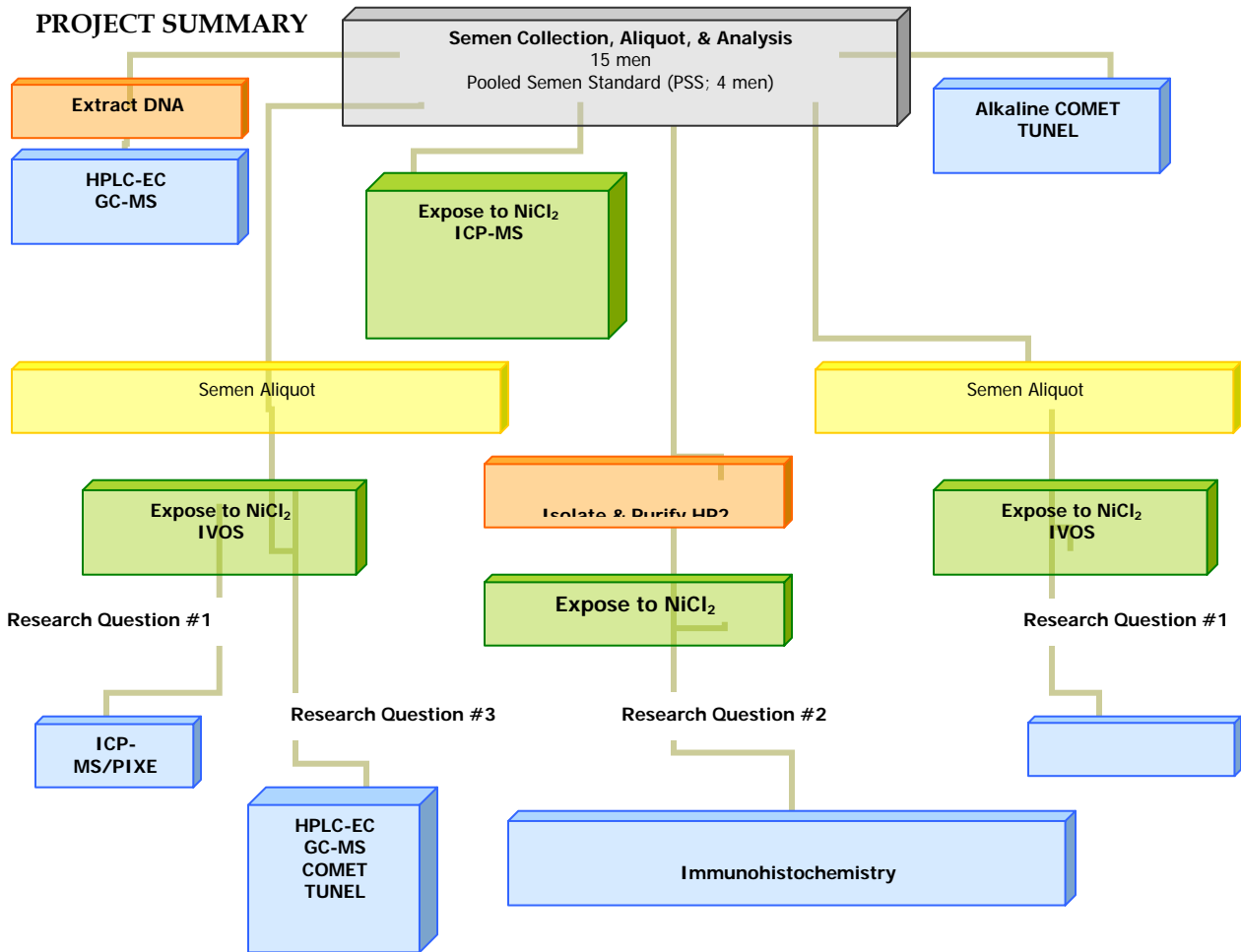
Further Testing/Analysis

- Test Two More Models for a total of Four Models
- Characterize Differences in Masks
- Begin Tests on Flexing of Respirators
- Begin Multivariate Analysis
- Begin Dissertation and Plan to Defend in Spring of 2007

The Effects of Occupational Nickel Exposure on Human Sperm DNA Integrity

Flow chart for semen analysis.

PROJECT SUMMARY



PPRT-RELATED DISTINCTIONS

The Principal Investigator was awarded a grant (\$5000.00) from the Community Environmental Health Stars Summer Program to investigate and identify greater Los Angeles communities at risk of exposure to metal contaminants.



UNIVERSITY OF CALIFORNIA, Southern California ERG SAN FRANCISCO Pilot/Small Projects Prog

Motivations and Obstacles to Work for Injured Hospital Nurses



MORE Nurses Study

K. Mullen, M. Gillen, S. Kools, P. Blanc, & C. Chesla

Introduction

The aim of this study was to examine motivations and obstacles experienced by hospital nurses who endeavor to work after injury by investigating the influence of self meaning as a consequence of the over-all injury experience, along with, work meaning, risk/fear of re-injury, work climate, workers' compensation, and issues related to personal lifestyle. Self meaning, experienced by identity, is acquired from perceptions, experiences, and relationships with others. Therefore, exploring the complex sources that contribute to how injured nurses feel about themselves promotes an understanding of their subsequent actions and behaviors.



The MORE Nurses Study is a sub-study of a larger study, Gradients of Occupational Health in Hospital Workers (GROW Study), lead by principal investigator Paul Blanc, MD, that examined hospital workers with reported musculoskeletal injuries and matched referents. Participants were obtained from two large metropolitan hospitals in northern California.

Hospital nursing remains the foundation for the development of nursing skills for newly trained nurses and for many nurses represents the essence of the professional role. Nurses comprise the largest single group of hospital workers and experience some of the highest rates of work related musculoskeletal injuries. Due to increased concerns of a shortage of nurses there is a dire need to maintain the employability and retention of invested and experienced nurses.

Findings – Injured Nurses' Motivations to Work

Personal	Economic	Organizational	Environmental	Workers' Compensation
Internalized identity of being a nurse Considers nursing to be a <i>calling</i> to care for one in need Social / family role identity Resourcefulness in self assessment & treatment of injury symptoms and use of outside medical support services Support of co-worker's who possess similar identity of nursing as <i>calling</i> Personal philosophy that is aligned with organizational goals	Primary source of income and benefits for self/family Ability to pay for needed care using out-of-pocket funds or private disability insurance If not primary income, then income is seen as important contribution to quality of life and family goals – education and activities for children and family life	Work schedules that allow long gaps between shifts due to prevalence of 12 hour shifts Some flexibility to informally modify one's workload to accommodate reduced ability for full duty Administration's tolerance of nurses sleeping at work Unspoken acceptance & expectation of working while injured	Acceptable practice of sleeping in break rooms or in their car Work environment is endemic at all levels with staff that are overworked leaving few positive role models for setting self imposed limits for self care and wellbeing – Patients are always worse off than staff no matter what the demands on nurses	Treatment for work injury is available through a well staffed & experienced on-site employee health clinic No-fault system of benefits covers medical treatment and indemnity compensation for reported injuries Purposeful avoidance of the system which leads to lack of reporting and denial of injury –pushing on despite injury

Core Conceptual Category of GT

Nursing Together

"Because so many people have been injured... people know that you can't nurse alone. I mean, it's impossible to nurse alone...people are very cognizant of that."



Conclusions

Nursing together is different than "working together." It captures shared identity with co-workers and meaningful others including family and friends with a like sense of commitment to caring. In the hospital setting, acts of nursing are multidimensional –physical-emotional-situational that can enhance or inhibit one's identity as nurse.

Nurses are motivated to *nurse together*. When nurses *nurse together* they are deeply connected to their work – expressed as achieving the highest level of care for another...and connected to their co-w with similar caring.

When events such as injury, work cli and threats to identity, inhibit nurses *nursing together* they become disenc with their work, their profession, and disconnected to their own sense of sel



Sample

Convenience sample (sub-study) of nurses who participated in GROW Study as reported cases (n = 56). Eligibility for the MORE Nurses Study, was limited to registered nurses with a reported injury, who provided patient care (n = 44). Individual interviews for the MORE Nurse Study were conducted with 16 of those eligible. All were women; mean age – 51 years (SD =7.4); median length of time with employer – 18 years; 4 of 16 trained outside the U.S.; 7 of 16 born outside of U.S.

Methods

Grounded theory methodology including sequential analysis, coding, and conceptualization of the data was used to determine 3 sub-categories and a core category used as the basis of theory development. Research began as an area of study of hospital nurses with a reported injury allowing the theory of nurse identity to emerge as a core conceptual category connecting nurses to their injury experience within the hospital setting. Sub-categories – *public nurse/private self, working while wounded, and the spirit of place*, helped formulate the conceptual components of the core category –*nursing together* and a description of nurse self-identity that expressed the connection nurses thrive on in the hospital setting as they provide care for patients and support each other.

Findings –Injured Nurses' Obstacles to Work

Personal	Economic	Organizational	Environmental	Workers' Compensation
Situations that inhibit or infringe on strong co-worker relationships – working with others perceived as not sharing a philosophy of caring as <i>calling</i> Limited duty assignments that lack a connection with nurse identity Fear -of re-injury; job loss from direct and indirect experiences; and loss of nurse identity	Paying out-of-pocket for injury related expenses including help at home, encourages need to maintain income Use of sick leave for injury recovery rather than disability benefits	Light duty assignments that assigns nurses with work restrictions to clerical positions rather than those that recognize nurse identity Light duty assignments that remove nurses from their assigned unit, thereby separating restricted nurse from co-worker support Fatigue -12+ hour shifts Short term and temporary nurse staffing results in uneven distribution of patient load and unit responsibilities such as staff training	Lack of rest or respite space to accommodate long work hours Lack on on-site exercise facility Patient rooms that are unable to adequately accommodate equipment and technology for patient care using good ergonomic principles Lack of available lift team Injuries are so common as to be expected which contributes to underreporting	Stigma –perceived as a challenge to the nurse's integrity Unfamiliar role shift from caregiver to one who is entitled to care Statutory restrictions on length, type, and cost of care allowed within the system Lack of control recipients have over selecting their medical provider results in lack of trust in the system Limitations in covered benefits are perceived as punitive by nurses who have insufficient knowledge of the parameters of the system Lack of injury reporting leaves many nurses on hospital units "working while injured", therefore fewer are available for co-worker assistance

Implications

By increasing our understanding of nurses' motivation to work, as influenced by fear of injury, staffing demands, and experiences with employee health departments, interventions aimed at recognizing and preserving nurse identity and promoting co-worker connections, as functions of healthy work behavior, can be developed.

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III. Program Progress Report**A. Program Title**

National Occupational Research Agenda Research Support (NRS) Program

B. Program Director

Dean Baker, MD, MPH, Professor, Department of Medicine
School of Medicine, University of California, Irvine

C. Program Description

Goals and Objectives. The Program's goal is to support implementation of the National Occupational Research Agenda (NORA) by encouraging and facilitating research training in NORA priority areas. Specific objectives are (1) to raise awareness about NORA within the universities in the region; (2) to facilitate interdisciplinary research training on NORA priority areas; (3) to support research training of graduate students in ERC programs; and (4) to organize outreach and education programs to disseminate information about NORA and NORA research topics. The program has developed and implemented several strategies in each of these areas.

The Program has raised awareness about NORA and encouraged SCERC faculty and trainees to conduct pilot projects, doctoral research projects, and investigator initiated research projects in NORA priority areas. For example, the Program collaborated with the CE/O program three years ago to conduct a mail-back survey of ERC graduates and occupational health practitioners in the region. This survey was used to assess awareness of NORA and to ask about regional need for NORA-related research training and professional education. In addition, the Program developed outreach materials on NORA that has been distributed to the ERC programs and trainees. We also downloaded and printed the NORA posters that were developed by the NIOSH working groups. The posters have been displayed at the Southern California ERC events, such as our interdisciplinary dinners and at ERC CE/O conferences.

The NRS Program has facilitated research training using several strategies. First, the Program has provided limited support for faculty to provide research training in ERC core courses. The faculty have provided lectures in required courses of each of the core programs on the SCERC research initiatives in ergonomics and in work organization. The program faculty also developed new courses in work organization and cardiovascular disease and in occupational cardiology that have been offered at the UCLA School of Public Health and at the UCI School of Medicine. Second, the Program has provided technical support by purchasing shared research equipment and supplies for use by ERC faculty and trainees who are involved in NORA-related research. Third, the Program has provided some technical support to the Pilot Project program in reviewing proposals and has provided supplemental funding for a pilot project that addressed a NORA priority area. The program will continue to use these strategies to encourage and facilitated NORA research training within the ERC.

The Program has supported research training in the ERC programs by providing stipend and technical support to doctoral students in the Industrial Hygiene program. The Industrial Hygiene program is the only approved doctoral degree program in the SCERC. The NRS has provided stipend support to 2-4 Industrial Hygiene doctoral students per year, including four trainees during the reporting period. In addition, the Program has purchased research equipment and supplies and provided limited support for research assistants, statistical consulting, and machine shop services. Some of the Industrial Hygiene doctoral students have also received support through the Industrial Hygiene core program or the Pilot Project program, but the ERC coordinates these programs so there is no duplication of support across the programs.

The program encourages NORA research in other SCERC core programs and across the two universities, but the program does not provide stipends support to trainees in other ERC core programs or related programs at our universities (e.g., occupational epidemiology, toxicology) because of program restrictions on providing stipends to trainees in programs other than the NIOSH approved doctoral training program. Our long-term strategy is for the SCERC to expand the number of approved doctoral degree training programs within the ERC.

The NRS Program has collaborated with the CE/O Program to organize outreach and education programs to disseminate information about NORA and NORA research topics. The Program has organized and sponsored at least one outreach event per training year that has a focus on a NORA priority area. These events have targeted occupational health professionals of all disciplines to raise awareness about NORA and to present research findings on NORA research. Examples of outreach meetings include presentations at the California Work and Health Study Group and meetings with community groups, such as the Orange County Asian and Pacific Islander Community Association, to present NORA-related research on work organization and psychosocial factors. During the reporting period, the Program collaborated with the CE/O program to organize a symposium on the health effects and management of mold, which was taught at the UC Irvine Center for Occupational and Environmental Health in December 2006.

D. Program Activities and Accomplishments

The program activities and accomplishments over the past four years are summarized in the previous sections. The Program's specific objectives during the reporting period were (1) to provide technical support for NORA research within the ERC by purchasing shared laboratory research equipment; (2) to provide stipend and technical support to ERC trainees in the Industrial Hygiene core program to undertake doctoral research in NORA areas; (3) to provide research training in the core programs with an emphasis on health effects of work organization; and (4) to collaborate with the Continuing Education/Outreach program to organize a symposium on the health effects and management of mold.

1) Shared Research Equipment and Supplies

The NRS Program purchased two portable water-based Condensation Particle Counters (CPC) (TSI, Inc. Models 3781 and 3007) and an ultrafine CPC (TSI, Inc. Model 3786) as shared equipment for SCERC trainees and faculty who are conducting NORA-related research.

This equipment is being used by doctoral students in the Industrial Hygiene program and by SCERC faculty in research projects and for research training.

2) *ERC doctoral student support*

The Program provided full stipend support to two doctoral students and partial stipend support to two doctoral students in the Industrial Hygiene research training program. The research activities of the four trainees are summarized below. In addition, the Program provided partial support for a student research assistant for one of the research projects, research supplies (e.g., respirators, latex spears, and laboratory supplies), and machine shop services. This support enabled the doctoral students to make substantial progress on their dissertation research.

James Hollingshead: Ultrafine Particle Generation during Welding Operations

In response to the increased awareness of the health effects of ultrafine particles, this project involves the study of ultrafine particle generation during gas metal arc welding (GMAC) or metal inert gas welding (MIG) operations. The project will quantify and correlate ultrafine particles generated to existing fume formation rates (FFR). In order to achieve this objective, a welding chamber was designed and built to enclose the welding operation; capture the fume generated under specific sets of conditions; and at the same time measure the ultrafine particle concentrations as a function of time after formation. The apparatus also permits the measurement of the fume formation rate for a wide range of welding conditions.

Jeff Birkner: Release of Particles from Commonly Used Respirator Filters

Dr. Birkner completed all degree requirements during the reporting period. Manuscripts are being finalized for publication. The following summarizes the results of his dissertation project.

When filtering facepieces are dropped onto a hard surface captured particles may be released from the filters. Data show that there are differences between respirators, but that release was not significantly effected by particle size for particles between 0.6 μm and 2.0 μm and that particle load appeared to have a negative effect. Release leveled off for some respirators as height was increased between 3 to 5 feet. Further investigation of filtering facepieces revealed that significant particle release does not occur when a filtering facepiece respirator is subjected to a 4 – 6 pound tension simulating removal of the respirator from one's face. Coverstocks were investigated on certain filtering facepieces and determined to play a role in particle release or retention. A pilot investigation of release from reusable elastomeric half-mask respirators fitted with P100 filter cartridges and loaded with particles and dropped onto a hard surface was also performed. Modeling was used to estimate the risk when particles are released from respirators.

Calculations show that when filtering facepiece respirators are used in industrial environments it is unlikely that they will be able to release enough particles to cause a health hazard. Various models were also used to assess the risk of release of microorganisms. The results show that in some healthcare settings or during a terrorist event where microorganisms are used the risk could be significant if respirators are not carefully handled.

Nancy Jennerjohn: Exposure Assessment of Airborne Carbon Nanotubes in the Workplace

This project will examine the ability of existing air monitoring methods to characterize airborne carbon nanotube exposure in the workplace. The project has used lab-generated aerosols to explore the response of air monitoring equipment to carbon nanotubes. TEM imaging, surface area considerations, air filter samples, and other techniques are used to assess how best to interpret instrument-reported data with respect to health risk. Ms. Jennerjohn have generated a reliable test aerosol of single-walled carbon nanotubes with an electro-spraying device we developed in our lab. Ms. Jennerjohn began to challenge and characterize the responses of the TSI nano-DMA (differential mobility analyzer) and UWCPC (ultrafine water condensation particle counter) to this aerosol. She added two NIST standard reference materials, diesel particulate matter and indoor urban dust, to the nanotubes, and generated an aerosol with all possible combinations. Ms. Jennerjohn obtained number concentration, particle size distribution, and TEM images of all these aerosols.

In the near future, we plan to add PAHs to the nanotubes (which are known to absorb them extremely well) and study whether we can determine surface area using the PAS (Photoelectric Aerosol Sensor). Ms. Jennerjohn currently collects air particulates from a graduate research lab where nanotubes are in heavy use and they are currently being evaluated for heavy metals tracers using ICP-MS.

David Fung is a new doctoral student who is exploring fine and ultrafine particle exposure associated with cooking operations as a possible thesis topic.

NRS supported graduate **Robert Phalen** completed his doctoral degree program in June 2006. Since then he has taken a faculty position at CalState San Bernardino where he directs their IH program.

3) *Research Training in the SCERC Core Programs*

The NORARS program has provided research training in ERC courses. A focus of the training has been the SC ERC initiative in work organization and workplace psychosocial factors. Dr. Schnall and Dr. Baker provided lectures to the graduate students from Industrial Hygiene program, Occupational Health Nursing program, and Occupational Medicine Residents at UCLA and UCI. At UCLA, the course CHS 278 – Work and Health was updated by Dr. Schnall. In this course, physical and psychological health outcomes are explored in the context of the disciplines of social epidemiology, occupational health psychology and an emerging occupational cardiology which focus on the role of psychosocial factors in the workplace. Dr. Schnall and Dr. Marnie Dobson taught this course during Spring 2006.

4) *NORA-related Continuing Education and Outreach*

The Program has been used to increase awareness about the NORA priority areas within the region by providing limited support for outreach and research symposia on NORA related topics. A major activity during the reporting period was to collaborate with the CE/O program to organize a national symposium on the health effects and management of mold. This symposium was offered in December 2006 at the UC Irvine Center for Occupational and Environmental Health. The symposium was well attended and received outstanding evaluations. It will be scheduled next year to be taught at UCLA.

E. Program Products

The research projects with significant trainee involvement are listed in the previous section. The publications and presentations of these trainees are listed in Appendix B under the Industrial Hygiene program.

F. Future Plans

The NRS Program objectives will remain essentially the same during the next training year. As mentioned above, the SCERC will conduct a follow-up regional needs and impact assessment survey. This survey will emphasize topics related to NORA and continuing education and outreach of the SC ERC. The NRS Program will also continue to provide technical and stipend support for research training in the Industrial Hygiene program. In addition, administrative and technical support may be provided for research training in the areas of work organization and occupational health nursing. However, NRS funds will not be used to provide stipends for trainees in these areas because of the NIOSH restriction on use of NRS funds for research training outside of the industrial hygiene program. The NRS Program will also continue to support NORA-related research training in the SCERC core programs and to support continuing education and outreach activities to disseminate NORA research findings

CORE ACADEMIC PROGRAMS

III.**A. Program Title: Industrial Hygiene Program****B. Program Director: William C. Hinds, ScD, CIH****C. Program Description:**

The primary academic objective of the UCLA Industrial Hygiene Program is the training of professional industrial hygienists at the MPH and MS level and advanced training of researchers at the PhD level. Other objectives include conducting research to extend knowledge in the areas of anticipation, recognition, evaluation and control of environmental hazards in the workplace; collaborating and supporting other research in the general area of occupational health; and providing service to the local, state and national occupational health communities in support of the broad objective of improving worker health and safety.

Core Values: The Industrial Hygiene Program has as its core values a commitment to worker health, scientific integrity, and excellence in education (teaching, mentoring, and continuing education)

Core Purpose: The core purpose of the Industrial Hygiene Program is to improve worker health through education, research, and service.

Mission: The mission of the Industrial Hygiene Program is to accomplish our core purpose by educating professionals in the field of industrial hygiene through academic programs and continuing education, and conducting research in industrial hygiene and related areas.

Vision: The vision of the Industrial Hygiene Program is to be recognized as a leader in education and research in industrial hygiene.

Educational Objectives

The educational objectives of the UCLA Industrial Hygiene Program are:

1. To equip program graduates with the underlying technical and scientific knowledge required for the professional practice of industrial hygiene.
2. To equip program graduates with specialized, practical, and experiential knowledge and skills necessary for the practice of industrial hygiene.
3. To equip program graduates with the communication skills necessary for the practice of industrial hygiene.
4. To appreciate the need to work as part of an interdisciplinary team in addressing occupational health problems.
5. To understand that the practice of industrial hygiene involves ongoing learning and self-criticism.

Responsible Conduct of Research

Currently all IH students have two hours of Environmental Ethics in EHS 200B Fundamentals of Environmental Health. This covers aspects of conflict of interest. Also in 200B is a two-hour class on responsible conduct of research, which includes responsible authorship, scientific misconduct, human subjects in research, and data confidentiality. MS students will be required to complete an on-line course on human subject policies and procedures.

Faculty

The IH Program has four core faculty members and four supporting members. Their area of expertise are given in the following Table.

Faculty Member	Rank	Core/Sup.	Area
Froines	Professor	Core	Toxicology, Policy
Hinds	Professor	Core	Control Tech., Exposure Assessment
Kennedy	Assistant Professor IR	Core	Exposure Assessment, Physical Agents, IH Practice
Que Hee	Professor	Core	Analytical Chemistry, Biological Monitoring, Hazardous Waste
Delp	Lecturer	Supporting	Occupational Health Education
Harber	Professor	Supporting	Occupational Medicine
Liu	Lecturer	Supporting	Ergonomics, Safety
Ritz	Associate Professor	Supporting	Occupational Epidemiology

Curriculum

The full curricula for the MS and MPH degrees are given in Appendix A. The curriculum includes courses covering the properties, measurement, health effects, exposure prevention, and control technology for all types of harmful chemical, physical, and biological agents, and ergonomic and psychosocial factors. Also included are courses on toxicology, biostatistics, epidemiology, industrial hygiene chemistry, occupational safety, hazardous waste, industrial hygiene standards and regulations, environmental management, and risk assessment. The MS program includes a research-based thesis or report/comprehensive examination, and the Ph.D. program includes a research thesis. The MPH program includes a summer internship in industry or related area that results in an internship report. The internship is optional for MS candidates.

The IH faculty and our advisory committee believe **verbal communications skills** are important for all industrial hygienists. To develop these skills six courses, five required and one elective, either require an oral presentation or have oral exams. The faculty

also believes that writing skills are important. Many courses require reports or papers and some involve literature searching.

D. Activities and Accomplishments

During the reporting period, July 1, 2006 to June 30, 2007 the Industrial Hygiene Program had the following accomplishments and activities.

- During the reporting period we had 11 students in the program, six PhD and five MPH.
- During the reporting period nine students were supported by the ERC grant.
- During the reporting period five students graduated.
- The IH Program was reaccredited by ABET/ASAC for two years. We submitted an interim progress report on June 30, 2007.
- IH faculty and students participated in the ERC interdisciplinary dinner meeting November 13, 2006.
- IH faculty and students participated in the ERC interdisciplinary plant visit and workshop at Northrop Grumman Company on May 10, 2007.
- Three IH students were placed in internships in a range of settings, including Cal OSHA, Johnson and Johnson, and Clark, Sief, Clark, Inc.
- We continue to offer the HSAT as a minor concentration for IH students. Three IH students did the minor and two did the 40-hour HAZWOPER program.
- The six doctoral students focused their research in the following areas: an intervention study of computer terminal users; a laboratory study of permeation of Captan formulations through gloves; a study of ultrafine particles from welding in the occupational environment; a study of secondary contamination by respirators; and a study of improved measurement of nanoparticles in occupational exposure settings. One is developing a research program to study ultrafine particles from cooking processes.
- One doctoral student Wenhai Xu received the Dean's Outstanding Student Award and the Wayne Soohoo Memorial Award.
- Recent graduate Yifang Zhu was awarded an HEI New Investigators Grant.
- Masters Student Khadeeja Abdullah received a California Wellness grant and the Tony Norton Award.
- Doctoral student Nancy Jennerjohn received a Toxic Substances Research and Training Program partial fellowship.
- Shane Que Hee was awarded the Biological Monitoring Service Award in Recognition of Exemplary Contribution to the Committee and the BEELs Project Team, Biological Monitoring Committee, American Industrial Hygiene Association June, 2007.
- Shane Que Hee is Chairperson, Biological Environmental Exposure Level Project Team, AIHA Biological Monitoring Committee, 2007-8.
- Shane Que Hee was Secretary, Biological Monitoring Committee, American Industrial Hygiene Association, 2006.
- Shane Que Hee is Vice-Chairperson/Secretary, Biological Monitoring Committee,

American Industrial Hygiene Association, 2007.

- Shane Que Hee was a member of the Joint Editorial Board of *Standard Methods for the Examination of Water and Wastewater*.
- Shane Que Hee continues as a member of the Report on Carcinogens Expert Registry, National Institute of Environmental Health Sciences.
- John Froines was appointed NAS Member, Committee to Evaluate NIOSH Health Hazards Evaluation Program
- John Froines continues as Associate Director, NIEHS funded Southern California Environmental Health Sciences Center
- John Froines continues as Director, UCLA Pollution Prevention Education and Research Center (PPEREC)
- John Froines continues as Principal Investigator, Fogarty Program for Occupational and Environmental Health
- John Froines continues as Member, Carcinogen Identification Committee, Cal/EPA
- John Froines continues as Chairman, Scientific Review Panel, California Air Resources Board.
- John Froines continues as Member, Scientific Advisory Board, Center for Vulnerable Populations Research
- John Froines continues as Director, Southern California Particle Center and Supersite
- John Froines continues as Member, Clean Fuels Advisory Group, South Coast Air Quality Management District
- William Hinds was appointed to the Nominating Committee of the American Association for Aerosol Research

E. Program Products

- Publications by program faculty and trainees are given in Appendix B. Trainee authors are underlined. During the reporting period core IH faculty published or submitted 29 papers. Eleven papers include trainee authors.
- Dr. Hinds gave a tutorial on Fundamentals of Aerosol Mechanics on September 11, 2006 at the 7th International Aerosol Conference in St. Paul, MN.
- Dr. Que Hee organized a roundtable titled *Biological Monitoring: Sparking Industrial Hygiene* at the American Industrial Hygiene Conference and Exposition, Philadelphia PA, June 2-7, 2007.
- During the reporting period five students graduated from our IH Program and entered the labor market as industrial hygienists. One doctoral student graduated and is now directing an IH Program at CSU Riverside.
- Shane Que Hee (interview). *Inside OSHA* 14 (13): 2007 p1,2: Interview on Biological Environmental Exposure Level concept.

F. Future Plans

- We plan to continue our ABET/ASAC accreditation. We submitted a progress report to ABET/ASAC on July 1, 2007 on our accreditation activities.
- We are planning to develop a combined exposure assessment, air quality, and industrial hygiene program. There is considerable overlap between these programs and there would be greater efficiency overall if they were combined.

- We plan to make 40-hour HAZWOPER training required for all IH students not just those doing the HSAT minor. At present it is optional for all IH students.

Progress Report Summary: July 1, 2006 – June 30, 2007

A. OCCUPATIONAL AND ENVIRONMENTAL HEALTH NURSING (OEHN)

B. Wendie Robbins, RN, PhD Program Director

C. Program Description

The profession of Occupational and Environmental Health Nursing (OEHN) plays a unique and important role in optimizing worker health and safety while supporting growth and security of our national and local economies. The goal of the UCLA OEHN program is to prepare nurses who will assume leadership, academic, and research roles within the profession of Occupational and Environmental Health. Objectives of the UCLA OEHN program are to provide graduate level education for nurses in order to:

1. Prepare nurses to function as part of interdisciplinary occupational health and safety teams in increasingly diverse and technologically complex workplace settings,
2. Prepare nurses for management and leadership roles in a global economy,
3. Prepare nurses to practice at the Advanced Practice level with legal authority to coordinate and manage care of adults including diagnosis, treatment, and in the case of the nurse practitioner track, prescriptive authority,
4. Prepare nurses to conduct research in occupational and environmental health including NIOSH NORA priority areas.

Faculty Participation:

Program Director: Dr. Robbins, RN, NP, PhD, FAAN, teaches the core theory courses N213A: Occupational Health Nursing Role and Theory and N213B: Health Assessment, Research, and Health Promotion in Occupational Health. Included in these courses is content on responsible conduct of science and ethics in occupational health. Dr. Robbins also teaches in School of Public Health courses that students may take as part of their required 10 units in Public Health. She works in collaboration with other faculty in the School of Nursing and the OEHN Advisory Board, to evaluate program progress toward objectives and revise the program plan as needed.

Dr. Donna McNeese-Smith, RN, EdD, CNAA, teaches the nursing administration training component for OEHN students in the administration track. She will teach the required N218 and N219 series of courses on Nursing Administration Theory. She works with Dr. Robbins to facilitate continual quality assessment for the OEHN Administration component of the program.

Clinical Lecturers: Mrs. Nila Cainglit and Mrs. Mirasol Fajardo were clinical instructors responsible for supervising and evaluating all the OEHN Adult Nurse Practitioner Students (ANPs) in terms of their ANP practice. This included site visits to students in their clinical placements throughout the greater Los Angeles area, weekly clinical conferences with the second year students, and weekly diagnostic reasoning sessions with first year students.

In addition to the nursing occupational health faculty described above, the students took masters level nursing courses toward the MSN and faculty for these classes included Drs. Hahn (teaching-learning theory); Berg and Maliski (foundations of health assessment); Fongwa (research design/critique); Gylys (pharmacology); Compton (advanced pathophysiology); Hudson (women's health); Lewis (professional issues); Keenan and Fitzgerald (acuity and chronicity in illness).

Faculty outside the School of Nursing participated, including Dr. Nola Kennedy who taught physical agents and Dr. Phil Harbor who taught occupational diseases.

Curricula:

This is a two-year program of study earning a Masters degree in Nursing (M.S.N.) in which training is multidisciplinary and includes courses and content in industrial hygiene, safety, ergonomics, psychosocial factors in workplace health, research, epidemiology, toxicology, and occupational medicine. Students choose a concentration in either nursing administration of occupational health programs (minimum of 69 units) or advanced practice adult nurse practitioner (minimum of 85 units). Graduates of the nurse practitioner concentration are certified to practice as Adult Nurse Practitioners in the state of California and are eligible to sit for national Adult Nurse Practitioner (A.N.P.) certifying boards. The UCLA School of Nursing degree programs have been approved by the California Board of Registered Nursing, the University Academic Senate (Western Association of Schools and Colleges), and are accredited by the National League for Nursing (NLN) and the Commission on Collegiate Nursing Education (CCNE). All graduates of the program have a foundation for future doctoral study.

D. Program Activities and Accomplishments

Progress toward goals and objectives:

The UCLA OEHN program has been successful implementing their objectives during '06-'07. Thirteen Masters level nursing students were enrolled in OEHN specialty courses Fall 2006, seven of these were NIOSH trainees. Four NIOSH trainees graduated in the OEHN specialty June 2007. Three of these graduates accepted employment in traditional occupational health settings in Southern California, one married and moved to England and is not employed at this time.

Trainee honors, awards, scholarships:

- Jacqueline Masih was elected Graduate Students in Nursing Association (GSNA) President
- Jacqueline Masih was appointed to the Deans Alumni Advisory Board for UCLA School of Nursing
- Samta Bhakta was elected Graduate Students in Nursing Association Treasurer (GSNA) and represented the association in the Forum for Nursing (2006).
- Samta Bhakta, Jacqueline Masih, Amy Ann Edgington, and Maki Kusunaga were inducted into Sigma Theta Tau Honor Society of Nursing.

Faculty honors, awards, appointments:

Dr. Robbins was named the Audrienne H. Mosley Endowed Chair in Biological Nursing Research

Dr. Robbins was appointed as an Executive Committee member, UC Toxics Substances Research & Teaching Program (UC TSR&TP)

Dr. Robbins was appointed to the UCLA South Campus General IRB

Trainee recruitment:

Dr. Robbins attended 12 recruitment sessions representing OEHN as part of the UCLA School of Nursing recruiting efforts for Masters level students.

Ms. Rhonda Flenoy, UCLA School of Nursing Recruiter, included information on occupational health nursing in her recruitment efforts, including diversity, to more than 15 high schools and six junior colleges in the Southern California area.

E. Program Products*Successful student projects (Academic theory to practice):*

Health Promotion for Retired City of Glendale Employees. NIOSH trainee, Maria Rosales, developed an innovative, cost effective program for the City of Glendale to promote health of their retirees. This program would include outreach to retired employees and hire a part-time Social Worker to assist in linking retirees with community exercise programs, nutrition and diet counseling, programs providing health counseling, and sources of information on things like advance directives. The strategic plan and budget for this program have undergone initial review by the city that was very positive. It is likely the city will implement Miss Rosales' program.

Blood Borne Pathogen Program NIOSH trainee, Samta Bhakta, revised and updated the existing Blood Borne Pathogen Program at Valley Presbyterian Hospital at the request of the Director of Employee Health for the hospital.

Respirator Fit Testing for School of Nursing Students NIOSH trainee, Amy Ann Edgington, researched and wrote a Respirator Fit Testing plan for the students in the School of Nursing who are required to find their own fit testing prior to being placed in hospitals for clinical rotations. The plan that was finally accepted and implemented by the School of Nursing is based on Ms. Edgington's research and plan.

Publications:

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testicular toxicity in mice, Toxicological Sciences, advance on-line access ahead of press.

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Xing X, Wu G, Wei F, Liu P, Wei H, Wang C, Jun X, Xun L, Jia J, Kennedy N, Elashoff DA, Robbins WA, Biomarkers of environmental and workplace boron exposure, Journal of Occupational and Environmental Hygiene, accepted September 2007.

Surgeon General's Report 2007, How Tobacco Causes Disease: The Biology and Behavioral Basis for Tobacco-Attributable Disease, contributor to Chapter 9. (Chapter Ed: Gayle Windham) Reproductive and Developmental Effects of Cigarette Smoking.

Robbins WA, Young KE, Wei F, (2007) Feasibility Study of Metal Effects on the X:Y Ratio in Human Sperm, In: (Eds: D. Anderson and M. Brinkworth) Male Mediated Developmental Toxicity, published by the Royal Society of Chemistry Publishing, United Kingdom.

Presentations by faculty:

Robbins WA, Wei F, Elashoff DA (2007) Influence of work and environment on sperm: A study in northeast China, XI International Congress of Toxicology, Montreal, Canada

Robbins WA (2007) Atrazine effects on human menstrual cycle, 38th Annual Environmental Mutagen Society Meeting, Atlanta

Environmental Risk Factors in Community Based Nursing, lecture for 21 undergraduate nursing students at UCLA

Occupational Issues in Pregnancy, lecture for 58 Family Nurse Practitioner Students, UCLA

Occupational and Environmental Health, lecture for 60 Advanced Practice Nursing Students (Family and Gerontology specialties)

Work and Environmental Health Policy, lecture to 48 Health Care Policy Students at UCLA

Meeting Sponsored

Dr. Robbins was Chair of the NIOSH Occupational Health Nursing Directors meeting, Albuquerque, New Mexico, funded by the UCLA Center for Occupational and Environmental Health

F. Future Plans

We plan to continue to actively recruit a diverse, talented pool of student trainees. The UCLA School of Nursing recently added two new pre-licensure programs: Masters Entry

Clinical Nursing (MECN) and Bachelors of Science in Nursing. Dr. Robbins developed a new epidemiology course to be offered to these students and will use this as portal to introduce and encourage students to choose OEHN when they are qualified for the advanced practice degree. We will continue to attend the recruitment sessions for advance practice nurses, as well.

Moodle is a new on-line course manager system at UCLA and we plan to use this teaching tool for all of the OEHN core courses over the coming years. The goal will be for students from far distances to be able to access the specialty courses in a way similar to distance learning.

We are trying to attract doctoral students with an interest in occupational and environmental health nursing so we might develop a doctoral training program at UCLA in Occupational Health Nursing.

The UCLA School of Nursing is actively recruiting for a doctorally prepared faculty with nurse practitioner certification to help with the OEHN program. This is a tenure track position.

A. Program Title UCLA OCCUPATIONAL & ENVIRONMENTAL MEDICINE**B. Program Director** Philip Harber**C. Program Description**

The major goals and objectives of the UCLA Occupational-Environmental Medicine Training Program include the following:

- Educate physicians who will specialize in the field of occupational-environmental preventive medicine and become eligible for certification by the American Board of Preventive Medicine
- Educate other physicians and other health care providers in occupational medicine
- Develop, implement, and evaluate novel strategies to improve occupational medicine education
- Contribute to the education of other occupational health professionals in ERC and non ERC related academic programs.
- Educate occupational medicine and other practitioners in our region, nationally, and internationally.

The program faculty includes one full-time tenured faculty member, many clinical faculty members, affiliated faculty in the school of public health and elsewhere. Further, the program benefits significantly from the many interactions with the extensive UCLA faculty in the schools of medicine, public health, and public policy.

Education in the proper conduct of science and ethics includes a formal required online and in person courses in human subject research (required by both UCLA and the Veterans Administration), HIPPA, and other aspects. Furthermore, trainees gain practical experience with these issues through their rotations and during seminar discussions.

D. Program Activities and Accomplishments

UCLA Occupational -- Environmental Medicine Residency program continued throughout the 2006-7-year. Three physicians graduated from program .

During the past year, the UCLA occupational medicine residency underwent its five-year reaccreditation evaluation by the Accreditation Council for Graduate Medical Education (ACGME). This involved preparation of an extensive Program Information Form as well as an on-site survey. The review was successfully completed, and we were recently notified that the UCLA program has been given full accreditation for a full-term five-year term until 2012.

Preparation for the re-accreditation appraisal also provided an opportunity for the program, the ERC, and the medical school to carefully consider the nature of the program. As a consequence of this careful review, we carefully considered both the regional and the national needs for occupational medicine training. We have developed a proposal to optimize the program to capitalize upon the unique strengths available at UCLA and to minimize the local constraints.

Several resident physicians presented research posters at the regional Western Occupational Health Conference (of the Western Occupational and Environmental Medical Association). Our

residents won two awards, capturing the second and third place awards in the research category for their presentations.

The faculty has been very active in continuing education and outreach. In the past year, UCLA and Kaiser Permanente have teamed together to collaboratively sponsored the monthly Grand Rounds in Occupational Medicine. This monthly program is presented in the early evening and targets the occupational health professional community (physicians and others) in the greater Los Angeles area.

Faculty members are active in professional organizations. Dr. Craig Conlon is Chairman of the Board, and Dr. Paul Papanek is Second Vice President of the Western Occupational and Environmental Medical Association. Dr. Philip Harber serves on numerous committees of the American College of Occupational and Environmental Medicine (including the academic section, respiratory disease, maintenance of certification, evidence based medicine, and "academic summit"). In addition, last year, he became the Web editor for Environmental and Occupational Health of the American Thoracic Society. In this role, he has endeavored to further increase the impact of Internet resources. Harber also serves as a member of the Institute Medicine committee on Gulf War Health Effects-Depleted Uranium.

Residents have been deeply involved with the respiratory protection research project. One resident (Dr Sies) was actively involved in nearly all data collection efforts, and another resident play a major role in the establishment and validation of test procedures in the exercise laboratory. In addition, another resident (Dr Saecaho) played a central role in policy research related to the health effects of surface goods movement; and, he served as an alternate representative to the Ports of Los Angeles and Long Beach Task Force on the Clean Air Action Plan (serving as the alternative member for Dr. Harber provided him unusual insight into policymaking).

UCLA occupational medicine contributes significantly to numerous other academic programs at UCLA. We are responsible for a weekly seminar, producing an interdisciplinary approach to occupational health problems. In addition to attendance by residents, the international physicians students in occupational health, attendance is open to some members of the external community. Furthermore, we teach the three credit public health school course-EHS251 -Prevention of Disease in Workers and Workplaces. This is a strongly multidisciplinary course attended by physicians, nurses, occupational hygienists, health educators and others. In addition, we provide lectures and discussions for several primary care programs as well as for pulmonary training programs at UCLA, Harbor General General -- UCLA medical center, and Olive View-medical center . During the past year, Dr. Harber was appointed to the faculty of the interdisciplinary program in molecular toxicology; while not a molecular toxicologist, he was asked to provide some perspective about environmental/occupational exposure assessment and related areas.

We are deeply involved in international health. The UCLA occupational medicine program sponsors a collaborative program with King Faisal University of the Kingdom of Saudi Arabia. Physician trainees in this program participate in seminars and projects with the ERC residents (although they are not specifically funded through the ERC. UCLA occupational medicine had a central role in recruiting Dr. Isabel Garcia to come to UCLA as a doctoral candidate in the Fogarty international program. She became involved with our activities since her Mexican mentor, Dr. Victor Borja worked on the second Health, Culture, and Productivity Symposium during the prior year.

The UCLA occupational residency supports special projects of the ERC continuing education program. With a grant from the California Wellness Foundation, the ERC continuing patient program is developing a large outreach program for primary care practitioners. Dr. Harber serves as a co-investigator for this project. In addition, this educational program utilizes video taped segments as part of the presentations; our residents have been deeply involved in the production of these video presentations (including service as an actor).

UCLA occupational medicine as part of the ERC implemented a national symposium on Health Effects of Surface Goods Movement. This meeting viewed the health effects on workers and the environment from a very broad perspective. Speakers included epidemiologist, toxicologist, clinical investigators, economist, governmental organization representatives, community representatives, engineers, and others. The meeting will lead to a published monograph. In addition, as an outgrowth of this meeting, we will participate in a session on this topic at the national occupational medicine meeting in the spring of 2008. The ERC continuing education program served as cosponsor.

G. Program Products

The work of UCLA occupational medicine, partially supported by the ERC, has significant research to practice applications. The program is extensively involved in development of evidence based treatment and evaluation guidelines. For example, we have worked closely with Rand Corporation to develop guidelines for workers compensation treatment in the state of California. In addition, we are developing draft evaluation compensation guidelines for COPD for the province of Alberta. In addition, we worked closely with The American College of Occupational and Environmental Medicine, the American College of Chest Physicians, and the American Thoracic Society in developing guidelines for occupational asthma, work exacerbated asthma, and occupational lung disease.

As noted above, trainees were actively involved in the research projects, particularly respiratory protection project (assessing impact of respirator utilization by individuals with mild respiratory impairment) and in the policy project concerning health effects of surface goods movement.

Our clinic has identified the first two cases of diacetyl induced occupational bronchiolitis obliterans of California. Working with state and federal agencies, we have helped facilitate the public health response to this. We are currently preparing a research reports concerning the clinical-public health interface based upon this experience. In addition, we presented a research abstract at the American Thoracic Society concerning the topic of the clinical-public health interface.

Through our consulting service, we have active involvement in numerous workplaces. For example, residents and faculty have visited the port operations in Los Angeles and Oxnard several times over the past year in order to advise about work ability and work conditions.

H. Future Plans

Based upon our program review we are currently exploring three restructuring options:

- Option 1: Continue without significant change.
- Option 2: Residency Emphasis Combining Clinical Excellence with Health Services Research/Management/ OH Policy:
- Option 3: Comprehensive Preventive/ Occupational/ Population Medicine Residency: A 2-3 year program leading to combined board eligibility in Occupational Medicine and General

Preventive Medicine/ Public Health (GPM/PH) would include comprehensive training in all of the major areas of PM. Currently, most GPM residents learn only one aspect of GPM/PH well.

Several benefits are likely to follow if options two or three are followed. This will facilitate resident recruitment from a national, rather than a regional, pool. It will provide opportunities for physicians completing training in general preventive medicine/public health to enter the field of occupational preventive medicine. Many highly motivated physicians are attracted to GPM rather than OEM; this may facilitate their involvement in OEPM. The approach will create a 'critical mass' of trainees.

These approaches will build upon existing strengths of UCLA. UCLA has unique expertise in these areas. Our recent 5 year reaccreditation provides some leeway for development.

This approach will strengthen the overall ERC, serving as a nexus for involving other faculty members with health related research who are not currently working within the ERC and/or COEH. The approach is consistent with NIOSH goals and will strengthen the application by using innovative approaches to integrate health promotion and health protection activities.

These approaches will also provide significant benefit to the specialty of general prevent medicine/public health. GPM/PH residencies lack a specific "training product" with well-defined skills/competencies. By implementing training for a comprehensive set of PM/PH skills, the program will help answer the current identity crisis of GPM. There is already considerable overlap between GPM/PH and OM. Comprehensively trained physicians will be uniquely valuable for public health agencies, corporate settings (where health promotion is as important as hazard control), and clinical health delivery systems (e.g., Kaiser).

At this time, we are recruiting residents for both a 1 year practicum if they have successfully completed a prior general prevent medicine residency as well as for the more traditional two-year curriculum. We are continuing to enhance the general preventive aspects of our residency program. Further, we are seeking to engage University leadership in supporting this innovative program.

Program Title

University of California, Irvine, Occupational Medicine Program

B. Program Director

Dean Baker, MD, MPH, Professor and Chief; Division of Occupational and Environmental Medicine; Department of Medicine, School of Medicine, UC Irvine
&
Director, UC Irvine Center for Occupational and Environmental Health

C. Program Description

Occupational medicine training at UCI is designed to impact on the full range of trainees and physicians, including medical students, primary care residents, graduate students in toxicology and epidemiology, safety and health professionals through the UCI Certificate Programs, and practicing physicians through the UCI COEH continuing medical education program. The occupational medicine residency serves as the cornerstone of these training programs.

The UCI Occupational Medicine Residency Program is sponsored by the UC Irvine Center for Occupational and Environmental Health (COEH) and is based in the Division of Occupational and Environmental Medicine, Department of Medicine, School of Medicine. The residency is fully accredited by the ACGME and offers the academic and practicum years.

Goals and objectives. The goal of the residency is to prepare residents for the comprehensive practice of occupational medicine in a variety of settings including clinical practices, corporate medical departments, academia, and public health programs. The program provides a range of training opportunities so the residents can tailor their training to address their educational objectives, while ensuring that each resident receives solid training in the core areas. The residency program emphasizes training and competency in clinical occupational medicine.

Faculty. The program leadership and faculty have remained the same during the reporting period. Dr. Dean Baker continues as the program director and Dr. Leslie Israel functions as the associate director. The following list shows the UCI occupational medicine program faculty.

Core faculty:

- Dean Baker, MD, MPH - Residency Director - environmental epidemiology, occupational stress, indoor air quality, pesticides
- Leslie Israel, DO, MPH - Residency Associate Director – occupational medicine, QME
- M. Joseph Fedoruk, MD, CIH - Clinical preceptor, directs clinical case conference - toxicology, medical surveillance, industrial hygiene, reproductive toxicology

- Ulrike Luderer, MD, PhD, MPH - Clinical and research preceptor - occupational medicine, reproductive toxicology, developmental toxicology
- Peter Schnall, MD, MPH - Didactics and research preceptor – work organization, occupational stress, occupational cardiology
- Elliott Kornhauser, MD, MBA, MPH - Clinical preceptor and didactics - ergonomics, occupational medicine
- Wayne Chang, MD, MS – Clinical preceptor and didactics
- Stephen Bondy, PhD - Neuro-toxicology, research preceptor - mechanisms of neurotoxicity
- Robert Phalen, PhD - Respiratory toxicology, research preceptor - laboratory characterization of airborne pollutants, especially particles

Supporting faculty:

- Hoda Anton-Culver, PhD - MS degree program - cancer epidemiology, genetic factors in breast, prostate, and colorectal cancer
- Ralph Delfino, MD, PhD - MS degree program - asthma, cancer epidemiology
- Michael Kleinman, PhD - Toxicology, industrial hygiene, research preceptor
- Oladele Ogunseitan, PhD - Environmental health sciences, ecology
- Kathryn Osann, PhD - Epidemiology, biostatistics
- Ronald Shank, PhD - Toxicology MS degree program director - hepatotoxicity

Voluntary faculty:

- Richard Clark, MD - Regional Poison Control System - clinical toxicology
- Frederick Fung, MD, MS -Sharp-Rees Stealey Clinic - toxicology, occupational medicine
- Constantine Gean, MD, MS, MBA - UnumProvident – disability management, program management
- Loretta Lee, MD, MPH - County of Orange - program administration, return to work, development of modified duty programs
- Ellyn McIntosh, MD, MPH - Exxon-Mobil – corporate occupational medicine
- Richard Pitts, DO, MPH - Kaiser Permanente - occupational medicine, ergonomics
- Mary Kochie, RN - Cal-OSHA – occupational health regulation, worksite hazard assessment, occupational health nursing
- Lester Sacks, MD, PhD - Steelcase - occupational medicine, ergonomics

Curriculum. There were no changes in the curriculum during the reporting period. Residents in the academic phase enroll in a Master of Science degree program in environmental toxicology at UCI. During the degree programs, residents complete the MPH-equivalent course requirements for board certification. Residents must complete a formal research project. Residents are provided with instruction in the responsible conduct of research in the degree program required seminars and in sessions of the core residency program seminar. All residents who undertake research that involves clinical data, human subjects, or animals are required to take UCI training programs in the relevant areas.

During the practicum phase, residents spend much of their time in field site rotations in settings which reflect the broad range of practice opportunities. The residency provides practicum training in corporate occupational medicine programs, as well as in comprehensive occupational medical practices and in public health regulatory agencies. The field training rotations remained the same. The core rotations continue to be Exxon-Mobil Oil, Steelcase, Cal-OSHA, Kaiser Permanente Occupational Medicine, Sharp-Rees Stealey Medical Group, and the UCI Medical Center Occupational Health clinic – providing corporate, regulatory/governmental, and clinical training experiences. The program also offers a number of elective rotations.

Throughout the academic and practicum phases, residents receive ongoing training at the UCI COEH. The core residency training activities – occupational medicine clinic rotations, clinical case conference, didactic seminars, and journal club – remained the same. The COEH operates two full-time comprehensive and consulting occupational medicine clinics which provides substantial clinical training opportunities for the residents.

D. Program Activities and Accomplishments

The UCI occupational medicine program had substantial accomplishments during the reporting period. The program faculty has remained stable with no new faculty nor any faculty leaving the program during the past year.

Training. During the year, the UCI occupational medicine residency program recruited one well qualified resident and had three continuing residents, for a total of four trainees. The entering resident previously completed a residency program in internal medicine and had clinical practice experience in occupational medicine. Therefore, the program had one academic phase and three practicum phase residents. During the past few years, the program has been very successful in conducting outreach recruitment to minority physicians. The program identified several well qualified minority applicants. The races of the four residents during the training year were African American, Asian (Chinese), and Pacific Islander (Filipino).

The three continuing practicum phase residents completed research projects. Two obtained the Master of Science in Environmental Toxicology degree, while one completed the Master of Science in Environmental Health Science and Policy. The program graduated three residents (technically completed program in July 2007, since our training year goes from August 1 to July 31), all of whom obtained full-time positions as occupational medicine specialists in California.

The UCI program offered a monthly continuing medical education (CME) program on occupational medicine practice for occupational medicine physicians and nurses in the region.

Research. The UCI program continued to provide national and international leadership in the field of work organization and cardiovascular disease. Dr. Schnall serves as president of the committee on work and cardiovascular disease of the International Commission on Occupational Health.

The program met all process and outcome measures of effectiveness during the reporting period. The evaluation criteria for these measures were defined in the 2004-05 annual report. The following is a list of the program's measures of effectiveness that we track:

Process measures of effectiveness for program evaluation:

- Maintain training program faculty and resources.
- Maintain affiliation agreements with academic degree programs and field training sites.
- Maintain ACGME accreditation.
- Complete internal program evaluation activities.
- Success in recruiting well qualified trainees.

Process measures of effectiveness for residents' performance:

- Successful performance in coursework and complete Master's thesis with University approval.
- Successful performance in clinic, didactics, and field rotations.
- Performance on in-service ABPM examination.

Outcome measures of effectiveness:

- Number and proportion of residents who graduate.
- Proportion of residents who take and pass the ABPM occupational medicine boards.
- Occupational medicine practice of program graduates.
Address regional need for occupational medicine physicians.

E. Program Products

The UCI Occupational Medicine program faculty and trainees were productive in conducting research and providing presentations, education and outreach related to the program's goals and objectives. The program graduates and their current occupational positions, and the program publications are listed in appendices. The program faculty's presentations and outreach are listed in the continuing education and outreach section.

Residency research projects: Three residents completed research projects during the reporting period. The following list shows the titles:

- Elaine Tonel, DO, MS: "The Effects of Ultrafine Particulate Matter on Heart Rate and Blood Pressure in the Aged Sprague-Dawley Rat"
- John Kim, MD, MS: "Historical Review of Cadmium Monitoring from the U.S. Navy and Marine Corps, Categorized by Job Class"

- Gerald West, MD, MS: “Non-invasive Oximetry in Rats Exposed to Particulate Matter”

Symposium: Drs. James Seltzer and Dean Baker collaborated with Ms. Cass Ben-Levi, director of the Continuing Education and Outreach Program to organize a three-day symposium on the current state of medical and environmental science for mold. The symposium was highly successful and will be offered again in future years.

Continuing Education: The UCI program offered a monthly continuing medical education (CME) program on occupational medicine practice for occupational medicine physicians and nurses in the region.

F. Future Plans

The UCI Occupational Medicine program anticipates that the faculty, facilities, and curriculum will be stable during the next project period. The program has enrolled residents for the 2007-08 training year, so the program currently has four occupational medicine residents. The program is currently evaluating applicants for the 2008-09 training year.

The UC Irvine Program in Public Health developed a proposal for a new Master of Public Health (MPH) degree program. This proposal was approved by the campus and is currently being reviewed at the University of California system level. This process typically takes two years for full university approval. Our program faculty will develop an environmental health sciences-occupational health concentration within this degree program, so our residents will be able to select the MPH as their degree program for the academic phase.

ALLIED OCCUPATIONAL S & H PROGRAMS

- A. **Program Title:** Hazardous Substances Academic Training
- B. **Program Director:** Nola J. Kennedy
- C. **Program Description:** Hazardous substances academic training (HSAT) is available as a minor for industrial hygiene students with a GPA of 3.0 or greater. ERC supported students receive an additional one-time stipend supplement of \$600 in December of their second year. The minor consists of additional masters' level courses in the area of hazardous substances.

The primary academic objective of the UCLA Hazardous Substances Academic Training (HSAT) Program is to provide broad, high-level training in the area of hazardous substances at the Masters and PhD levels in conjunction with industrial hygiene training.

Currently fifteen courses are available to industrial hygiene masters students that address aspects of handling and disposal of hazardous substances or the underlying science necessary to understand and control the hazard associated with these materials. Nine of these courses are required of all industrial hygiene students, three are menu options, and three are electives.

Students who opt to take the HSAT minor must complete the following courses in addition to the required courses of the IH curriculum:

EHS 252G - Industrial and Environmental Hygiene Assessment (required for HSAT minor, elective for IH students) includes practical experience in environmental exposure assessment. It includes a segment on exposure assessment at a hazardous materials handling site.

EHS 257 - Risk Assessment and Standard Setting (required for HSAT minor, now required for all IH masters students) focuses on occupational health standard for toxic and hazardous substances and the role of risk assessment in setting these standards.

EHS 258 - Identification and Analysis of Hazardous Wastes (required for HSAT minor, elective for IH students) instructs on the recognition of hazardous waste, protection of workers at hazardous waste sites, and to the special sampling and analytical chemistry considerations for hazardous waste.

HSAT students are required to take a 40-hour Hazardous Worker Training Program (HAZWOPER), usually given by UCLA Labor Occupational Safety and Health Program (LOSH) or ERC Continuing Education/Outreach Program, during second-year Spring break. All IH master's students are encouraged to take this course and the course fee is paid by the training grant. Students who enter the HSAT minor with current 40-hour HAZWOPER training are offered the 8-hour refresher course.

The thesis or masters report for an HSAT MS student must be related to hazardous substances. MPH internships (EHS 400) for HSAT students must be related to hazardous substances.

Other courses that are related to or have hazardous substances content include:

EHS 225 - Atmospheric Transport and Transformation of Airborne Chemicals (elective) provides an understanding of the transport of contaminants in the air environment. The material is relevant to hazardous substances spills and accidents.

EHS 240 - Environmental Toxicology (required for IH masters students) addresses the underlying science for understanding health impacts of hazardous substances.

EHS 400 - Field Studies in Environmental Health Sciences (required for MPH students, elective for MS students) provides field experience in the hazardous substances area. Students taking the HSAT minor are required to have a hazardous substances component in this course.

CHS 470 - Occupational Health Education (elective) addresses issues of communication, including hazard communication to workers and the community.

Faculty

The IH Program has four core faculty members and five supporting members. Their area of expertise is given in the following Table.

Faculty Member	Rank	Core/Sup.	Area
Froines	Professor	Core	Toxicology, Policy
Hinds	Professor	Core	Control Tech., Exposure Assessment
Kennedy	Assistant Professor IR	Core	Exposure Assessment, Physical Agents, IH Practice
Que Hee	Professor	Core	Analytical Chemistry, Biological Monitoring, Hazardous Waste
Delp	Lecturer	Supporting	Occupational Health Education
Harber	Professor	Supporting	Occupational Medicine
Liu	Lecturer	Supporting	Ergonomics, Safety
Ritz	Associate Professor	Supporting	Occupational Epidemiology

Curriculum

The full curricula for the MS and MPH degrees are given in Appendix A. The additional electives required of the HSAT minor are indicated by an asterisk. The curriculum includes courses covering the properties, measurement, health effects, exposure prevention, and control technology for all types of harmful chemical, physical, and

biological agents, and ergonomic and psychosocial factors. Also included are courses on toxicology, biostatistics, epidemiology, industrial hygiene chemistry, occupational safety, hazardous waste, industrial hygiene standards and regulations, environmental management, and risk assessment. The MS program includes a research-based thesis or report/comprehensive examination, and the Ph.D. program includes a research thesis. The MPH program includes a summer internship in industry or related area that results in an internship report. The internship is optional for MS candidates.

The IH faculty and our advisory committee believe **verbal communications skills** are important for all industrial hygienists. To develop these skills six courses, five required and one elective, either require an oral presentation or have oral exams. The faculty also believes that writing skills are important. Many courses require reports or papers and some involve literature searching.

D. **Program Activities and Accomplishments:**

During the reporting period, July 1, 2006 to June 30, 2007 the IH/HSAT Program had the following accomplishments and activities.

- Two second-year students received partial support by the HSAT program during the 2006/2007 academic year. Both of these students graduated in the 2006/2007 academic year and are employed in Industrial Hygiene and are using knowledge obtained in the HSAT minor.
- One first-year student who did not receive support from the HSAT program during 2006/2007 is doing the HSAT minor, and will receive partial support from the HSAT program during the current academic year (2007/2008).
- Two students were eligible for the 40-hour HAZWOPER course and completed it during March 26-30, 2007.
- A first-year master's student in the IH/HSAT program, received several awards, including the UCLA School of Public Health California Endowment Award, the Tony Norton Memorial Scholarship, and the American Industrial Hygiene Foundation Award.
- During the reporting period three students were partially supported by the HSAT program.
- During the reporting period three HSAT supported students graduated.
- The IH Program was reaccredited by ABET/ASAC for two years. We submitted an interim progress report on June 30, 2007.
- HSAT students participated in the ERC interdisciplinary dinner meeting November 13, 2006.
- HSAT students participated in the ERC interdisciplinary plant visit and workshop at Northrop Grumman Company on May 10, 2007.
- Three IH students were placed in internships in a range of settings, including Cal OSHA, Johnson and Johnson, and Clark, Sief, Clark, Inc.
- John Froines was appointed NAS Member, Committee to Evaluate NIOSH Health Hazards Evaluation Program
- John Froines continues as Director, Southern California Particle Center and Supersite

E. Program Products:

- Two second-year students in the HSAT program graduated in the 2006/2007 academic year and are now employed in Industrial Hygiene and are using knowledge obtained in the HSAT minor.
- Publications by program faculty and trainees are given in Appendix B. Trainee authors are underlined. During the reporting period core IH faculty published or submitted 29 papers. Eleven papers include trainee authors.
- Dr. Hinds gave a tutorial on Fundamentals of Aerosol Mechanics on September 11, 2006 at the 7th International Aerosol Conference in St. Paul, MN.
- Dr. Que Hee organized a roundtable titled *Biological Monitoring: Sparking Industrial Hygiene* at the American Industrial Hygiene Conference and Exposition, Philadelphia PA, June 2-7, 2007.
- Shane Que Hee (interview). *Inside OSHA* 14 (13): 2007 p1,2: Interview on Biological Environmental Exposure Level concept.

F. Future Plans:

- We plan to continue our ABET/ASAC accreditation of our IH program. We submitted a progress report to ABET/ASAC on July 1, 2007 on our accreditation activities.
- We are planning to develop a combined exposure assessment, air quality, and industrial hygiene program. There is considerable overlap between these programs and there would be greater efficiency overall if they were combined.
- We plan to make 40-hour HAZWOPER training required for all IH students not just those doing the HSAT minor. At present it is optional for all IH students.

III. Program Progress Reports

A. Program Title – Continuing Education/Outreach

B. Program Director – Cass Ben-Levi

C. Program Description

Goals –

1. Provide multi-disciplinary continuing education to assist professionals, paraprofessionals, labor and management with responsibilities in the ever-broadening field of occupational health and safety to keep up to date on new developments, research and procedures in their field.
2. Provide courses required for health and safety professionals to become certified in their field.
3. Expand training opportunities in environmental health and safety to new sectors.
4. Build and strengthen relationships with other university-based training programs.
5. Respond to the changing range of occupational health and safety problems and develop educational programs to deal with emerging problems and issues.
6. Develop distance learning alternatives in continuing education.

Faculty Participation – while many faculty members work in collaboration with the Continuing Education Program, the following are of particular note:

1. William Hinds, ScD, CIH – oversees and advises on all course and grant activities
2. Dean Baker, MD, MPH – served as Faculty Chair of 3-day Mold Symposium
3. Philip Harber, MD, MPH – serves on Faculty Committee of Ergonomics Symposium; initiated and supervised Surface Goods Movement Conference; serves as Course Chair of upcoming Mold Symposium; presented at previous 2007 Mold Symposium; advises on many projects and grant activities
4. Nola Kennedy, PhD, CIH, CHMM – is co-course director for CIH Review; teaches sections of CHMM Review and Hearing Conservation courses; acts as advisor on grants and other projects

Curricula – Curricula are offered to represent a broad range of knowledge and skills for occupational safety and health professionals.

1. In December 2006 the CE/O program offered its first independent course that included CME (Continuing Medical Education) accreditation – Mold: State of the Medical and Environmental Science – through the UC Irvine School of Medicine
2. New courses were added including Effective Cleaning and Contamination Control (IH), Controlling Sharps Injuries Conference (OHN) and a number of OSHA courses (IH and Safety); Health Effects of Surface Goods Movement Conference and Ergonomic Insights To Reduce Occupational Injury – Basics to New Research
3. New curricula were developed for grant-sponsored classes – Injury and Illness Prevention for Groundskeepers, Injury and Illness Prevention for Service Workers in the Tourism Industry and a four-part series for health care practitioners “Recognizing Workplace Injury and Illness and Helping Your Patient Prevent It.”

D. Program Activities and Accomplishments

- In 2004/05 the Continuing Education program established a successful partnership with the OSHA Training Institute (OTI) at the University of California, San Diego. In 2007 the

partnership was expanded to include California State University, Dominguez Hills. The number of classes increased to eight (nearly all are four-day courses). (Goals, 1, 2, 3, 4)

- The program created several new courses: Mold: State of the Medical and Environmental Science, Effective Cleaning and Contamination Control, Sharps Conference, most of which had been identified by various needs assessment avenues as needed topics. (Goals 1, 2, 4, 5)
- The 5-day Comprehensive Industrial Hygiene Review was expanded to twice a year. (Goals 1, 2, 4, 5)
- Awarded Grant from the California Wellness Foundation to train 1) health care practitioners in ambulatory care facilities about occupational health and safety and 2) owners and supervisors of businesses and agencies involved in the tourism industry about health and safety for low wage service workers. The grant began July, 2006. (Goals 1, 3, 4, 5, 6)
- Awarded Susan Harwood Grant from OSHA to train business owners, supervisors and workers in injury and illness prevent for groundskeepers. The grant period is October 2006 through September 2007. (Goals 1, 3, 4, 5, 6)
- Offered Groundskeeper Safety Classes throughout Southern California and in Phoenix and Honolulu.

I. Program Products – CE Courses presented (by specialty area)

Occupational Health Nursing

Pulmonary Function Testing - 2 days (3 times)
 Pulmonary Function Testing Refresher – 1 day (2 times)
 Workers Comp Review – 2 days (2 times)
 Occupational Health Nursing Review – 3 days (2 times)
 Hearing Conservation – 2.5 days (2 times)
 Hearing Conservation Recertification – 1 day (2 times)
 Controlling Sharps Injuries Conference – 1 day

Industrial Hygiene

Effective Cleaning and Contamination Control – 1 day (new)
 Occupational Ergonomics – 3 days
 Ergonomic Job Analysis – 2 days
 CIH Review – 5 days (2 times)
 Ergonomic Insights To Reduce Occupational Injury – Basics to New Research – 1 day (new)
 OSHA 521 -- Fundamentals of Industrial Hygiene - 4-day (new)

Occupational Medicine

Mold Symposium: State of the Medical and Environmental Science – 3 days (new)
 UCI Grand Rounds
 UCLA Occupational Health Seminar

Safety

How to Plan, Develop, Implement and UPDATE an Effective IIPP (Injury Illness Prevention Program) – 1 day (new)
 The Fundamentals of Incident Investigation and Root Cause Analysis– 1 day (new)
 OSHA 511 -- 4 days
 OSHA 500 -- 4 days (2 times)

OSHA 501 -- 4 days (2 times)

OSHA 510 -- 4 days

OSHA 2045 – 3 days

Other

- Orientation to Environmental Assessment – once 5 days, once 3 days (2 times)
- Preventing Injury or Illness of Groundskeepers – 4-hour sessions – Basic class and Train-the-Trainer – 448 trained in Basic, 49 in Train-the-Trainer
 - Created new curriculum
 - Video presentation on DVD
 - Chemical hazards poster (one in English, one in Spanish)
 - Ergonomic Fact Sheet booklet (one in English, one in Spanish)
 - Resource CD
 - Train-the-Trainer curriculum
 - Publications portfolio
 - Classes held throughout Southern California, in Phoenix, Arizona and in Hawaii.
- Preventing Injury or Illness of Service Workers in Tourism Industry – -hour sessions - 90 trainees
 - Created new curriculum
 - Video presentation on DVD in development
 - Chemical hazards poster (one in English, one in Spanish)
 - Resource CD
 - Publications portfolio
- Recognizing Workplace Injury and Illness and Helping Your Patient Prevent It”
 - Created new curriculum
 - Video presentation on DVD in development
- Other CE events organized: SCERC annual interdisciplinary dinner
- SCERC interdisciplinary Site Visit to Northrop Grumman

J. Future Plans

- New and increased number of courses in partnership with OTI and CSU Dominguez Hills:
 - Respiratory Protection; Trenching and Excavation; Electrical Low Voltage Standards – Federal; Fall Arrest Systems; Scaffolding; and Permit Required
- Web Seminar Series on 12 Ergonomics topics
 - Office Ergonomics - The Seen and Unseen (Basic to Intermediate)
 - Ergonomics and Productivity - How so? How to. (Basic)
 - Macroergonomics: Getting the "Big" Ergonomic Picture (Advanced)
 - The Impact of Work Scheduling on Injury Risk and Intervention Methods Employers Can Take (Intermediate)
 - Controlling Same-Level Slips Trips and Falls (Basic)
 - Anthropometry and Workstation Design (Advanced)
 - The Aging Population - Strategies and Tactics for Employers to Reduce the Risk of Injury (Intermediate)
 - Controlling Repetitive Motion Injuries in Industry (Basic)
 - The Truth About Lifting Safely (Advanced)

- Keys for Employers to Effective Return to Work After Occupational Injury (Intermediate)
- An Ergonomics Approach to Investigation of Occupational Injuries (Basic)
- Can Back Injuries Be Prevented? - Primary and Secondary Control (Intermediate to Advanced)
- Offering classes with CME accreditation – The Program expects to add a second course with CME accreditation for the first time -- the 2nd Annual Ergonomics Symposium.
- New Workplace Safety Week to include one-day classes in IIPP, Incident Investigation and Root Cause, Communications Skills for Supervisors and half-day class on Preventing Workplace Violence
- New class on Lock Out/Tag Out
- More courses will be offered at locations outside Los Angeles County including Arizona, Nevada and Hawaii.
- Implement new courses under new one-year Susan Harwood Grant from OSHA – Training Small Businesses to Prepare for Asian Flu Pandemic

III. Program Progress Reports

A. Program Title – Hazardous Substance Training

B. Program Director – Cass Ben-Levi

D. Program Description

Goals –

1. Respond to the changing range of HST-related occupational safety and health problems and develop educational programs to deal with emerging problems and issues.
2. Increase the number of state and local government agencies sending participants to HST courses.
3. Use all stipend funds to support the training of state and local government health and safety professionals.
4. Provide courses required for health and safety professionals to become certified in their field.

E. Program Activities and Accomplishments

- The Confined Space Awareness for Managers class which was created in 2005/06 was offered in Los Angeles County and also in Orange County. It was marketed aggressively to state and local government. (Goals 1, 2, 3)
- Confined Space Awareness (Level 1) was offered for the first time. (Goals 1, 3)
- Thirty-eight health and safety professionals attended the Confined Space Awareness for Managers class. New agencies represented were the cities of Monterey Park, Corona, Paramount, Pomona, Lynwood; Los Angeles County Sanitation District, San Diego State University, UC San Diego, and others.. (Goals 1, 2, 3)
- The CHMM Review course is offered twice a year when before it had been once. (Goals 1, 4)

K. Program Products

- CHMM Review – 3 days (2 times)
- CHMM Exam (3 times) –the Institute for Hazardous Material Management has now made all exams computerized and are offered in computer centers. No further exams will be offered by this program.
- Confined Space for Managers (2 times)

L. Future Plans

Plans for 2007/08 include:

- a. Providing a 40-hour HAZWOPER for a local government onsite
- b. Expanding the sites at which courses are offered
- c. Providing partial scholarships/discounts for participants unable to pay the full amount

IV. Report on improvements in Occupational Safety and Health Resulting from ERC Programs.

IV. Report on improvements in Occupational Safety and Health Resulting from ERC Programs.

IH Program

- Nine program graduates now work for CalOSHA.
- Two recent doctoral graduates have faculty positions and one directing an IH Program at CSU San Bernardino.
- As a result of our ABET accreditation we have started a process which will indirectly evaluate the impact of our program on the professional IH community. We are surveying our graduates two and three years after graduating from our program as to the value of our 17 program outcomes and their proficiency in those outcomes at the time of their graduation.

UC Irvine OM Program

- The UCI Occupational Medicine program provides medical surveillance, health assessments and fitness evaluations for firefighters in the Orange County Fire Authority. These evaluations are conducted by program physician faculty at the COEH OEM clinic with the participation of the occupational medicine residents. The program is related to the national Wellness-Fitness Initiative of the International Association of Fire Chiefs (IAFC) and International Association of Fire Fighters (IAFF). This program has had a positive impact on increasing awareness of workplace safety and cardiovascular fitness among the OCFA fire fighters. The program is now tracking cardiovascular fitness indicators and will be able to report on quantitative impact measures during the next annual report.

UCLA OM Program

- The UCLA program works closely with CalOSHA. UCLA residents actively support the activities of the CalOSHA, which relies upon their expertise since the CalOSHA office is limited to a single physician and nurse.
- The UCLA program was the first to identify California cases of bronchiolitis obliterans due to diacetyl and has worked closely with numerous agencies to facilitate the public health response. In addition, by educating numerous physicians via lecturers and presentations, the awareness of this problem has been significantly increased.

CE/O Program

- Beginning with classes offered in 2006, the Program began to send out on-line impact surveys to course participants 90 days after the completion of most courses. Below are examples of impacts cited by respondents to the question "Is there a specific occasion in which you have been called upon to use your new knowledge/skills?"
 - Mold: State of the Medical and Environmental Science –
 - "Deposition. Air testing."
 - "QME on pt claiming mold caused health problems"

- QME on pt claiming mold caused health problems”
- “As a medical expert witness”
- “Environmental health consulting.”
- “Mould contamination of the HVAC system.”

Effective Cleaning and Contamination Control –

- “In trying to develop a new cleaning procedure.”

OSHA 511 –

- “For incident reporting on the OSHA log”

Risk Assessment (offered June 2006) –

- “The site needed documented Job Hazard Analysis completed for tasks. That is now happening.”

OSHA 510 –

- “Everyday with scaffold inspection and training.”

OSHA 501 –

- “Training our employees on a recurring basis”
- “machine guarding, fall protection, flashpoint samples”

Preventing Injury and Illness of Groundskeepers –

- “I was not aware of the new Heat Stress Standards until I took this class. I also gained some more insight into the hazards faced by groundskeepers. If and when I conduct training for groundskeepers I use the knowledge gained from the class as well as make use of the study book you provided”
- “I am in charge of safety so many employees call me about different incidents. After investigating the accident, I develop tailgate meeting material based to prevent the accident from happening again.”
- “Gave a class on working in temperature extremes.”
- “Soon after this training class, two new grounds maintenance workers were hired. I eased them into the position by gradually increasing their work load to get them into physical shape for the summer heat.”
- Of the 43 responses received to date for the non-grant supported classes:
 - 12 agreed that they have changed their work practices since receiving training
 - 14 stated that there was a specific occasion for using their new knowledge/skills
 - 16 agreed that they are more like to approach their supervisor concerning employee rights and/or health ad safety issues because of their training
 - 16 said that they had often looked up information in or referred to the course materials provided; 9 others said they had looked up information at least once.

HST Program

- Follow-up contact with participants who completed the CHMM Review Courses and then took the CHMM exam indicate that more than 90% of participants passed the exam.

APPENDICES

Appendix A. Curricula of core academic programs.

MPH PROGRAM IN INDUSTRIAL HYGIENE 2006-2007

Department of Environmental Health Sciences
UCLA School of Public Health

You must take the courses listed below and satisfy the elective requirement on page 3.

FIRST YEAR

Fall	BIO 100A	Introduction to Biostatistics (4 units)
	EHS 200A	Foundations of Environmental Health Sciences I (6) Staff
	EHS 256	Bio. & Hlth. Surveil. Monitoring in Occ./Env. Health (4) Que Hee [odd yrs only]
	EHS M411	Environmental Health Sciences Seminar (2) Staff
Wntr	BIO 100B	Introduction to Biostatistics (4)
	EHS 200B	Foundations of Environmental Health Sciences II (6) Staff
	EHS 251A	Occupational Diseases: Recognition and Prevention (1) Harber
	EPI 100	Principles of Epidemiology (4)
Sprg	EHS 252D	Properties & Measurement of Airborne Particles (4) Hinds
	EHS 252E	Identification & Measurement of Gases & Vapors (4) Que Hee
	EHS 252F	Industrial Hygiene Measurements Laboratory (3) Kennedy, Que Hee, Hinds
	EHS 251B	Occupational Diseases: Recognition and Prevention (1) Harber
Sumr	EHS 400	Field Studies in Env. Health Sciences (summer internship) (4) Staff

SECOND YEAR

Fall	EHS 201	Seminar: Health Effects of Environmental Contaminants (2) Eckhert
	EHS 255	Control of Airborne Contaminants in Industry (4) Hinds
	EHS 256	Bio. & Hlth. Surveil. Monitoring in Occ./Env. Health (4) Que Hee [odd yrs only]
Wntr	EHS 454	Health Hazards of Industrial Processes (4) Kennedy, Hinds, Que Hee,
	CHS 100	Behavioral Science and Health Education (4)
	EHS 253A	Physical Agents (2) Kennedy
	EHS 253B	Physical Agents Laboratory (2) Kennedy
	EHS 240	Fundamentals of Toxicology (4) Collins
Sprg	EHS M411	Environmental Health Sciences Seminar (2) Staff
	EHS 250D	Industrial Hygiene Practice (2) Kennedy
	EHS 257	Risk Assessment and Standard Setting (4) Froines
	EHS 259A	Occupational Safety and Ergonomics (4) Liu
	HS 100	Health Services Organization (4)

Note: Electives may be taken each quarter provided total units do not exceed 18 units/quarter.

Note: [**odd years only**] Courses given only on odd **calendar** years. Take first or second year, as appropriate.

Curriculum for
MS PROGRAM IN INDUSTRIAL HYGIENE
2006-2007

Department of Environmental Health Sciences
 UCLA School of Public Health

You must take the courses listed below and satisfy the elective requirement on page 3.

FIRST YEAR

Fall	BIO 100A	Introduction to Biostatistics (4 units)
	EHS 200A	Foundations of Environmental Health Sciences I (6) Staff
	EHS 256	Bio. & Hlth. Surveil. Monitoring in Occ./Env. Health (4) Que Hee [odd yrs only]
	EHS M411	Environmental Health Sciences Seminar (2) Staff
Wntr	BIO 100B	Introduction to Biostatistics (4)
	EHS 200B	Foundations of Environmental Health Sciences II (6) Staff
	EHS 251A	Occupational Diseases: Recognition and Prevention (1) Harber (pending approval)
	EPI 100	Principles of Epidemiology (4)
Sprg	EHS 252D	Properties & Measurement of Airborne Particles (4) Hinds
	EHS 252E	Identification & Measurement of Gases & Vapors (4) Que Hee
	EHS 252F	Industrial Hygiene Measurements Laboratory (3) Kennedy, Que Hee, Hinds
	EHS 251B	Occupational Diseases: Recognition and Prevention (1) Harber (pending approval)

SECOND YEAR

Fall	EHS 201	Seminar: Health Effects of Environmental Contaminants (2) Eckhert
	EHS 255	Control of Airborne Contaminants in Industry (4) Hinds
	EHS 256	Bio. & Hlth. Surveil. Monitoring in Occ./Env. Health (4) Que Hee [odd yrs only]
	EHS 598 [#]	Master's Thesis Research (4) Staff
Wntr	EHS 454	Health Hazards Industrial Processes (4) Kennedy, Hinds, Que Hee
	EHS 410A	Instrumental Methods in Environmental Sciences (4) Que Hee, Suffet
	EHS 253A	Physical Agents (2) Kennedy
	EHS 253B	Physical Agents Laboratory (2) Kennedy
	EHS 240	Fundamentals of Toxicology (4) Collins
	EHS 598 [#]	Master's Thesis Research (4) Staff
Sprg	EHS M411	Environmental Health Sciences Seminar (2) Staff
	EHS 250D [□]	Industrial Hygiene Practice (2) Kennedy
	EHS 257	Risk Assessment and Standard Setting (4) Froines
	EHS 259A	Occupational Safety and Ergonomics (4) Liu
	EHS 598 [#]	Master's Thesis Research (4) Staff

[#] Students doing the MS Report Option may take EHS 597 (EHS 596 in final quarter) instead of EHS 598.

Note: Electives may be taken each quarter provided total units do not exceed 18 units/quarter.

Note: [**odd years only**] Courses given only on odd **calendar** years. Take first or second year, as appropriate.

MPH AND MS PROGRAM IN INDUSTRIAL HYGIENE

REQUIRED MENU COURSE

You must take at least one of the following courses:

EHS 252G* [Spr]	Industrial and Env. Hygiene Assessment (4) Hinds, Que Hee
EHS 258* [Win]	Identification and Analysis of Hazardous Wastes (4) Que Hee [odd yrs only]
EPI 261 [Win]	Occupational Epidemiology (4) Ritz
EHS 410B [Win]	Instrumental Methods Laboratory in Environ. Health Sciences (4) Que Hee
CHS M470 [Spr]	Introduction to Occupational Health Education (4) Delp

Recommended Alternative to Biostatistics 100A and 100B

BIO 110A	Basic Biostatistics (4)
BIO 110B	Basic Biostatistics (4)

RECOMMENDED ELECTIVES (not required)

Note, courses listed above as required menu courses are also recommended electives.

Fall Quarter

LAW 290	Environmental Law (4) Freeman (Fall semester)
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Winter Quarter

EHS 225	Atmospheric Transport and Transformations of Airborne Chem. (4) Winer
EPI 201A	Epidemiologic Methods I (6)
EPI 263	Exposure Assessment in Occup.& Environ. Epidemiology (2) Ritz

Spring Quarter

EHS 202	Seminar: Environmental Chemistry (2) Que Hee
EPI 260	Environmental Epidemiology (2)/(4)
EHS 264	Fate and Transport of Organic Chemicals in the Aquatic Environment (4) Suffet
EPI 201B	Epidemiologic Methods II (6)
CHS M278	Work and Health (cross listed as EHS 270) (4) Siegel, Schnall, Repetti

*Indicates course qualifies for Hazardous Substances Minor

UCLA

School of Nursing

July 24,

2007**Master of Science in Nursing Program****NURSING ADMINISTRATION/OCCUPATIONAL AND ENVIRONMENTAL HEALTH
SPECIALTY -- FALL 2007 ADMISSION*****SAMPLE COURSE SEQUENCE –SUBJECT TO REVISION***

This course sequence is provided as an example only. An individual student's program may differ from this sample according to his/her background and educational goals. Each student must meet with his/her faculty advisor every quarter to review progress in the program and plan coursework for future quarters. A minimum of 69 units is required for this specialty. Students receiving funding from the Graduate Division must enroll in at least 12 units each quarter.

First Year

<u>Fall</u>	Units	<u>Winter</u>	Units	<u>Spring</u>	Units
N204 *	4	N219A	4	N219B	4
N213A	4	EHS/EPI	4-8	N418A	3-4
N218A	4			EHS/EPI	2-6
N220	3				
EHS/EPI	0-6				
Total	15+	Total	8+	Total	8+

Second Year

<u>Fall</u>	Units	<u>Winter</u>	Units	<u>Spring</u>	Units
N213B	3	N218C	4	N218D	4
N218B	4	N418C	3-4	N418D	12
N418B	3-4	EHS/EPI	2-4		
EHS/EPI	0-6				
Total	10+	Total	8+	Total	16+

Nursing Core Courses

N204	Research Design and Critique
N220	Instruction and Learning in Nursing

Nursing Administration Specialty, Occupational Health and Master's Courses

N213A	Occupational Health Nursing Role and Theory
N213B	Health Assessment, Research, and Health Promotion in Occupational Health
N218A,B,C,D	Nursing Administration Theory
N219A	Essentials of Accounting and Budgeting in Health Care Organizations

N219B Operations Planning and Control for Nurse Administrators
 N418A,B,C Nursing Administration Practicum
 N418D Nursing Administration Residency

Public Health Courses

Students are required to complete at least 10 units of course work in the School of Public Health covering content inclusive of the following areas: Epidemiology, Industrial Hygiene/Physical Agents, Ergonomics and Occupational Safety. Some example courses for this and other content relevant to OEHN include, but are not limited to, courses listed on the back.

***Recommend completion of N204 during summer prior to entering program.**

Epidemiology

100 Principles of Epidemiology (4) Summer, Spring
 226 Public Health Responses to Bioterrorism (4) Spring
 251 Epidemiology of Non-intentional Injuries (4) Fall
 253 Acute Traumatic and Chronic Repetitive Injuries from Work Related Exposures (2) Off years Spring
 260 Environmental Epidemiology (2 or 4) Spring
 261 Occupational Epidemiology (4) Winter
 263 Exposure Assessment in Occupational and Environmental Epidemiology (2) Winter

Environmental Health - Ergonomics

259A Occupational Safety and Ergonomics (4) Spring

Environmental Health - Industrial Hygiene and Physical Agents

200A Foundations of Environmental Health Sciences (6) Fall
 253A Physical Agents in the Work Environment (2) Winter S/U Grading
 454 Health Hazards of Industrial Processes (4) Winter – May substitute for N239C for OEHNP students.

Environmental Health - Occupational Medicine

251A Occupational Diseases: Recognition and Prevention (1) Winter, Spring

251B Occupational Diseases: Recognition and Prevention (1) Winter, Spring

Environmental Health - Occupational Safety

259A Occupational Safety and Ergonomics (4) Spring

200A Foundations of Environmental Health Sciences (6) Fall

Environmental Health -Toxicology

M242 Toxicodynamics (4) Fall

257 Risk Assessment and Standard Setting (4) Fall

240 Fundamentals of Toxicology (4) Spring

243 Embryology and Teratology (4) Spring

256 Biological and Health Surveillance Monitoring in Occupational and Environmental Health (4) Fall

Public Policy: Industrial Policy

CM230 Labor Markets and Public Policy (4) Spring

233 Employment Issues in California (4) Winter

242 Regional Development, Urbanization, and Industrial Policy (4) Fall, Winter

271 Urban Poverty, Workforce Development, and Public Policy (4) Spring

UCLA

School of Nursing

July

24, 2007**Master of Nursing Program****OCCUPATIONAL AND ENVIRONMENTAL HEALTH NURSING****ADULT NURSE PRACTITIONER SPECIALTY -- FALL 2007
ADMISSION****SAMPLE COURSE SEQUENCE – SUBJECT TO REVISION**

This course sequence is provided as an example only. An individual student's program may differ from this sample according to his/her background and educational goals. Each student must meet with his/her faculty advisor every quarter to review progress in the program and plan coursework for future quarters. A minimum of 75 units is required preparation as an occupational health adult nurse practitioner. Students receiving funding from the Graduate Division must enroll in at least 12 units each quarter.

First Year

<u>FALL</u>	Units	<u>WINTER</u>	Units	<u>SPRING</u>	Units
N200	4	N225A	3	N225B	2
N204 *	4	N230A	2	N230B	2
N213A	4	N440	2	N239A	4
N220	3	EHS/EPI	4	N439A	4
EHS/EPI	0-6			EHS/EPI	0-4
Total	15+	Total	11	Total	12+

Second Year

<u>FALL</u>	Units	<u>WINTER</u>	Units	<u>SPRING</u>	Units
N213B	3	N264	3	N439D	8
N239B	4	N439C	6		
N439B	6	N239C			
EHS/EPI	0-6	OR EHS 254	4		
Total	13+	Total	13	Total	8

Nursing Core

N204	Research Design and Critique
N220	Theories of Instruction and Learning in Nursing
N264	Professional Issues in Nursing

Primary Care/Occupational Health Specialty

N200	Biobehavioral Theoretical Foundations of Health Assessment
N213A	Occupational Health Nursing Role and Theory
N213B	Health Assessment, Research, and Health Promotion in Occupational Health

N225AB	Pharmacology for Advanced Practice Nurses
N230AB	Advanced Pathophysiology
N239A,B,C	Biobehavioral Foundations of Acuity and Chronicity in Illness
N439A,B,C	Advanced Practice Nursing: Clinical Practicum
N439D	Advanced Practice Nursing: Residency
N440	Advanced Assessment and Clinical Diagnosis Practicum

Public Health Courses

Students are required to complete at least 10 units of course work in the School of Public Health covering content inclusive of the following areas: Epidemiology, Industrial Hygiene/Physical Agents, Ergonomics and Occupational Safety. Some example courses for this and other content relevant to OEHN content include, but are not limited to, courses listed on the back.

***Recommend completion of N204 during summer prior to entering program.**

Epidemiology

100	Principles of Epidemiology (4)	Summer, Spring
226	Public Health Responses to Bioterrorism (4)	Spring
251	Epidemiology of Non-intentional Injuries (4)	Fall
254	Acute Traumatic and Chronic Repetitive Injuries from Work Related Exposures (2)	Off years Spring
262	Environmental Epidemiology (2 or 4)	Spring
263	Occupational Epidemiology (4)	Winter
263	Exposure Assessment in Occupational and Environmental Epidemiology (2)	Winter

Environmental Health - Ergonomics

259A	Occupational Safety and Ergonomics (4)	Spring
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Environmental Health - Industrial Hygiene and Physical Agents

- 200A Foundations of Environmental Health Sciences (6) Fall
- 253A Physical Agents in the Work Environment (2) Winter S/U Grading
- 454 Health Hazards of Industrial Processes (4) Winter – May substitute for N239C for OEHNP students.

Environmental Health - Occupational Medicine

- 251A Occupational Diseases: Recognition and Prevention (1) Winter, Spring**
- 251B Occupational Diseases: Recognition and Prevention (1) Winter, Spring**

Environmental Health - Occupational Safety

- 259A Occupational Safety and Ergonomics (4) Spring
- 200A Foundations of Environmental Health Sciences (6) Fall

Environmental Health -Toxicology

- M242 Toxicodynamics (4) Fall
- 257 Risk Assessment and Standard Setting (4) Fall
- 240 Fundamentals of Toxicology (4) Spring
- 243 Embryology and Teratology (4) Spring
- 256 Biological and Health Surveillance Monitoring in Occupational and Environmental Health (4) Fall

Public Policy: Industrial Policy

- CM230 Labor Markets and Public Policy (4) Spring
- 233 Employment Issues in California (4) Winter
- 242 Regional Development, Urbanization, and Industrial Policy (4) Fall, Winter
- 271 Urban Poverty, Workforce Development, and Public Policy (4) Spring

UCLA OCCUPATIONAL MEDICINE CURRICULUM

The UCLA program includes a 2 year integrated curriculum. Trainees begin projects in year 1 and continue in the second year. First-year trainees have both academic classes and clinical activity. The practicum experience based upon a small number of well-designed, comprehensive rotations rather than a large number of electives: Unlike some programs, our program uses a limited number of rotations through which trainees obtain a comprehensive experience in occupational medicine, working with faculty members who are regularly and consistently involved in education rather than on an intermittent basis. The major rotations are designed to be complementary (clinical/nonclinical; frontline versus "tertiary referral"; governmental versus private).

The program places emphasis on effective project management: Each resident must complete a successful meaningful project. From this they learn project management as well as the specific topics. Many lead to publications and presentations.

Residents who do not have an acceptable MPH spend much of the first-year in classroom related work. However, they do considerable clinical work before the fall quarter begins. In addition, this year, we have instituted incorporating them into clinical settings during the first-year (typically a few clinic sessions a week at Kaiser). During the second year, the residents have a major focus on one of the "major rotations" for several months each (i.e., Kaiser, UCLA academic, OSHA, "corporate"). To achieve longitudinal experience in "frontline clinical occupational medicine", they continue at Kaiser throughout the second year. In addition, the second year residents both come to the UCLA clinic on a regular basis (generally, each comes on alternate weeks). The "minor rotations" (Pacific Occupational Medical and Long Beach Clinic) are scheduled during open days (typically about one or two a month). The "corporate management" experience was currently being revised to establish a corporate management rotation with Exxon Mobil Corp.

The curriculum is competency based. The ACGME recently reviewed the program curriculum and provided 5 years of accreditation (maximal possible).

ROTATION CURRICULAR GOALS**Kaiser Permanente**

Diagnosis and treatment of common occupational illnesses and injuries
Communication with employers and workers
Understanding of the workers' compensation system, including report preparation as treating physician and as QME.
Improved understanding of operation of an employee health service focused in the health care sector

Exxon-Mobil Corporation

Obtain factual knowledge and strengthen judgment about fitness for duty and placement decisions
Participate in the evaluation of worksite hazards.
Understand functional interrelationships among managers, health care providers, occupational hygienists, and regulators.
Implement disaster preparedness and emergency response methods. Understand critical incident management.
Understand corporate health management procedures.
Understand the ethical concepts of public health in a corporate setting.

Pacific Occupational Medical Associates

Understand workplace medical surveillance procedures. These include the following stages:

- Design
- Conduct
- Interpreting results
- Communication of results to workers and employers

Interpretation of audiometry, spirometry, and ILO-radiography.
Implementation of OSHA related medical surveillance programs.

Long Beach Medical Clinic

Become familiar with methods of implementing occupational health programs in worksites.
Understand methods of managing off-site occupational health programs.
Understand major methods of the quality assurance for occupational health services.
Understand the maritime industry and oil refining as particular examples.

Cal-OSHA

- Understand functioning of a public health regulatory agency
- Understand OSHA- the primary regulatory basis for workplace health and safety
- Learn to prepare comprehensive site and program evaluation reports
- Understand compliance evaluation
- Evaluate occupational hazards, using methods including in-site inspections
- Improve understanding of the standards development process

UCLA (Academic Center)

- Diagnose and treat toxic related exposure health problems.
- Diagnose occupational lung disease.
- Effective communication to groups
- Project planning
- Assessment of workplace exposures
- Design of prevention programs
- Clinical preventive medicine practices
- Americans with Disabilities Act principles and practice.
- Critically review published scientific and medical literature
- Effective written communication

MPH COURSE STRUCTURE

SCHOOL REQUIREMENTS				
<i>Course no.</i>	<i>Course Title</i>	<i>Units</i>	<i>Quarter Offered</i>	<i>4</i>
BIOST 100A	Introduction to Biostatistics	4	Fall, Spring	
CHS 100	Behavioral Sciences & Health Education	4	Winter, Spring	
EPID 100	Principles of Epidemiology	4	Winter, Spring	
HS 100	Health Services Organizations	4	Fall, Spring	
EHS 400	Field Studies in Environmental Health Sciences	4	Fall, Wtr, Spr	

DEPARTMENT REQUIREMENTS				
<i>Course no.</i>	<i>Course Title</i>	<i>Units</i>	<i>Quarter Offered</i>	<i>4</i>
BIOST 100B	Introduction to Biostatistics	4	Winter	
EHS 200A	Foundations of Environmental Health Sciences	6	Fall	
EHS 200B	Foundations of Environmental Health Sciences	6	Winter	
EHS 240	Fundamentals of Toxicology	4	Winter	
EHS 254	Health Hazards of Industrial Processes	4	Winter	
EHS 257	Risk Assessment and Standard Setting	4	Fall	
EHS 259A	Occupational Safety and Ergonomics	4	Spring	
EHS 400	Field Studies in Environmental Health Sciences	4	Fall, Wtr, Spr	
EHS M411	EHS Seminar	2	Fall, Spring	
EHS 251	Occup Dis	2	Winter	

TOTAL NO. of UNITS—58

University of California, Irvine, Occupational Medicine Program

1. Core Training Activities

The core training consists of the residency program orientation; COEH courses on industrial hygiene and on occupational safety; and the continuing residency training activities. The residency program orientation and COEH courses are offered during seven weeks from the beginning of August until the UCI fall quarter courses begin during the third week of September.

Continuing residency didactics are scheduled for every Tuesday afternoon throughout the two-year residency. The program provides a weekly residency didactic seminar series which is designed to address all of the ACOEM and ACGME occupational medicine competency areas during the two-year residency schedule. Residents also participate in a bi-weekly clinical case conference and bi-weekly journal club throughout the residency.

2. Academic Phase

During the academic phase, residents complete a Master of Science (MS) in Environmental Toxicology. Residents must satisfy all of the requirements for the degree program and complete the core courses required by the ACGME for residency training in preventive medicine.

1) Degree and Residency Program Course Requirements

All students must fulfill the requirements of Plan I (Thesis Plan) specified by the University of California, Irvine. The following are the requirements for the MS degree: Students complete the core program (Environmental Toxicology 201, 206A-B, 207, 298A-B, 299A-B-C, and eight units from the approved elective pool) with an average grade of B or better, and, under the direction of a faculty advisor, prepare a thesis that is acceptable to the thesis committee. For occupational medicine residents, the topic of the thesis must be approved by the Director of the Occupational Medicine Residency.

Required courses for degree program:

TOX 201	Principles of Toxicology	4 units
TOX 206A-B	Target Organ Toxicology	12 units
TOX 207	Experimental Design & Interpretation of Toxicology Studies	2 units
TOX 298	Environmental Toxicology Seminar	2 units/qtr.
TOX 299	Research Problems	2-4 units/qtr.
plus	Approved Electives	8 units
	(may include courses required for residency)	

Additional required course for residency program: (taken as electives in degree program)

Note: Residents are required to complete at least one course in each of the following areas: epidemiology, biostatistics, health services organization and administration, environmental and occupational health, and social and behavioral influences on health. The courses must be approved by the director of the occupational medicine residency program.

E 226	Epidemiology	4 units
E 227	Biostatistics	4 units
TOX 202	Environmental Toxicology	4 units
M 266	Economics of Health Care Services	4 units
or M 267	Management of Health Care Organizations	
P 258	Health Psychology	4 units
or P 262	Interpersonal Processes and Health	

Approved toxicology elective courses

Note: Residents take at least one of Environmental Toxicology or Industrial Toxicology, and most take both courses. Residents take at least one of neurotoxicology or inhalation toxicology. Residents are encouraged to take one additional epidemiology course.

TOX 204	Neurotoxicology	4 units
TOX 205	Toxins and Cellular Injury	4 units
TOX 212	Inhalation Toxicology	4 units
TOX 220	Industrial Toxicology	4 units
TOX 230	Chemical Mutagenesis & Carcinogenesis	4 units
TOX 297	Advanced Topics in Occupational Toxicology	2 units/qr.

Additional approved elective courses

SE 264AB	Data Analysis (statistics)	4 units each
E 244	Toxic Substances in the Environment	4 units
E 249	Environmental Epidemiology	4 units
E 250	Cancer Epidemiology	4 units
E 283	Environmental Health and Quality	4 units
E 293	Lead in the Environment and Society	4 units
M 200	Management of Complex Organizations	4 units
P 211	Attitude Theory and Research	4 units

3. Practicum Phase

During the practicum phase, residents spend much of their time in field site rotations in settings which reflect the broad range of practice opportunities. The residency provides practicum training in corporate occupational medicine programs, as well as in comprehensive occupational medical practices and in public health regulatory agencies. Residents are required to complete at least three months FTE in a corporate or worksite-based practicum rotation; at least 2 months FTE in a occupational medicine specialty clinic; and at least 1 month FTE in the Cal-OSHA regulatory agency. The core rotations continue to be Exxon-Mobil Oil, Steelcase, US Postal Service, Cal-OSHA, Kaiser Permanente Occupational Medicine, Sharp-Rees Stealey Medical Group, and the UCI Medical Center Occupational Health clinic. The program also offers a number of elective rotations.

Exxon-Mobil

Address: Torrance Refinery Medical Clinic, Torrance, California
 Preceptor: Ellyn McIntosh, MD, MPH, Clinical Director
 Rotation: Two to four months, full-time

Steelcase

Address: Steelcase, City of Industry, California
 Preceptor: Lester L. Sacks, MD, PhD, MPH, Medical Director
 Rotation: Two to three months, two days/week

County of Orange, Employee Health Service

Address: Employee Health Service, County of Orange, Health Services Agency,
 Santa Ana, California
 Preceptor: Loretta Lee, MD, MPH, Medical Director
 Rotation: Two months, two days/week

California Department of Industrial Relations

Division of Occupational Safety and Health (CAL-OSHA)

Address: Division of Occupational Safety and Health, Anaheim, CA
 Preceptor: Mary Kochie, MSN, RN, COHN-S
 Rotation: Three to four months, two days/week

Kaiser-Permanente Occupational Medicine Program

Address: Anaheim, California
 Preceptor: Richard Pitts, DO
 Rotation: One to three months, two days/week

Sharp Rees-Stealy Medical Group

Address: 2001 Fourth Avenue, San Diego, California
 Preceptor: Frederick Fung, MD, MS
 Rotation: Two to four months, two days/week to full-time

UCSD Center for Occupational and Environmental Medicine

Address: 330 Lewis Street, Suite 100, San Diego, California
 Preceptor: William Hughson, MD, PhD
 Rotation: Two months, two to three days/week

UCSD Toxicology Division, California Poison Control System

Address: UCSD University Hospital, San Diego, California
 Preceptor: Richard Cooper, MD
 Rotation: One month, full-time

UCI Medical Center Ambulatory Care Clinics

Address: University of California, Irvine Medical Center, Orange, California

 Preceptors: Gary Cole, MD, dermatology
 Mathew Brenner, MD, pulmonary
 Rotation: One to two months; one to two half day clinic(s)/week

4. Sample Curriculum for Resident in this Program

8/05	9/05	10/05	11/05	12/05	1/06	2/06	3/06	4/06	5/06	6/06	7/06
Orientation		Academic phase, MS courses, UCI Environmental Toxicology									Cal-OSHA
Workplace Visits		E226 - Epidemiology T206A - Target Organ Toxicology T207 - Design of Toxicology Studies T298 - Toxicology Seminar			E227 - Biostatistics T206B - Target Organ Toxicology T204 - Neurotoxicology T298 - Toxicology Seminar			P258 - Health Psychology T201 - Principles of Toxicology T212 - Inhalation Toxicology T298 - Toxicology Seminar			
Industrial Hygiene Occupational Safety											Steelcase
COEH clinic, case conference, journal club, didactics - 1 day/week											

8/06	9/06	10/06	11/06	12/06	1/07	2/07	3/07	4/07	5/07	6/07	7/07
Cal-OSHA – Field site		Academic - MS courses			Kaiser Occupational Medicine – field site			Exxon-Mobil – field site			
Steelcase – Field site		T201 - Environmental Toxicology T298 - Toxicology Seminar T299 – Thesis Research H502 - Health Care System									
					COEH – Research Project						
COEH clinic, case conference, journal club, didactics – 1 day/week											

Appendix B

**Publications by core ERC faculty members during the 2006-07 reporting period.
Publications arranged by program. Trainee authors underlined.**

IH Program

Publications by Industrial Hygiene Core faculty members for 2006-07. Student authors are underlined.

Krishnadasan, A., Kennedy, N., Zhao, X., Morgenstern, H., Ritz, B. (In press, 2007) Nested Case-Control Study of Occupational Chemical Exposures and Prostate Cancer in Aerospace and Radiation Workers, Am J Industrial Med

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Presentations by faculty:

Robbins WA, Wei F, Elashoff DA (2007) Influence of work and environment on sperm: A study in northeast China, XI International Congress of Toxicology, Montreal, Canada

Robbins WA (2007) Atrazine effects on human menstrual cycle, 38th Annual Environmental Mutagen Society Meeting, Atlanta

Environmental Risk Factors in Community Based Nursing, lecture for 21 undergraduate nursing students at UCLA

Occupational Issues in Pregnancy, lecture for 58 Family Nurse Practitioner Students, UCLA

Occupational and Environmental Health, lecture for 60 Advanced Practice Nursing Students (Family and Gerontology specialties)

Work and Environmental Health Policy, lecture to 48 Health Care Policy Students at UCLA

UCLA OM

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Additional Information on Pilot Projects

ABSTRACTS AND PROGRESS REPORTS FOR PPRT AWARD RECIPIENTS**FY 05-06**

1. Jeffrey Birkner – Ph.D. student -
Project title - Release of Particles from Commonly Used Respirator Filters
Thesis Advisors: Drs. Nola Kennedy and William Hinds

Abstract: –The goal of this research is to better understand and characterize whether or not particles are released from respirator filters. Particulates are captured by filters through five mechanisms. There are interception, impaction sedimentation, diffusion, and electrostatic charge. It has always been assumed that once particles are captured by filters there is little risk of their subsequent release. Preliminary data suggests that particles may be released from filters under typical handling scenarios. It is important to determine if particles can be released from particulate respirator filters, under what conditions, and to what extent. The present work will attempt to quantify the release of particle from filters from several different types of respirators under various conditions including particle size, drop heights, and different loading conditions. If preliminary results are validated, recommendations may be made to the public and to regulatory agencies to modify the handling and disposal procedures of respirators under both common use as well as during terrorist scenarios

Progress report: The pilot project was completed in 2007. It was found that under certain adverse conditions respirators do release particles. Further investigations were undertaken to determine if release occurred during other real world use conditions such as stretching when respirators are removed from the head. Additionally, a study was undertaken to determine if the use of coverstocks had an effect on the release of particles from respirators. Data was compiled, a dissertation was written and successfully defended in May of 2007.

NOTE: This Pilot Projects was partially supported by NORA funds.

2. Graduate Student – Ph.D. candidate
Project Title - The Effects of Occupational Nickel Exposure on Human Sperm
DNA Integrity
Thesis Advisor: Dr. Wendie Robbins

Abstract: Previous research studies have suggested that occupational exposure to metals may damage the sperm cells in some men and may increase cancer incidence in their offspring (Wilkins and Koutras, 1988; Buckley et al, 1989, Buckley, 1994). No single metal has been identified, but metal particulates and fumes generated during welding, minting, mining, and electroplating such as nickel, lead, chromium, and manganese (Hjollund et al, 1998; Figa-Talamanca et al, 200) are implicated. In this research study, we will investigate whether exposing mature ejaculated sperm cells to nickel *in vitro* will induce sperm DNA damage. No one has measured sperm cell damage from nickel exposure. Nickel is a carcinogenic transition metal (Costa, 2000)

that may target sperm DNA (Liang et al, 1999). The specific aims of this study are to: 1) determine if nickel enters the nucleus of spermatozoa; 2) assess the ability of nickel to bind DNA and proteins, particularly human protamine 2, a protein formed during spermiogenesis thought to aid in the compaction and packing of sperm DNA; and 3) evaluate sperm DNA damage in the form of breakage and modifications of chromosome structure. We hypothesize that ejaculated human sperm cells exposed to nickel *in vitro* will yield quantifiable damage to sperm DNA. This research study is the first step in assessing the potential for adverse reproductive health effects in men occupationally exposed to nickel. If we demonstrate that sperm DNA damage does occur after exposure to nickel, then it would be important to conduct epidemiologic studies in men occupationally exposed to nickel.

PROGRESS REPORT: SEMEN COLLECTION

Methodology Action: Fifteen men were enrolled. All submitted samples and were paid.

SPECIFIC AIM 1: Determine if nickel enters the nucleus of mature spermatozoa

Action: Time course experiments were conducted to determine optimal incubation time, temperature, and concentration of nickel for spermatozoa exposure. Initial results showed exposure of whole semen to 0.5 mM Ni resulted in 0.1% Ni uptake into the cells (i.e., 4.62×10^{-4} mM Ni was found in the pellet fraction after 8-hour exposure). We conclude that Ni is not significantly transported into an ejaculated sperm cell. ICP-MS results for other metals important in sperm development yielded mixed results. We are experiencing difficulties measuring zinc. As nickel may displace zinc bound to human protamine 2 (HP2), we are currently exploring other techniques (e.g., ICP-AES, AA, PIXE) to quantitate zinc in our samples.

PIXE experiments were conducted in February 2007. Four of ten men had measurable nickel in their sperm cells (mg/L).

SPECIFIC AIM 2: Assess the ability of nickel to bind DNA and proteins, namely HP2, a protein formed during spermiogenesis thought to aid in the compaction and packing of sperm DNA

Action: The 15 collected samples did not yield enough HP2 protein for binding studies (< 100 ug). The Principal Investigator pooled frozen samples (donated for research and approved by the UCLA IRB) and isolated and purified HP2. Identity was confirmed by Western blotting. Binding experiments are currently underway using HPLC/ICP-MS.

SPECIFIC AIM 3: Evaluate sperm DNA damage in the form of breakage and modifications

Action: We have re-evaluated this specific aim given that nickel was not significantly transported into the ejaculated sperm cell. We are looking into identifying men who are occupationally exposed to nickel and thus may have nickel present throughout sperm cell development and packaging.

FY 2006-07

1. Maxwell Fogelman, Ph.D. – junior faculty
Project title – Evaluation of Biomechanical Stressors of Baggage Handler
Thesis Advisor: Dr. Nancy F. Lawrence

Abstract: Bureau of Labor Statistics (BLS) data on the rates of injuries and illnesses in the air transportation industry (NAICS 404500) from 1989 through 1999 show that the air transportation industry is well above private industry in both reportable cases of injuries and illness as well as severity (rate of days lost). Furthermore, the specific data for scheduled air transportation (NAICS 404510) is even higher than that for the air transportation industry as a whole.

Research in stressors associated with ground operations in the aviation industry has concentrated on baggage handlers. Ruckert et al. (1992) have shown that baggage handling in the hold of the aircraft increased the likelihood of back injuries resulting from handling baggage in the confined space of the hold. This observation is buttressed by the results of Haslegrave et al. (1997) showing how strength capabilities are reduced in kneeling positions similar to those found in the hold.

Data from a major air carrier (which has requested anonymity) indicate that much of the higher rates indicated by the BLS data are due baggage handlers, but are linked to other job categories as well and are linked to other job categories among ramp service personnel. These data indicate that the jobs with the most hazardous occupations (as indicated by highest rates of injuries and illness) are (from highest to lowest) ramp personnel (primarily baggage handlers), ticket agents (from baggage handling), maintenance technicians, and flight attendants.

Therefore, the objective of this research will be to equip a laboratory and conduct research in the specific operations performed by these high-risk occupations. Specific research topics will involve the study of the biomechanical stressors of baggage handling in order to identify improvements in job design to reduce the rates of musculoskeletal injuries among airport workers.

Progress report: We assembled the project team, wrote the study design and protocol, and identified subjects. This effort will have to be duplicated if we get the funding in the future. We also set-up the approval for the IRB for the project in preparation for the signing of the subcontract, which should be able to be renewed. No money has been spent on this project. The project has been delayed due to the late set-up of UCLA subcontract on ___To Be Cited ___ without extension.

If we do receive the carryforward funds, we will complete the project, June 30th of 2008 at the earliest.

2. Jennifer Currie, MPH –Ph.D. student

Project title – Does Rapid lung Function Decline in Firefighters Predict Respiratory Morbidity during their Retirement

Thesis Advisor: Dr. Jeff Burgess

Abstract: To determine whether rates of decline in lung function and estimates of occupational exposure during years of employment are predictors of respiratory morbidity in retired firefighters.

Background: Firefighters are exposed to products of combustion that can have acute and chronic effects on pulmonary function. The respiratory health of firefighters is monitored regularly during their employment. However this monitoring generally does not continue into retirement, when the effects of reduced lung function are most likely to result in adverse respiratory symptoms. We hypothesize that firefighters with greater decreases in pulmonary function while working will have more long-term adverse respiratory effects, including FEV₁, lower FEV₁/FVC, and increased respiratory symptoms during retirement and that occupational exposures will contribute to the rate of decline in lung function.

Specific Aims: 1) To determine the prevalence of respiratory symptoms and abnormal pulmonary function in retired firefighters. 2) To determine whether the rate of decline in lung function during employment is associated with subsequent respiratory morbidity (abnormal pulmonary function tests and respiratory symptoms) in retired firefighters. 3) To determine whether estimates of occupational exposure are predictive of pulmonary morbidity in retired firefighters.

Study Design: Retired firefighters from the Phoenix Fire Department will be recruited to participate. Using a retrospective cohort design, the retired firefighters will be separated into two groups, those with average decline FEV₁ exceeding 60 ml per year (accelerated rate of decline) and those with less rapid decline. Fifty retired firefighters with an accelerated rate of decline in lung function will be compared with 50 retirees with less rapid decline. Participating firefighters will undergo a medical screening session which will consist of a questionnaire and pulmonary function testing. Prevalence of respiratory symptoms and FEV₁/FVC <70% will be compared pre-and post- retirement for both groups of firefighters separately using McNemar's test. Administrative records from the PFD on job title, the number and types of fires fought along with percentages of time using SCBA will be used to determine estimates of occupational exposure.

Expected Outcomes: We anticipate retired firefighters with an accelerated decline in FEV₁ pre-retirement will have greater extent of respiratory impairment and symptoms than firefighters with slower rates of decline.

Progress report: Our progress to date has included formalizing the research agreement with the Phoenix Fire Department (PFD) and gaining IRB approval from the University of Arizona for initiation of the project. We met with individuals at the PFD to help plan the research and identified the appropriate PFD contact for Human Subjects training to help contact individual firefighters for the study. Unfortunately, by the time training for this individual had been completed and the study was subsequently granted IRB approval, we had reached the end of the initial study period

and we have been awaiting approval of a no-cost extension prior to enrolling retired firefighters in the study. The study should be able to start immediately once the extension has been granted and should be completed by the end of June, 2008. No funds have been expended on the study to date.

3. Kathleen Mullen, BSN, MS – Ph.D. student

Project title – Motivation and Obstacles to Returning to Employment for Nurses

Thesis Advisor: Marion Gillen, Ph.D., MPH, RN and Paul Blanc, MD, MSPH

Abstract: Purpose: The aim of this study was to examine motivations and obstacles experienced by hospital nurses who endeavor to work after injury by focusing on the injury experience, work climate, risk of re-injury, workers' compensation, and issues related to personal lifestyle. **Background/Significance:** Nurses represent the largest group of hospital workers and experience some of the highest numbers of work-related injuries. Injuries not only cause physical and emotional harm but reduce the number of available hospital nurses and can create socioeconomic hardships for workers and their families. **Methods:** Motivations and Obstacles to Work for the Injured Hospital Nurse (MORE Nurses Study), used ground theory methodology analysis including coding and conceptualization were used in the analysis of the data.

Nurses (n = 16) from two different settings were interviewed. **Findings:** Participants reported fear of injury based on their own experiences and witnessing career ending injuries to co-workers. Many reported altruistic motivations relating to their work as a *calling*. They were reluctant to report an injury for reasons including their identity, stigma for disability, desensitization of self needs, and loyalty to patient care. Three conceptual sub-categories emerged from the data. From them, the conceptual description of *Nursing Together* represented the connections nurses share which motivate them to work. **Conclusions:** Nurses are compelled to do their work based on deep beliefs related to the importance of caring for another human being in need.

The degree to which nurses personally connect with nursing as something more than a job, influences their perseverance to maintain work, the quality of the patient care they delivery, where they chose to work, and how they connect with co-workers. These connections are essential in determining whether nurses will find ways to *nurse together* as an identity; *nurse together* as a consequence of injury; or *nurse together* in the physically and emotionally demanding hospital setting.

4. Gerald Poplin, MPH – Ph.D. student

Project title – Injuries among the Tucson Firefighting Population: Identifying Root Causes and Areas for Intervention

Thesis Advisors: Dr. Jeff Burgess

Abstract: To identify firefighter work processes at high risk for causing injuries.

Background: Reducing injury rates is a difficult challenge, particularly in high risk industries such as firefighting and mining. A recent study of the coal mining population evaluated the effect regulation has on lost time injury rates, showing significant declines among injury rates after the adoption of a risk management regulatory system (Poplin et. al, 2006). The current proposal aims at identifying high risk tasks undertaken by Tucson firefighters in order to develop intervention strategies targeted toward the prevention of injuries among this high risk population.

Specific Aims: (1) Identify work processes and job tasks associated with high frequencies of injury; (2) Perform root cause analyses among specific work processes and classes of injury; and (3) Review standard operation procedures for high risk tasks.

Methods: Data will be collected from injury surveillance databases and annual medical testing. Demographic, biometric, and work attributes will be compared between injured and uninjured firefighters for the years 2000-2005. Standard operating procedures will be reviewed and root cause analyses performed in order to identify potential areas for testing risk management intervention strategies. Statistical analyses include standard descriptive methods and Poisson regression to measure for unequal distributions among fire stations in terms of the number of response and resulting injury risk potential. Chi-squared analyses and multinomial logistic regressions will be modeled to assess for individual predictors of injury.

Expected results: The combination of statistical and root causes analyses will be in the identification of specific work tasks that are exposed to increases in injury risk.

Observational reviews of these tasks will support the development of specific interventions for the implementation of risk management strategies aimed at the prevention of injury.

Progress report: All injury surveillance data have been collected and mostly cleaned. Remaining details to define include the severity of injury and determining the causative energies. Annual firefighter physicals are presently being queried to extract certain biologic measurements (e.g. height, weight, flexibility and strength) for all firefighters (injured and uninjured) and will be merged to injury surveillance data. Firefighter recruit training was observed for three days in mid-August, and commissioned firefighters will be observed during three 24-hour shifts in November. An initial root cause analysis on back sprains & strains was completed and issued to TFD management. Results from this analysis is scheduled to be presented to TFD management in early November to receive feedback on the usefulness of information, and what can be improved on to better generalize or specify results for all injuries. It is believed that a significant portion of this project will be completed by the end of this calendar year so that a multi-year federal grant can be applied for in February 2008, focusing on delivering one or multiple intervention strategies that stem from the current pilot project. To date, \$6,290

from work on this project has been allocated toward salary, IT support and indirect costs.

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ANNOUNCEMENT**\$19,000 Occupational Health and Safety Research Training Pilot Project Grants**

The Southern California NIOSH Education and Research Center (ERC) announces the availability of awards for one year pilot projects **to support research training for occupational health and safety students, including ERC and TPG trainees; new investigators; and new faculty members** (within four years of initial appointment). The goal of this program is provide pilot funding for projects to explore feasibility, to collect preliminary data, and to enable investigators to seek external, longer-term funding. Awards are not intended to support activities already funded by research grants. Awards are contingent on receipt of funds from NIOSH. The program anticipates making four new awards of up to \$19,000 (direct cost) each.

Students and young investigators are particularly encouraged to apply, and with all other factors equal, will receive funding priority. Non-faculty must have a full-time faculty member to sponsor their project. Faculty sponsors and students must be identified as such in the proposal. Projects involving human subjects should apply for human subject approval from their IRB at the earliest opportunity, and give the date of the application on the coversheet of the proposal. All pilot project grantees are required to submit an annual/final progress report and to present their research results at a poster session in the fall of the following year.

Letter of Intent and Applications:

By **July 12, 2007** applicants should submit a one-page Letter of Intent describing their proposed project. This will allow us to select appropriate reviewers for the applications. Please e-mail your letter to D.T. Evans at dtevens@ph.ucla.edu.

By **July 31, 2007** applicants should submit their application. Please submit a hardcopy original to the address given below and an electronic copy to dtevens@ph.ucla.edu. Applications must include:

- a brief abstract of the proposal,
- NORA areas addressed by the proposal (see below)
- a description of project (3-5 pages, single-spaced),
- a budget and justification, and
- a bio-sketch.

Applications will be reviewed by a multidisciplinary panel of scientists. Awardees will be selected following review, with funding to begin as early as September 2007, or if human subjects are involved when IRB approval is obtained. The primary review criteria are:

- 1) relevance to occupational health and safety and to NORA objectives
(see: <http://www2a.cdc.gov/nora/nora-1.html> or <http://www.cdc.gov/niosh/nora/default.html>)
- 2) scientific quality
- 3) stimulation of interdisciplinary activity
- 4) likelihood that the project will lead to ROI or other external funding
- 5) novelty of ideas
- 6) likelihood that the project would foster long-term research interests and attract new or young scientists to the field
- 7) evidence that the proposed project is not already funded by a research grant.

For further information, Contact D.T. Evans at 310-825-7104, or dtevens@ph.ucla.edu, or 650 Young Drive South, Los Angeles, CA 90095-1772

Please post and distribute to eligible individuals at your institution.