

NIOSH Summary Annual Center Report
Johns Hopkins Education and Research Center for Occupational Safety and health

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Overview

The Johns Hopkins Education and Research Center for Occupational Safety and Health (ERC) was established in 1977 in response to the need for interdisciplinary training programs to help meet the need for a professional workforce dedicated to worker safety and health. Master's and doctoral training is provided in Occupational and Environmental Hygiene, Occupational and Environmental Health Nursing, Biomarkers of Occupational Exposure and Susceptibility research training, Occupational Injury Epidemiology and Prevention, and residency training in Occupational and Environmental Medicine. Continuing Education and Outreach components (including Hazardous Substance Training) bring the strengths of the core programs to practicing occupational safety and health professionals and workers in Region III and beyond.

Occupational and Environmental Hygiene (Patrick N. Breyse, PhD, CIH)

Five master's and 17 doctoral students were enrolled in the Occupational and Environmental Hygiene program during the 2007-2008 academic year, while two doctoral students graduated. This program has remained stable and continues to be a leader in research and practice education. The *Noise and Physical Agents* course was developed and offered for on-line delivery, and enrollment for the on-line offering of *Principles of Occupational and Environmental Hygiene* continues to grow.

Faculty have extensive, interdisciplinary research support and a productive publication record that frequently includes student co-authors. In 2007-2008, OEH program faculty had 21 peer-reviewed publications; 11 of these publications included ERC students as co-authors. During this period, Dr. Breyse served as chair of the NIOSH Safety and Occupational Health grant review study section and the National Academy of Sciences – National Research Council Committee on

Beryllium. Dr. Peter Lees served as a member of the NTP-CERHR Expert Panel on the Reproductive and Developmental Toxicity of Bisphenol A, as well as the National Academy of Sciences review committee. Dr. Ana Rule, previously a post-doctoral fellow in the Division of Environmental Health Engineering, was appointed as a research associate. Dr. Rule's area of expertise is in particulate matter, air pollution and bioaerosol research.

Occupational and Environmental Health Nursing (Sheila Fitzgerald, MSN, PhD, RN-C)

During this period, seven master's and four doctoral students were enrolled in the Occupational and Environmental Health Nursing program; four master's students and one doctoral student graduated. Practicum sites were expanded to include Organization Resource Counselors, the Social Security Administration and the Baltimore City Department of Health. Also, the school appointed associate status to program graduate Deborah Jones, who teaches in our Hazardous Substance Training program and participates in OEHN program mentoring.

Program faculty are engaged in leadership activities within the school, professional associations and at the national level. Ms. Mary Doyle and Dr. Sheila Fitzgerald are officers in the Washington and Maryland area chapters of the American Association of Occupational Health Nursing. Dr. Fitzgerald chairs the school's Affirmative Action Committee and worked with the Office of Occupational Health Nursing at OSHA and with the director of that agency to increase support for the OSHA Graduate Nurse Internship Program, while Dr. Jacqueline Agnew is a member of the NIOSH NORA Liaison Committee and served on a National Academy of Science review team. Interdisciplinary projects in which faculty and students participated include a medical surveillance program for former Department of Energy workers and a study of workplace violence and its consequences for nursing personnel.

Occupational and Environmental Medicine Residency (Virginia Weaver, MD, MPH)

The Occupational and Environmental Medicine Residency program had six residents during this period; one graduated in December and another graduated in May. Two students received Occupational Physician Scholarship Fund (OPSF) scholarships. One of our successful 2008 graduates has taken the position of Chief Medical Officer of the Office of Health, Safety, and Security at the U.S. Department of Energy. Another was the 2008 recipient of the Randall Bass Award in the Johns Hopkins Bloomberg School of Public Health.

We continued to work closely with the local ACOEM chapter, MCOEM. The fall MCOEM meeting, which will be supported by our Continuing Education program, will feature a presentation by a current resident. Other outreach interactions have included joint conferences with the JHU General Preventive Medicine Residency, the Uniformed Services University of the Health Sciences OMR, and the University of Maryland Occupational Health Program.

The teaching capacity of the program has been enhanced by the increased involvement of Dr. Carrie Dorsey, assistant professor at the University of Maryland and a key preceptor in the four-month clinical rotation. We have expanded our elective rotation opportunities to address areas of emerging importance, such as health promotion and management and disaster preparedness, and Dr. Brian Schwartz has developed a new MPH concentration in global sustainability. Dr. Weaver co-chairs the ACOEM Outreach Workgroup and is a member of the ACOEM Task Force on

OEM Education, and she is working with a JHU resident on outreach strategies and surveys to be sent to OEMR directors, residents and recent graduates.

Occupational Injury Epidemiology and Prevention Program (Prof. Susan Baker, MPH)

This marked the final year of Prof. Susan Baker's directorship of the Occupational Injury Epidemiology and Prevention program. According to plan, Dr. Keshia Pollack will assume the directorship. Prof. Baker and Dr. Jim Weeks will continue as core faculty members of the program, joined by Dr. Renan Castillo, a former trainee who was recently appointed to a tenure track position. In addition, 13 other faculty serve as program advisors or preceptors – including former NIOSH trainee Dr. Kristin Archer, who recently began a faculty position at Vanderbilt (retaining an adjunct affiliation with Johns Hopkins and the OIEP program).

Dr. Pollack is well positioned to take on the leadership of the program, having been mentored by Prof. Baker and having demonstrated a highly productive research and teaching record. In addition to instructing the course *Epidemiologic Methods in Injury Control* and coordinating a seminar series, Dr. Pollack was recently awarded a \$1 million grant from the Department of Homeland Security to explore health and wellness among firefighters, has presented at several scientific meetings, and has had three papers accepted for publication. Over the course of this year, OIEP core faculty have produced 12 papers. Interdisciplinary projects include a study to improve the case management of low back pain patients insured by the Injured Workers Insurance Fund (IWIF) of Maryland, and Drs. Castillo and Archer have a project currently under review with the Orthopedic Trauma Association (OTA) to develop and pilot test a multidimensional pain instrument for use in the clinical setting.

NIOSH funding was reduced to one-third when NIOSH discontinued the Injury Research Training Program Initiative; as a result, program recruitment has suffered. Two doctoral students were enrolled in this program during this period; one of these students graduated in May 2008. As the planned program director, Dr. Pollack is making student recruitment a priority.

Biomarkers of Occupational Exposure and Susceptibility (Paul T. Strickland, PhD)

The revised Biomarkers of Occupational Exposure and Susceptibility program was formally re-reviewed and awarded full funding for the remaining four years of this funding cycle. With bridging funds from NIOSH, we have maintained program continuity and continued to recruit new doctoral candidates. The program was also recently reviewed and enthusiastically supported by the external advisory committee.

Seven PhD students were enrolled in this program (and three graduated) during this period. Recent graduates have successfully transitioned to full-time employment at the Department of Occupational Safety and Health in Thailand and Westat Research Corporation in Bethesda, Md., and one is a postdoctoral research fellow in the Department of Molecular Biology in the Johns Hopkins School of Medicine. NIOSH support has helped leverage independent support for fees and doctoral research, including an EPA STAR fellowship and a Center for a Livable Future grant to study dietary confounders of combustion product exposure biomarkers.

BOES faculty demonstrated a high level of research productivity during this period, as evidenced by published papers, review articles and book chapters (many that include students as authors),

which are augmented by numerous presentations at national and international conferences and participation on national and international professional committees. We have added two faculty with expertise in proteomics, genomics and bioinformatics, and, to further enhance BOES faculty expertise in these areas, we have recruited three new contributing faculty from the Department of Environmental Health Sciences.

Pilot Project Research Training Program (Peter S.J. Lees, PhD, CIH)

We continue to offer the Pilot Project Research Training Request for Proposals to all NIOSH-supported institutions and other institutions engaged in occupational safety and health research in Region III. This year, the RFP was distributed to 36 individuals at 18 different institutions. In response, 19 applications were received – seven from junior faculty and doctoral students from Johns Hopkins, and 11 from the following universities: West Virginia University School of Medicine (two); the University of Pennsylvania School of Medicine (one); the University of Maryland School of Nursing (two); Virginia Polytechnic and State University (two); Towson University (two); the Uniformed Services University of Health Sciences (two); and the Johns Hopkins Bloomberg School of Public Health (seven). In addition, we received one application from the newly-formed University of Maryland School of Public Health. Four proposals were funded: *An in vitro Model of Human Intestinal Transport of Nanoparticles*; *Determining the Kinetics of Blood Mn after Exposure to Welding Fume*; *Occupational Exposure of Bus Drivers to Volatile Organic Compounds (VOCs) and Particulate Matter (PM_{2.5})*; and *Cadmium Exposure, Metallothionein Levels, and Kidney Disease in a General Motors Company Assembly Plant*.

Continuing Education and Outreach (Mary Doyle, RN, MPH, COHN-S/CM)

Several examples of ERC outreach efforts – many of which were coordinated with the Continuing Education program – are listed in the above academic program sections. In addition, Ms. Mary Doyle has fostered strong relationships with professional organizations, resulting in activities such as co-sponsorship of the Fifth Annual Mid-Atlantic Regional Conference on Occupational Medicine, the ASSE/AIHA Professional Development Conference, and the upcoming Occupational Health Conference 2008 (with four regional AAOHN chapters). The program also presented a two-week *Principles of Environmental Health* course for sanitarians (in-training) and other occupational/environmental health professionals. As part of our new Hazardous Substance Training program, we continue to partner with local sections of the Academy of Certified Hazardous Materials Managers (ACHMM) to develop professional continuing education programs. Courses developed for regional public employees included *Hazard Communication Awareness* and *Workplace Violence Awareness*. During this period, we offered 33 courses to a total of 1,061 trainees.

Summary

During this reporting period, the Johns Hopkins ERC successfully accomplished its mission of providing professional and research training and continuing education and outreach in the field of occupational safety and health – sustaining and even surpassing our tradition of excellence in the core ERC programs. Student recruitment remains a priority, with specific attention to recruiting minority students. Dr. Sheila Fitzgerald is leading these efforts on behalf of this ERC, in coordination with the school diversity officer. Additionally, we are constantly exploring

additional sources of student funding. The support provided by NIOSH funding is vital to sustaining and growing our programs, and allows us to leverage funding from other sources.