

**SUNSHINE EDUCATION AND
RESEARCH CENTER FOR
OCCUPATIONAL SAFETY AND
HEALTH**

**ANNUAL REPORT
July 1, 2005 – June 30, 2006**

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Introduction and Executive Summary

A. Major Accomplishments

The 2005-2006 year was another successful year for the Sunshine ERC. One major notable was the funding of the Occupational Health Psychology program by NIOSH. We are excited about the success of this application. Along with the other ERC programs, the OHP program area will be very beneficial to the continued success of the ERC.

Research conducted at the Sunshine ERC has continued to grow. The Breath Lab has continued to be a success in the research area, and has continued to expand in its research abilities. The numerous research projects conducted in the Breath Lab have led to a number of presentations at national conferences (ATS, ACOEM, CCP). Research from the lab also produced two published journal articles, two submitted articles and five grant applications submitted. Research in the Sweat Lab has progressed with continued work on a Pilot Project by a Medical College faculty member.

The ERC has made an effort to expand the role of R2P with partnerships with entities in the community and at the University of South Florida. A firmer partnership with the USFSafety program has boosted our ability to incorporate R2P into our trainee programs and our continuing education/ outreach programs.

Diversity recruitment has become a renewed focus of the ERC. One such initiative is the partnership with Florida International University. This agreement in principal to cooperate will allow us to cooperate in teaching, research and services. We have also agreed to share offerings in the IH and OS tracks. This will open up large Latino population to USF and expand our diversity recruitment efforts.

The HST/CE programs continued to be a success. With each passing year there continue to be an increase in the number of participants in our programs. We are also utilizing impact and needs assessments to target topics of interest for our participants and tailor our programs to meet their needs.

B. Significant Changes since 2004-2005

No significant changes have occurred since 2004-2005.

C. ERC Website

Sunshine ERC's web site: <http://publichealth.usf.edu/erc/>

Department of Environmental and Occupational Health's Programs: http://publichealth.usf.edu/programs_offered.html#eoh

Department of Environmental and Occupational health: <http://publichealth.usf.edu/eoh/>

Department of Environmental and Occupational Health Directory: <http://hsc.usf.edu/publichealth/eoh/faculty.html>

University of South Florida's College of Public Health: <http://health.usf.edu/publichealth/>

Program Progress Reports

Center Wide Activities Stuart Brooks, MD

The following progress report covers notable accomplishments and features of the Sunshine ERC for the last fiscal year (05-06). Because the Occupational Health Psychology program has just started (July 2006), it will not be included in the following progress report.

A. Administrative Core

The leadership of the Sunshine ERC has not changed during the last reporting period. Stuart Brooks and Yehia Hammad are the Director and Deputy Director, respectively, with Diana McCluskey serving as the Executive Director. During the past reporting period the Executive Committee also included the directors and deputy directors of the training programs (IH, OHN, OMR, OS) plus CEO.

The Board of Advisors met quarterly to discuss the upcoming competing application.

B. Outreach

Outreach is an important part of the Sunshine ERC programs with service to professional organizations and in the local community. In the past project period; the faculty have sat on national committees, study sections for federal agencies, and planning committees for national conferences. Volunteer lectures are provided in academic courses at different educational institutions and at statewide and national conferences. With respect to the community, faculty members had an open door policy and took phone calls on questions related to their discipline.

For OM, Drs. Brooks and McCluskey provide volunteer lectures at conferences around the state. For example, Dr. Brooks recently lectured at a conference for prison wardens on TB in the occupational setting. Dr. McCluskey delivered presentations on bloodborne pathogens, exposure assessment, occupational exposures and toxicology at numerous conferences around the state. Dr. McCluskey also provided walk-throughs for different companies, followed by a lecture on an important topic. For example, during the project period he went to Formosa Plastics in Texas for a walk through and provided a lecture to employees on *Benzene and the Risk of Brain Cancer*.

For IH and OS, Drs. Bernard, Mlynarek and Hammad spend a significant amount of time providing input to individuals in the community on mold, indoor air quality concerns, ergonomics, heat stress and sampling. Dr. Bernard's website for ergonomics and physical agents provides free tools for individuals visiting his web site that they can download to help as they examine issues in ergonomics, heat stress and physical agents. It generates about 15,000 hits per year with many requests to use the material in other training programs and within a plant or company. Dr. Bernard is the current chair of the ACGIH Physical Agents TLV Committee.

Dr. Burns representing OHN has an active outreach effort as well. She serves on professional committees and associations. For example, Dr. Burns serves as chairperson of the Florida Westcoast Chapter of AAOHN Membership Committee. In this role, the chapter has received 3 awards from the state and national AAOHN associations for recruitment of new members and retention of current members in the professional association. Dr. Burns participated in Governor Bush's Expert Committee 2005-2006 for "Homeland Security: Avian Influenza Epidemic Table Top Exercise for the State of Florida.

Many of the Needs Assessment activities of the ERC were managed by the Continuing Education and Outreach function and thus reported here. We have been able to tailor the programs to what individuals in the OSH fields would find beneficial. In the past, it has been challenging to successfully have a large number of trainees complete the forms, even though participation numbers were high. During the 2005-06 year, the CE team piloted a plan where trainees were offered incentives in the form of a drawing at the end of each CE course but not conferences. For the most recent ERC/ Florida Safety and Health/Workers' Compensation Institute conference, a half page evaluation/information collection form was designed. As an incentive, a series of several drawings with excellent prizes was used to encourage participants to complete the form.

C. Diversity Recruitment

Recruitment and diversity recruitment are similar issues for the Sunshine ERC. While the OHN program (and OHP) has shown good minority representation among the students, the IH, OMR and OS have been less successful. The traditional recruitment from representation at undergraduate fairs, web site hits and attending professional conferences with booths was steady throughout the reporting period.

Two new initiatives were also undertaken. One was to start offerings for undergraduates and to build links with Florida International University. The undergraduate effort has been discontinued and will be re-constituted in 2007. In early 2005, the leadership of the public health programs at USF and FIU (Florida International University) made an agreement in principle to cooperate in teaching, research and service. After two other meetings with the chair of EOH at FIU, we have targeted shared offerings in the IH and OS tracks as the starting point. This opens up a large Latino population for USF. There has also been some collaboration between USF EOH and its sister department at the University of Puerto Rico. From this, one PhD student in IH has been recruited.

D. Interdisciplinary Coordination

The major foci of interdisciplinary activities within the Sunshine ERC are shared classes and NORA seminars. At the core class level, all four disciplines must take four of the core classes. This gives the students the opportunity to see OHS in the broader public health models. There are nine other classes in which at least two of the disciplines attend and in most classes it is required of three of the disciplines. Class projects attempt to mix the disciplines so that they interact outside of the classroom and the class presentations are another opportunity for shared view points.

The NORA seminars are held at least six times in the Fall and Spring. The presentations are either research supported by the pilot projects or research by faculty. These are interspersed with environmental health seminars to broaden the perspective of the students.

E. Pilot Projects

The pilot project programs began in 1999. During the 2005 to 2006 cycles, there were 5 awards. The awardees and their projects are as follows: Krishna Harohalli, PhD- Development of an Occupational Airways Disease 3-D Epithelial Cell; Eric Coris, MD- Heat Illness Symptomatology in Exhaustive Repetitive Work Under Heat Stress; William Johnson, PhD- Evaluating and Reducing Risk of Exposure in Florida Fern Farmworkers; Steve Mlynarek, PhD- Filtration Efficiency of Surgical Masks; and James McCluskey, MD, MPH- Antioxidant Levels and a Marker of Oxidant Damage in Exhaled Breath Condensate and Induced Sputum Following an Inhalation Exposure to Ozone in a Young and Older Population of Normal Individuals

Seven of those awards were used to fund the research projects of five doctoral students and one MSPH thesis (Wan). Four of the PhD students (Pourmoghani, Dotson, Krause, Wan) have graduated. Six of the awards were made to ERC junior faculty to develop an area of interest. Five of the awards were made to other USF faculty and students to help build a wider collaboration. One of those was for a PhD student in Industrial and Organizational Psychology, who has graduated. This was one of the activities that help develop the OHP program. One was to support a PhD student at the University of Miami (a TPG) who also graduated. One of the other USF awards was to a physician interested in heat stress and who be an investigator on research projects with Thomas Bernard.

F. NORA

The NORA funding is used to invest heavily in a strategic direction for the Sunshine ERC. Based on the ERC commitment to human laboratory research, the interests and skills of the faculty in the ERC for pulmonary disease, and the need to take advantage of state-of-the art methods, the leadership of the ERC decided to invest in the Breath Lab. The Breath Lab is one of the three NORA Research and Research Training Laboratories at the Sunshine ERC. The lab addresses NORA priority areas of occupational asthma and susceptible populations. The capital and labor support for this kind of direction setting research required a considerable investment that only the NORA funding of the ERCs could

provide. It is a state-of-the-art facility that uses noninvasive methodologies to measure markers in exhaled breath gases and exhaled breath condensates that reflect sub-clinical acute lung injury. A complementary commitment was made by the occupational medicine residency program faculty to develop their research areas under the Breath Lab umbrella and to require the OM residents to do their research in the lab. The laboratory has also been used by IH and nursing students as well as Pulmonary Fellows. The Breath Lab focuses on occupational asthma, COPD and mechanisms of acute irritant inhalation injury. As of July 2006, seven residents completed MSPH thesis research in the lab. IH doctoral students work in the lab.

Assessment methods developed and used in the Breath Lab include

- Capsaicin for Irritant (Cough) Response
- Human Ozone Exposure
- Exhaled Breath Nitric Oxide (ENO)
- Exhaled Breath Condensate pH and Ammonia
- Impulse Oscillometry: Impulse Oscillometry System (IOS)
- 8-Isoprostane
- Nerve Growth Factor in Induced Sputum
- Exhaled Breath Condensate and Sputum Glutathione

G. Notable Activities in the Past Performance Period

ERC joined with USF SafetyFlorida addressing safety during hurricane clean-up

OMR had over \$1,000,000 of extramural support from sources other than NIOSH to support OM Residents.

- A. Pilot Research Projects
- B. Program Director: Yehia Hammad, Sc.D.
- C. Program Description

Background/Overview

The USF Sunshine ERC first received funds to support the Pilot Research Project (PRP) Program (PRP) in 1999. Since that time pilot research projects have been awarded every year. A listing of these projects, plus the project abstracts is provided in the appendices. In addition, a listing of all projects since 2001 and how they relate to NORA is provided in the appendices. The goals of the PRP are to:

- A. Increase research opportunities in the field of occupational safety and health (OS&H),
- B. Encourage interdisciplinary research and interaction by trainees and faculty through the funding of NORA pilot research projects,
- C. Provide the opportunity for trainees and faculty to research new and unexplored areas of OS&H,
- D. Provide initial funding for OS&H related research projects that will result in scientific publications, presentations or further grant applications,
- E. Encourage TPGs in the region to apply for PRP funds on OS&H topics, and
- F. Increase research that will result in practical applications of research to practice

The objectives of the PRP Program are to:

- 1. Announce the availability of PRP funds to support NORA related research topics
- 2. Encourage applications from doctoral trainees, junior faculty and faculty located outside of the Sunshine ERC pursuing a new area of research that is related to OS&H/NORA.
- 3. Evaluate applications based on their relation to NORA.
- 4. Evaluate applications on the possibility of further funding based on the results of the initial pilot study.
- 5. Provide funding of dissertation research for doctoral trainees in the OS&H field.
- 6. Award funding to junior faculty to gather initial data for a grant application once the pilot project is completed.

Program Plan

In May of 2005, letters and applications were mailed out to institutions within region IV to solicit applications for pilot projects. The applications were evaluated on their scientific feasibility, how they related to NORA, organization, potential for impact on scientific knowledge and opportunity for future research. Members of the Sunshine ERC Executive Committee review the pilot project applications. When a faculty member has submitted a pilot project application, he or she withholds from the voting process on the pilot projects. Funding of projects is maintained in budget spreadsheets, as is a record of the progress of the projects.

Faculty reputation and strength

Dr. Yehia Y. Hammad serves as the program director and Mr. Alex LeBeau as the Program Coordinator. Dr. Hammad has had over 33 years of research experience that covers nationwide Industrial hygiene surveys and epidemiologic investigations of workers. Mr. LeBeau serves as a liaison between Dr. Hammad and the Awardees. Currently Mr. LeBeau is pursuing a MPH in Toxicology. He brings in a background of microbiology and animal science that will assist in his coordination of the projects. Faculty research strengths are listed below.

Y. Hammad, ScD	Indoor Environment, Industrial Hygiene, Air Sampling and Analysis, Respiratory Protective Equipment
T. Bernard, PhD, CIH	Ergonomics, IH, Personal Protective Equipment, Work Physiology
C. Bouchard, MPH, MS, ARNP COHN-S	Occupational Health Services, Clinical Worksites

S. Brooks, MD	Occupational Medicine, Occupational Asthma
C. Burns, PhD	Engineering, Ergonomics and Bioengineering
J McCluskey, MD MPH	Toxicology, Causality Assessment, Occupational Infections, Indoor Air Quality
S. Mlynarek, PhD, CIH	Aerosol science and technology and it's industrial hygiene application
R. Haight, MD, MSPH	Sports Medicine, Ergonomics, Biostatistics
P. Rentos, PhD	Characterization of respirable silica dust

Collaboration with regional research training institutions

The pilot projects are administered through the Sunshine ERC at the University of South Florida. However, projects were funded for research at the University of Miami, the James A. Haley VA Hospital as well as the University of South Florida. All TPGs and ERCs in the region are notified of the availability of funding when the announcements are released. In addition, members of the ERC advisory committee and professionals at other universities that work in occupational safety and health area also notified of the funding.

Program evaluation

Each awardee was expected to submit a progress report midway through the funding cycle. Prior to a project being selected, the Internal Review Board at the university must either approve the IRB application (for projects involving human subjects) or declare that the project is exempt of the IRB requirement. In addition, pilot project awards are intended to act as seed money, so that awardees can use initial data collected to apply for larger research grants. A final report on these projects will be due December 20, 2006.

D. Program Activities and Accomplishments

Summaries

During the 2005-06 year, 5 projects were funded. One pilot project awardee (Wanda Rosado-Proactive ergonomic behaviors approach: Effects on WRMSD) from the 04-05 year was given an extension to complete her project (due to extenuating circumstances in the transfer of funds). Projects awarded were as follows:

Krishna Harohalli, PhD: Development of an Occupational Airways Disease 3-D Epithelial Cell - \$15,000
Occupational asthma represents one of the major causes of occupational health morbidity and disability. Most previous understanding of occupational asthma has relied on human challenge or epidemiologic studies in the workplace. Few studies have utilized *in vitro*-models to study the condition. The investigator plans to develop a novel 3-dimensional culture method for growing human epithelial cells and test its efficacy for examining environmental/occupational exposures that produce airway injury. Future studies will examine such agents such as toluene diisocyanate (TDI) a major cause of occupational asthma. However, as an initial pilot study, this investigation will begin with a study of ozone. Our goal is to develop a 3D cell culture model to better understand the molecular consequences of ozone exposure in normal and asthmatic bronchial epithelial cell.

Eric Coris, MD: Heat Illness Symptomatology in Exhaustive Repetitive Work Under Heat Stress – \$14,534

Heat related illness is a common industrial and environmental malady commonly related to exertion in hot, humid environments. Several works have demonstrated symptomatology related to impending or present heat related illness in exertional trials, particularly during heat acclimation trials. We propose to further prospectively characterize symptomatology of heat related illness as it develops during exertion in the controlled, monitored environment of a heat lab.

William Johnson, PhD: Evaluating and Reducing Risk of Exposure in Florida Fern Farmworkers – \$11,145

Pesticide exposure remains an occupational hazard for migrant workers in Florida. Exposure risks include acute poisoning to possible neurological debilitation and cancer. Research in other populations of migrant workers indicates tht pesticide workers may bring pesticide residues from agricultural areas treated with pesticides into their households. This may increase the rick of pesticide exposure to the farm worker families who already live in a close proximity to the treated areas.

The focus of the proposed study will be to determine the most effective means to establish rapport and trust with farmworkers and their families, local community-based organizations, and representatives of the farm industry in an effort to involve all stakeholders in the research process. Two families will be selected for the initial sampling process. The collected samples will be analyzed for pesticides, and the most common pesticides in the samples will be characterized. A report and other educational material for each participating family will be provided in order to decrease future pesticide exposure.

Steve Mlynarek, PhD: Filtration Efficiency of Surgical Masks – \$2,250

Surgical masks are intended to be used to prevent transmission of disease from a health care worker to a patient, but are often relied upon by health care workers for their own protection. This study will characterize the aerosol collection efficiency of surgical masks. Two types of commercially available surgical masks, two flow rates (45 and 85 lpm), and three sizes of aerosol (polystyrene latex beads: 0.5, 1, 2 μ m) will be used. The specific aims are to measure the collection efficiencies of these masks for the various particle sizes at the two flow rates.

James McCluskey, MD, MPH: Antioxidant Levels and a Marker of Oxidant Damage in Exhaled Breath Condensate and Induced Sputum Following an Inhalation Exposure to Ozone in a Young and Older Population of Normal Individuals - \$10,479

In this study, participants will be exposed to ozone generated in a laboratory setting. Persons who choose to take part in the study will be exposed to 0.20 ppm ozone. Ozone will be generated from a medical grade oxygen and the mixed into air that is filtered for organic components, particulates and baseline ozone from ambient air. This level of exposure was chosen because it is frequently reached in many areas of the United States on a daily basis. In the proposed study, a younger (18-35 years) and older (55-80 years) population of normal individuals will be evaluated. Their pulmonary function will be assessed, as will depletion of antioxidants in the bronchial airways and any resultant oxidant damage. This study is being undertaken to further define the anti-oxidant capacity of normal individuals, as well as, document whether the defenses are adequate to protect the airways against a common environmental condition.

E. Program Products

Publications List

- Brooks SM, Haight R, Gordon R. Age does not affect pH and ammonia levels in exhaled breath condensate LUNG (in press, LUNG, 2006)
- Brooks SM, Spaul W, McCluskey J. The spectrum of building related asthma CHEST 2005; 128:1720–1727.
- Brooks SM, Truncale T, McCluskey J Occupational and Environmental Asthma. Environmental and Occupational Medicine. Rom WN (Ed). Lippincott-Raven Publishers (in press, 2006)
- Drinkaus, P, D. S. Bloswick, R. Sesek, C. Mann, T. Bernard. Job level risk assessment using task level Strain Index scores: A pilot study. *International Journal of Occupational Safety and Ergonomics* 11:141-152, 2005
- Gautrin D, Bernstein IL, Brooks SM, Henneberger, P. Reactive Airways Dysfunction Syndrome, or Irritant Induced Asthma. In: Asthma in the Workplace. Bernstein IL, Chan Yeung M, Luc-Malo J, and Bernstein DI (Eds). Marcel Dekker Publisher (in press, 2006)
- Gonzalez, N. W., T. E. Bernard, N. L. Carroll, M. A. Bryner, J. P. Zeigler. Maximum sustainable work rate for five protective clothing ensembles with respect to moisture vapor transmission rate and air permeability. *Journal of Occupational and Environmental Hygiene* 3:80-86, 2006
- Gordon R, Haight R, Brooks SM. Role of Age on Exhaled breath nitric oxide, LUNG (in press, LUNG, 2006)
- Tarlo SM, Malo J-L, et al. Perspective: An American Thoracic Society/European Thoracic Society Report. 100 key questions and needs in occupational asthma. AM Respir Crit Care Med. (in press, 2006)

F. Future Plans

The Sunshine ERC will continue with its successful Pilot Project Program. For the 2006-2007 year, we have 6 projects that are marked for funding.

Appendices

1. Typical Curriculum: **Not Applicable**
2. Updated data Tables 4a, 5, 12a, 12b, and 13 organized by program area (7/1/05-6/30/06) -**Not Applicable**
3. Publications by program area of faculty and trainees during the reporting period that have resulted, in whole or part, from ERC training grant support. Please specify all trainee authors by underlining their names. – **Not Applicable**

- A. Industrial Hygiene**
- B. Program Director: Yehia Hammad, Sc.D.**
- C. Program Description**

Historically, the Department of Environmental and Occupational Health's research and training revolved around five disciplines: (1) industrial hygiene, (2) occupational medicine, (3) toxicology, (4) and environmental health. With the recent increases in our budget from state funds and the ERC, several new programs are being developed by the new faculty members that were recruited in the Department. These programs include (1) risk assessment, analysis and management, (2) community air pollution, and (3) occupational safety.

The latter, developed by the Industrial Hygiene faculty in cooperation with the College of Engineering at USF, is of immediate significance to the various training programs offered in this ERC. Thus, the interactions with the Colleges of Medicine (occupational medicine) and Nursing (occupational health nursing) which have interdisciplinary training and research programs with the College of Public Health have been expanded to include the College of Engineering. The students in industrial hygiene make use of these opportunities to develop special skills in the other disciplines. In addition, some of the students avail themselves of further training in Research Methods, Biostatistics and Occupational Epidemiology, offered at the college, to improve their research capabilities.

Since its inception in 1985 to the present time, the industrial hygiene program has been growing at a rate that has surpassed expectations. It is the only program in the United States that is a part of an ERC, an OSHA 21 (d) Consultation Program (established in August of 2000, Dr. Hammad is Program Director) and an OSHA Training Institute (OTI, established in May of 2002, Dr. Hammad is also Program Director). In August 2000, USF became recipient of the State OSHA 21(d) Consultative Service Program (CSP) to small businesses. This is a \$2.1 million annual cooperative agreement designed to provide free occupational health and safety consultation to small private employers in Florida. There are 12 safety professionals and 6 industrial hygienists as part of the program. The program offers an important opportunity for students to gain practical and field experience in hazard identification and control and OSHA compliance issues. There is an ever-increasing interaction between OSHA 21(d) CSP, the ERC and OTI. Several members of OSHA 21(d) CSP professionals are participating in the expansion of specialty courses that are under development to expand the industrial hygiene and occupational safety course offerings, they also provide as guest lectures in the current courses as well as in continuing education offerings. Industrial Hygiene and Occupational Safety students have actually developed a new course for the OTI program. The extensive publications and training video libraries and a vast inventory of industrial hygiene equipment of the CSP and OTI are also available to the program students. The students also benefit from joining the OSHA 21(d) CSP professionals in field visits. The program also benefits from the guidance and advice provided by the members of the Industrial Hygiene Program Advisory Board. Its members represent industry, labor, national and local organizations as well as governmental agencies.

Academic training for the Industrial Hygiene program has been supported by NIOSH since 1985, as a Training Project Grant in its earlier stages and more recently as part of the current ERC. Students' evaluation of courses and student comments included in exit questionnaires at the time of graduation, as well as comments from alumni and members of the Center's Advisory Committee have all provided important feed back to the faculty of the program. In addition, the peer review associated with a NIOSH training grant and the ERC site visits, the industrial hygiene program participation in the Oak Ridge Institute for Science and Education (ORISE) Fellowship Program in the past, and accreditation by ABET-RAC in 1996 have also helped our self-assessments. The recognition associated with these activities provides a national visibility to our industrial hygiene training. The administration of the University and the College of Public Health strongly support the industrial hygiene program through the allocation of faculty time and salaries, financial resources for equipment, and dedicated space for laboratories and offices. Students studying industrial hygiene constitute about 40% of the master's students enrolled in the various programs in the Department. The department Industrial Hygiene faculty fosters interdisciplinary cooperation in both research and training within the department and between the Colleges of Public Health, Nursing, Medicine, Arts and Sciences (Chemistry, Biology and Psychology), Education (Physical Education) and Engineering. As a result, strong ties have been developed and exist now with these Colleges.

Yehia Y. Hammad, Sc.D. is a Professor in the Department of Environmental and Occupational Health. He has over 32 years in academia, including the University of Pittsburgh, Tulane University and USF.

He has directed the Industrial Hygiene Program at USF since he moved to Tampa in 1989. His research interests encompass many aspects of pulmonary disease; specifically, the development of new air sampling methods and technology and investigations of the health effects of airborne contaminants on the lung. He is also involved in the evaluations of indoor air quality and respiratory protective equipment. Dr. Hammad teaches INTRODUCTION TO INDUSTRIAL HYGIENE, INDUSTRIAL VENTILATION, ANALYTICAL METHODS IN INDUSTRIAL HYGIENE I (PHYSICAL AGENTS), AEROSOL TECHNOLOGY, ADVANCED INTERDISCIPLINARY SEMINAR IN PUBLIC HEALTH and RISK COMMUNICATION. He contributes to CONTROL ASPECTS OF INDUSTRIAL HYGIENE, ENVIRONMENTAL AND OCCUPATIONAL TOXICOLOGY, INDUSTRIAL HYGIENE ASPECTS OF PLANT OPERATIONS, ANALYTICAL METHODS IN INDUSTRIAL HYGIENE II (CHEMICAL AGENTS), BIOLOGICAL MONITORING IN ENVIRONMENTAL AND OCCUPATIONAL HEALTH and OCCUPATIONAL EPIDEMIOLOGY. In addition, he is an academic advisor and directs dissertations, and theses in industrial hygiene.

Dr. Steven Mlynarek, CIH, QEP is an Associate Professor. Dr. Mlynarek obtained his MSPH in industrial hygiene under the supervision of Dr. Hammad from USF in 1993 and his Ph.D. under the supervision of Dr. Morton Corn from Johns Hopkins University in 2000. Dr. Mlynarek joined the faculty at USF in the Fall of 2001. His research interests encompass several aspects of the evaluation of asbestos exposure, indoor air quality with special interest in indoor biological agents. He teaches the INDOOR AIR QUALITY COURSE, CONTROL ASPECTS OF INDUSTRIAL HYGIENE and ENVIRONMENTAL AND OCCUPATIONAL HEALTH (college core class); he participates in teaching INTRODUCTION TO INDUSTRIAL HYGIENE, and ANALYTICAL METHODS IN INDUSTRIAL HYGIENE I (PHYSICAL AGENTS). Dr. Mlynarek serves as an academic advisor and directs students MSPH theses and participates as a member of Ph.D. dissertations in industrial hygiene. Dr. Mlynarek has worked for the last four years on a continuing grant from the US D.O.D concerning bioterrorism response, with an emphasis on filtration efficiencies of non-woven materials, and on respiratory protection. In addition, he has worked for the last year on a CDC grant concerning parental exposures and resulting childhood brain cancers.

Program Faculty

The Program Faculty growth and success of the industrial hygiene program is the result of committed full-time and part-time faculty as well as the continued financial support of the USF administration and NIOSH. Program faculty provide continuous input and advice to the program director and deputy director. This synergism will continue and, as stated before, was expanded by the additional new faculty and funds allocated to the Industrial Hygiene and Occupational Safety Programs. The following faculty members are central to the continued success of industrial hygiene training:

Thomas E. Bernard, PhD, CIH, PE, CPE is a professor and chair of the EOH Department and Program Director of Occupational Safety. He teaches ENGINEERING SYSTEMS SAFETY and INDUSTRIAL ERGONOMICS, and has shared INDUSTRIAL HYGIENE-PHYSICAL AGENTS and CONTROL ASPECTS OF INDUSTRIAL HYGIENE. He contributes to INTRODUCTION TO INDUSTRIAL HYGIENE, ANALYTICAL METHODS IN INDUSTRIAL HYGIENE I. Dr. Bernard had responsibility for SAFETY MANAGEMENT PRINCIPLES AND PRACTICES for several years before Dr. Rentos was assigned the class. He was also one of the original co-instructors for the SAFETY AND HEALTH ADMINISTRATION course. Dr. Bernard has research programs in heat stress and strain (personal monitoring, stress evaluation, the effects of clothing and personal cooling) and in industrial ergonomics (exposure assessment methods). He advises IH students in their academic program and directs students MSPH theses and participates as a chair or a member of Ph.D. dissertations in industrial hygiene. **Ira S. Richards, Ph.D.** is an Associate Professor who is specialized in toxicology. He has active research interests in the effects of low-level exposures to industrial chemicals and has developed *in vitro* models to demonstrate effects of pulmonary irritants. He is also interested in the physiological responses of people to work stress and has collaborated with Dr. Bernard. Dr. Richards teaches ENVIRONMENTAL AND OCCUPATIONAL TOXICOLOGY, INDUSTRIAL TOXICOLOGY, and also teaches courses in anatomy, physiology and pathobiology in the college. He is an academic advisor and directs theses and projects in industrial hygiene. **Jay Wolfson, Dr.P.H., J.D.** is a distinguished professor in the department, Associate Vice President for Health Law, Policy and Safety, and Director of the Florida Health Information Center. He also serves as Director of the Sun-coast Center for Patient Safety Evaluation and Research, Co-Director of the USF/Stetson University Consortium for Law and Medicine, and Associate Director of the VHA National Patient Safety Center of

Inquiry. He has extensive experience and research in health policy issues and regulatory affairs. Dr. Wolfson teaches OCCUPATIONAL HEALTH LAW, ENVIRONMENTAL HEALTH LAW, and RISK MANAGEMENT. **Pete Rentos, Ph.D.** is an Associate Professor in the Department of Environmental and Occupational Health. He has 30 years of industrial hygiene experience through the Public Health Service and NIOSH. Dr. Rentos is responsible for outreach activities as well as industrial hygiene and safety courses. He teaches PRINCIPLES OF SAFETY MANAGEMENT and INDUSTRIAL HYGIENE ASPECTS OF PLANT OPERATIONS. He has been a major contributor to the development of the Occupational Safety program in cooperation with Dr. Roets and the faculty from the College of Engineering. In addition, he is an academic advisor and directs students' theses in industrial hygiene. Until about 18 months ago, **Philip Roets, Sc.D., CIH, CSP**, was an Associate Professor. Dr. Roets has extensive industry experience as well as a fundamental understanding of the role of government in occupational safety and health. Dr. Roets taught BIOLOGICAL MONITORING IN ENVIRONMENTAL AND OCCUPATIONAL HEALTH and ENVIRONMENTAL AND WORK PHYSIOLOGY. Dr. Roets also contributed to INTRODUCTION TO INDUSTRIAL HYGIENE, INDUSTRIAL SAFETY, and INDUSTRIAL HYGIENE – CHEMICAL AGENTS. Dr. Roets has developed the new course, SAFETY AND HEALTH ADMINISTRATION. This course is attended by industrial hygienists, occupational health nursing students and occupational medicine residents. Thus, this course has become one of the main activities for multidisciplinary interactions in the Center. He was an academic advisor and directed student theses in industrial hygiene. It should be noted that after the retirement of Dr. Philip Roets, the department has conducted an immediate recruitment plan for replacement of Dr. Roets. The finalists were recommended by the search committee to the Dean of the College for appointment selection and negotiations. It is expected that the new faculty member will be selected within about two months, that is, by the Fall of 2006.

Eugene Szonntag, Ph.D. is an Adjunct Associate Professor with a special interest in analytical chemistry. He has research interests in technology for monitoring low-level industrial pollutants. Dr. Szonntag teaches ANALYTICAL METHODS IN INDUSTRIAL HYGIENE II (CHEMICAL AGENTS) and INDUSTRIAL HYGIENE – CHEMICAL AGENTS. He is a frequent member of thesis committees.

Rene Salazar, Ph.D. is an Adjunct Assistant Professor. He teaches in many courses including INDOOR QUALITY, INTRODUCTION TO INDUSTRIAL HYGIENE and sits on a number of thesis committees. Dr. Salazar is participating extensively in the ERC CE courses. **Andrea Spehar, DVM, MPH, JD** is an Assistant Professor. She is contributing to the program in the areas of Risk

Communication and Occupational Health Law as well as continuing education courses. **Paul McCright, Ph.D.** is a lecturer in Industrial and Management Systems Engineering in the College of Engineering and an assistant professor in the College of Public Health. For the College of Engineering, his teaching responsibilities include graduate courses in engineering management, occupational safety, construction safety, work physiology and biomechanics, and work design; and undergraduate courses in ergonomics, occupational safety, construction safety, and engineering economics. Research interests include ergonomics, work design, environmental issues and white-collar performance parameters. He teaches OCCUPATIONAL SAFETY ENGINEERING, which is required, CONSTRUCTION SAFETY ENGINEERING and WORK PHYSIOLOGY AND BIOMECHANICS, which is an alternative offering for INDUSTRIAL ERGONOMICS. The industrial hygiene faculty is complemented by other Departmental faculty including **Dr. Stuart M. Brooks**, a Professor of Occupational Medicine. He teaches OCCUPATIONAL MEDICINE and lectures in ENVIRONMENTAL AND OCCUPATIONAL HEALTH (college core class). Dr. Brooks sits on a number of Industrial Hygiene thesis and Dissertation committees.

Dr. Noreen Poor is an Associate Professor of environmental health and teaches PRINCIPLES OF ENVIRONMENTAL SAMPLING, FATE OF CHEMICALS IN THE ENVIRONMENT, and ANALYSIS OF WATER AND WASTEWATER, COMMUNITY AIR POLLUTION, AIR POLLUTION CHEMISTRY, AIR POLLUTION MODELING and AIR POLLUTION MONITORING. Dr. Poor is responsible for the development of a new program in community air pollution. **Dr. Raymond Harbison** is a Professor of toxicology and work with advanced standing and doctoral students in industrial hygiene. Dr. Harbison is the Director of the HSTP.

Service is important because it is an indicator of what the faculty has returned to the profession and community. Dr. Hammad has served as a consultant to national, industrial and governmental organizations including, NIOSH. He has served as an editor and ad hoc reviewer for several US and European journals and books. He participates in national and international meetings on pulmonary

disease. Dr. Bernard serves as a consultant to a number of industries and is a member of two editorial boards. In addition, he is a member of protective clothing committee for the American Industrial Hygiene Association. Dr. Bernard also presented professional development courses on heat stress, chemical protective clothing, ergonomics at the AIHC&E and elsewhere. He is also the current Chair of the TLV Committee on Physical Agent. Dr. Richards serves as a consultant to the community in a number of ways. Very important among those are the Tampa Bay Poison Center, the Florida Department of Environmental Protection, City of Tampa Fire Department and the American Lung Association. Dr. Rentos participates regularly with the local section of the ASSE, in recognition of his efforts that have contributed financial and in-kind support to the program.

D. PROGRAM ACTIVITIES

One of the distinguishing characteristics of the College of Public Health in general and the industrial hygiene program in particular, is the fact that most of the classes are held at night. This serves the local professional community well because students can continue to work and attend classes. Usually these students have experience and expertise in a certain area of industrial hygiene and the program allows them to broaden and strengthen their base. A further advantage of having these students is that they provide the "real world" examples and commentary during the various classes that aid other part-time and full-time students. This student base has been constant at about 20-25 individuals. The usual number of full-time students in industrial hygiene is about 8-10. The NIOSH funding will allow us to increase the enrollment. The principal goal of the industrial hygiene training program is to furnish a high quality educational experience to students who have career objectives in the recognition, evaluation and control of workplace hazards. The program is intended to meet the critical need for this specialty in the State of Florida, the southeastern United States and nationally.

Training Program Evaluation

The evaluation of the Industrial Hygiene training program has been an ongoing process from the time of its inception in 1985. Evaluation of the program comprises several components that include peer review during site visits, peer review by invited consultants, feedback from the Advisory Committee, current and former trainees and finally self assessment by the faculty members of the program. As stated above, the comments from site visits (CEPH, NIOSH and ABET) have constituted a realistic, well informed and constructive criticism of the program that was continuously considered and implemented. Similarly, evaluations conducted during visits by consultants to the program such as Dr. Morton Corn, Dr. Roy Buchan and Dr. Nurtan Esmen have also been valuable. Course evaluations by students are required by USF at the end of each course. They are taken very seriously because the course material is evaluated while it is fresh in the students' minds. It should also be noted that these evaluations and comments are taken into consideration during the promotion and tenure process of the faculty. Comments from graduates obtained at exit interviews or through need assessment surveys present a different but interesting point of view. These reflect the graduates' opinions about how the program has prepared them for their professional careers. Finally, comments made by members of the Advisory Committee are always solicited both during and outside of their meetings. They represent a different point of view that reflects the varied experience of the members. While these evaluations are valuable most of the time, sometimes they are limited due to the fact that most members did not graduate from the program. Therefore, during one of the recent meeting, the faculty presented the various components of all programs in detail to the committee members in order to familiarize the members with the content of the courses to attain maximum and most efficient evaluations. Faculty members of the program meet regularly, and on an ad hoc basis, to discuss feedback from all of these sources and to review possible ways of their implementing suggestions. It is the intention of the administration of this program to continue this practice and expand it whenever possible.

Trainee Candidates:

The program follows the policies and standards of admission of USF, the College and the Department with respect to student qualifications. The students are required to have a GRE of 1000 for the MSPH, 1100 for the Ph.D. and a minimum of a 3.0 grade point average. In the Department, we emphasize a

technical degree or students with at least 60 hours of science. For industrial hygiene, we consider the student's experience and conduct an interview to assist with decisions regarding admission.

The program's major emphasis is on the MSPH degree used to train technically competent industrial hygienists to be effective professionals to satisfy national need as well as the needs of the southeast. At the present time, two students are supported by NIOSH fellowships at the MSPH level. They are Mr. Adam Marty and Mr. David Saly. MSPH students have sufficient electives to expand their knowledge in safety management, industrial hygiene, environmental health, or toxicology. A few select students are admitted into the Doctor of Philosophy (Ph.D.) program with the intent of developing specialists to address research problems associated with occupational health in the south. The Ph.D. research training program is designed to strengthen the student's base in industrial hygiene and to allow specialization in an area of particular interest such as bio-aerosols in the indoor environment. Currently, there are five Ph.D. students, two of them are supported by NIOSH fellowships; they are Luis Pieretti and John Smyth.

The Ph.D. program in Industrial Hygiene has grown from the base of a strong master's program. The increased number of elective courses expands the knowledge of industrial hygiene while the advanced courses described above provide a framework for understanding the limits and needs of research in occupational health. Specialized training in other sciences is available to meet the individual needs of the student. Course sequence and requirements are shown in TABLE II, in the APPENDIX. So far, ten students have graduated from the Ph.D. program in Industrial Hygiene at USF. They include Drs. Greg Deal, Rene Salazar, Robert Walton (U.S. Air Force), Richard Hartman (U.S. Air Force), James Poole, Hazel Barclay, Mehdi Pourmaghani, Christina Luecke and Margaret Wan, and Victor Caravello (U.S. Air Force).

Doctorate students currently enrolled in the industrial hygiene program include John Smyth, Luis Pieretti, Daniela Schiopu, Nancy Hitchins and Ronald Long.

Students can apply through the College of Public Health Admissions Committee for acceptance as a doctoral candidate. They must meet the admission criteria required by the College. However, before acceptance into the doctoral program, each candidate approaches a potential advisor and thesis research chairman. If both can agree on important parameters, and the faculty member is willing to accept the candidate as a student, then the student becomes a doctoral candidate and a doctoral committee is formed. The committee meets regularly with the doctoral student in order to gauge academic and research progress and provide advice. The two important steps are the initial qualification stage, which requires completion of necessary course work and passage of an examination. Then the student enters the dissertation stage, and a research project is selected, and the research begun. The College of Public Health has established guidelines for the completion of the Ph.D. degree. Based on the reviewers' recommendations during earlier site visits, a formalized program has been developed for the Ph.D. in Industrial Hygiene.

The USF doctoral requirements specify that each student completes 90 credit hours beyond the B.Sc. degree including, at least, 17 hours for the doctoral dissertation. The Structure of the program for Ph.D. students in industrial hygiene is presented in TABLE II, in the APPENDIX.

There are several research focus areas in the Doctoral Program that fall within particular expertise and interests of the Industrial hygiene and Occupational Health faculty. These areas are with the NIOSH National Occupational Research Agenda (NORA):

MINORITY RECRUITMENT AND RETENTION PLAN

The Industrial Hygiene program has relied for recruitment in general and minorities in particular, on advertisement in the various campus publications, and also on personal contacts with the faculty of Historically Black Colleges and Universities, and faculty of Florida A&M University, Florida International University and the University of Puerto Rico. The last has resulted in the recruitment of Mr. Luis Pieretti, who is currently enrolled in the Ph.D. program and is supported by a NIOSH fellowship. With regard to retention, we make every effort to retain any student that has matriculated into the program. Diversity programs are active at USF in general as well as the Health Science Center.

PLAN FOR INSTRUCTION IN THE RESPONSIBLE CONDUCT OF RESEARCH

There are three venues for training in the responsible conduct of research. The first is during student orientation when all students in the College of Public Health receive IRB training for IRB certification, including investigator responsibilities, and also HIPAA training. All students are also required to maintain their IRB certification with annual training and recertification. The second opportunity is in the

core epidemiology course in which the first lecture is devoted to ethical research. The lecture is provided by a representative of the IRB and the students are given the Belmont report to read. The third opportunity is for those students who work on a research project involving human subjects and for those who have human subjects as part of their project effort. While this third opportunity is not taken by all students, those who do, get first hand experience in the proper methods to obtain informed consent, interaction with human subjects and/or handle sensitive data. In the Spring of 2006, the College introduced a new Advanced Seminar on Public Health Research Ethics. Students who have special interest in the subject are encouraged to attend. The syllabus of this course is included with the rest of the syllabi in this application.

E. PROGRAM PRODUCTS

The data are presented by the students name, (year entered program, degree sought, mentors name), and a brief description of the emphasis of the work performed.

F. FUTURE PLANS

The program has evolved as a result of input from alumni, the ERC Advisory Committee, student exit interviews, course evaluations, and peer review by consultants. As a result, course content has been modified to reflect the current state of practice. Increased emphasis on interdisciplinary work is emphasized to students, and more course assignments are based on this teamwork approach. For example, in the industrial hygiene course, the two hour lecture on barotrauma was replaced by two hours on biological hazards of the workplace, because the latter currently is a more relevant topic, in light of international experience with SARS and bird flu, and the indoor environment in Florida. Additionally, there is more cooperation with the OSHA 21d consultation program, where students now make site visits with these consultants, and members of the consultation team participate in teaching of the industrial hygiene courses. Another way in which students interact with the 21d program is through using the 21d database that has developed over several years, to examine patterns and rates of occupational illness and injury in Florida. Students are also able to attend the courses offered by the OSHA Training Institute (OTI), and one student developed a course on agricultural safety operations for the OTI. Project selection for the Masters Degree theses has evolved to include consideration of research to practice (r2p) potential. For example a recent graduate completed a thesis on nurse exposure to waste anesthetic gases, and the hospital where this was performed used this work to improve ventilation controls for this type of exposure. Alumni have stated that their professional experience indicates that there is a need for training in other areas related to industrial hygiene, such as community air pollution, safety, environmental health, and toxicology. As a result, we have allowed students to either earn dual degrees, or expand their specific program to include a secondary emphasis. Three recent students have earned dual degrees, two have broadened their industrial hygiene program to include additional toxicology, and one has done so with the environmental health. We have also promoted cross-discipline interaction by encouraging students in the environmental health area with interests related to industrial hygiene to formulate research projects applicable to both fields. For example, an environmental health Ph.D. student received pilot project funding for an indoor air quality project. A further use of the training related expense funds is student attendance at the annual American Industrial Hygiene Conference and Exposition, and the local American Industrial Hygiene Association meetings. In addition we sent a student who had expressed interest to the NORA Ten-Year Conference Washington DC.

Appendices

1. Typical Resident Academic Curriculum: **Table I of this section**
2. Updated data Tables 4a, 12a, 12b, and 13 organized by program area (7/1/05-6/30/06): **See Appendix B**
3. Publications by program area of faculty and trainees during the reporting period that have resulted, in whole or part, from ERC training grant support. Please specify all trainee authors by underlining their names.
Menzel, N. N., S. M. Brooks, T. E. Bernard, A. Nelson. The physical workload of nursing personnel: association with musculoskeletal discomfort. International Journal of Nursing Studies 41:859-867,2004

- Drinkaus, P, D. S. Bloswick, R. Sesek, C. Mann, T. Bernard. Job level risk assessment using task level Strain Index scores: A pilot study. *International Journal of Occupational Safety and Ergonomics* 11:141-152, 2005
- Bernard, T. E., C. L. Luecke, S. W. Schwartz, K. S. Kirkland, C. D. Ashley. WBGT clothing adjustments for four clothing ensembles under three relative humidity levels. *Journal of Occupational and Environmental Hygiene* 2:251-256, 2005
- Fogleman, M., L. Fakhrzadeh, T. E. Bernard. The relationship between outdoor thermal conditions and acute injury in an aluminum smelter. *International Journal of Industrial Ergonomics* 35:47-55,2005

APPENDIX

TABLE I: CURRICULUM FOR THE MSPH

COLLEGE CORE COURSES

PHC 6357	Environmental and Occupational Health	3 Hours
PHC 6050	Biostatistics	3 Hours
PHC 6102	Principles of Health Policy & Management	3 Hours
PHC 6410	Social and Behavioral Sciences	3 Hours
PHC 6000	Epidemiology	3 Hours

PROGRAM CORE COURSES

PHC 6356	Industrial Hygiene	2 Hours
PHC 6425	Occupational Health Law	2 Hours
PHC 6310	Environmental & Occupational Toxicology	3 Hours
PHC 6365	Analytical Methods in Industrial Hygiene I	2 Hours
PHC 6366	Analytical Methods in Industrial Hygiene II	2 Hours
PHC 6360	Safety Management Principles and Practices	2 Hours
PHC 6362	Industrial Ventilation	2 Hours
PHC 6361	Ergonomics	2 Hours
PHC 63XX	Control Aspects of Industrial Hygiene	2 Hours
PHC6930	Public Health Seminar	1 Hour
PHC 6945	Supervised Field Experience	1-12 Hours
PHC 6977	Thesis Research Project	6 Hours

ELECTIVES

PHC 6355	Occupational Medicine	2 Hours
PHC 6556	Pathobiology of Human Disease	3 Hours
PHC 6303	Community Air Pollution	3 Hours
PHC 6934	Indoor Air Quality	2 Hours
PHC 6306	Radiation Health	2 Hours
PHC 6364	Industrial Hygiene Aspects of Plant Operations	2 Hours
PHC 6934	Principles of Risk Assessment	2 Hours
PHC 6934	Industrial Hygiene-Chemical Agents	2 Hours
PHC 6934	Risk Management	2 Hours
PHC 6934	Biological Monitoring in Env. & Occup. Health	2 Hours
PHC 6934	Env. & Occup. Work Physiology	2 Hours
PHC 7019	Occupational Health Epidemiology	3Hours
PHC 7932	Aerosol Technology in Industrial Hygiene	2 Hours
PHC 7931	Risk Communication	2 Hours

TABLE II: PH.D. PROGRAM SEQUENCE & COURSE REQUIREMENTS

MSPH program	52 Hours
Interdisciplinary Courses	11 Hours
Occupational Health	2 Hours
Industrial Toxicology	2 Hours
Occupational Health Risk Assessment	3 Hours
Risk Management	2 Hours
Doctoral Seminar	2 Hours
Research and analytical skills	9 Hours
Occupational Epidemiology	3 Hours
Research Methods in Epidemiology	3 Hours
Biostatistics II	3 Hours
Advanced Industrial Hygiene Courses	6 Hours
Aerosol Technology in Ind. Hyg.	2 Hour
Biological Monitoring in Env. & Occ. Health	2 Hour
Env. & Occup Work Physiology	2 Hours
Risk Communication	2 Hours
Courses relevant to students research	6 Hours
Doctoral Dissertation	17 Hours

Students Supported by this Grant. The Data are presented by Name of Trainee, Year Entered Program, Degree sought, and Mentors name

John Smyth (1998, Ph.D., Hammad). Mr Smyth expects to defend his dissertation by the end of this year. The working title is Investigation of an Air Sampling and Analytical Method for Bronopol. Bronopol is a biocidal compound that has been used as a preservative in cosmetics and pharmaceuticals, and also to sanitize air ducts in HVAC systems, and represents a potential indoor air quality issue.

John David Krause (1999, Ph.D., Hammad). Dr. Krause defended his dissertation Generation of Carbon Dioxide and Mobilization of Antimony Trioxide by Fungal Decomposition of Building Materials, and is currently the principal of an indoor air quality consultation company in Florida.

James Jackson (2000, MSPH, Mlynarek). Mr. Johnson had been a student in this program some years earlier. He returned in an attempt to complete his degree, but was forced to withdraw after one year due to personal reasons.

Steve Luecke (2000, MSPH, Hammad). Mr. Luecke came to the program with experience in general industrial hygiene. He desired further training to advance his professional life. He completed the program and his thesis was Performance Verification Of Personal Aerosol Sampling Devices. He is now the senior industrial hygienist for a local consulting company.

Mehdi Pourmaghani (2001, Ph.D., Bernard). Dr. Pourmaghani had previously completed Masters Degree training in this program. He returned and completed his doctoral training, and his dissertation was Effects of Gloves and Visual Acuity on Dexterity. He has returned to his native country of Iran, where he is a practicing industrial hygienist with the Isfahan University of Medical Sciences.

Ilsa Johannson (2002, MSPH, Mlynarek). Ms Johannson entered this program with a desire to enhance her professional life in the field of industrial processes and hazardous materials. Her thesis was Hydrogen Fluoride Method Development for the Ogawa® Passive Sampling Device. She is now employed with the State of Florida, Department of Environmental Protection, as an Environmental Specialist.

Christina Luecke (2002, Ph.D., Bernard). Dr. Luecke also had previously completed Masters Degree training in this program. She returned and completed her dissertation on Gender Differences During Heat Strain at WBGT_{crit}. She has since taken a position as an industrial hygienist with private firm.

Gary Scott Dotson (2002, Ph.D., Hammad). Dr. Dotson came to USF with a Masters degree in industrial hygiene from another university. During his time here, he became interested in the assessment of risk aspects of industrial hygiene. He completed his dissertation Risk Analysis of Asbestos Exposure Among Automotive Mechanics Servicing and Handling Asbestos-Containing Materials in June of 2006, and is currently seeking a position.

Adam Marty (2004, MSPH, Mlynarek). Mr. Marty is currently in the program and is interested in applied industrial hygiene, and intends to do his thesis work on the exposures of beauty parlor workers to ethyl methacrylate and methyl methacrylate. He is also interested in an intervention and a follow-up study.

David Saly (2004, MSPH, Hammad). Mr. Saly is also currently in the program. His interests include the development of computer based industrial hygiene management. His thesis is as yet undefined.

Margaret Wan (1999/2004, MSPH/Ph.D., Bernard). Dr. Wan completed her Masters Degree work, Prediction of Volitional Muscle Fatigue at Low-level Exertions, and continued in the program and earned her doctorate in Jun of this year. Her dissertation was Assessment of Occupational Heat Strain. She is currently seeking a position.

Larry Flack II (2005, MSPH, Mlynarek). Mr Flack entered the program as environmental professional who wished more specialized knowledge in industrial hygiene. His Masters Degree thesis was Nurse Exposure to Waste Anesthetic Gases in a Post Anesthesia Care Unit. He is currently employed as an industrial hygienist at a BP refinery in Louisiana.

Luis Pieretti (2005, Ph.D., Hammad). Mr. Pieretti came to this program as a result of efforts we have made to forge a cooperative relationship with the University of Puerto Rico. He is finishing his coursework requirements, and will soon develop his research interests and propose a dissertation topic.

STUDENT PUBLICATIONS AND PRESENTATIONS IN CONFERENCES

Krause, J.D. and Hammad, Y. "Measuring the Efficacy of Mold Remediation on Contaminated Ductwork", Proceedings of Indoor Air 2002, June 2002, Monterey, CA.

Krause, J.D., Hammad, Y. and Ball, L.B. "Application of a Fluorometric Method for the Detection of Mold in Indoor Environments", Applied Occupational and Environmental Hygiene, Vol 18, pp.499-503, 2003.

Margret, W, and T. Bernard, Prediction of Volitional Muscle Fatigue at Low-level Static Exertions. Presented at the AIHCE, Anaheim, California 2005.

Krause, J. D. and Y. Hammad. Mobilization of the Flame Retardant Antimony Trioxide by Fungal Decomposition of Fiberglass Duct-board, submitted for publication to Building and Environment, 2006

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- A. OCCUPATIONAL HEALTH NURSING
- B. Program Director: Candace Burns, Ph.D
- C. Program Description

Goals and Objectives Each objective of the OHN program is stated and progress described.

1. Plan, implement and evaluate an interdisciplinary training program to prepare nursing professionals to practice in advanced roles in occupational health nursing/adult nurse practitioners in business and industry.

Currently there are no other master's level graduate programs in the State of Florida for nurses to obtain advanced specialized preparation in occupational health nursing. The next closest ERC/OHN program is in Alabama. The College of Nursing has a strong master's program that enables graduates to practice as OHN/ARNPs in a variety of settings. The College of Public Health has strong existing training programs in Industrial Hygiene, Safety Management, and Occupational Medicine. With collaboration between the two Colleges to offer an Interdisciplinary Dual (MS/MPH) Degree Master's program in OHN and funding to the training program, a strong, effective model program for OH Nurse Practitioners exists.

There is strong community support for the OHN program. An excellent Advisory Committee provides ongoing input to the program. Arlene Guzik, M.S., A.R.N.P., serves as Chairperson. She is the Clinical Director of Lakeside Occupational Health Services and is the past-President, Florida State Occupational Health Nursing Association. Many of the Advisory Committee members have been on the Committee since its inception. There is a large cadre' of appropriately prepared preceptors, both Occupational Health Nurse Practitioners and Occupational Medicine Physicians, who work with trainees in the clinical and field settings.

Ms. Christine Bouchard, MS, MPH, COHN-S, ARNP is employed as Deputy Director of the OHN Program. She is a fully certified in Advanced Occupational Health Nursing (i.e. COHN-S) and an Adult Nurse Practitioner (ARNP). She has been employed as an Occupational Health Nurse Practitioner with both internal and external providers and practiced the full scope of occupational health nursing practice. She continues to practice as an Occupational Health Nurse Practitioner at Lakeside Occupational Health Services and is a doctoral student in the College of Nursing. She is an excellent role model for this OHNP program.

Additional funding will allow us to increase the enrollment. Out-of-state students will also be able to receive monies with additional funding in this area. Stipends to cover the cost of books is also requested. Textbooks are extremely expensive (one book in the Occupational Medicine course cost nearly \$200) and students generally want to keep their textbooks to prepare for their Comprehensive Exam. Travel to distant clinical sites and professional occupational health meetings is partially supported with grant monies.

The CON has significantly upgraded distance learning technologies. Approximately 83% of the courses in the CON and 43% of the courses in the COPH are offered via web-based methodology. This significantly enhances the ability of the program to met individual student needs and reduce travel time to campus for didactic coursework. However, all travel is NOT eliminated. Thus, continued funding is very important for students.

Trainees have extensive interdisciplinary interaction with students and working professionals in the fields of industrial hygiene/safety, occupational medicine, occupational health nursing, ergonomics, labor/management, and toxicology in classroom, field, and clinical settings. A brief summary of these experiences follows.

Classroom: COPH Core Courses (Epidemiology, Biostatistics, Public Health Policy and Administration, Environmental and Occupational Health); EOH Specialty Courses (Industrial Hygiene, Occupational Health Law, Safety Management, Plant Operations Field course, and Occupational Medicine, and Occupational Administration). Classes include group assignments and projects, guest speakers, and field visits for surveys/surveillance). Interdisciplinary seminars are offered for student trainees and professionals in the community. Community experts from the core disciplines are guest speakers, trainees present research/special projects, and faculty present their research.

Clinical/Field: Trainees are assigned OHN or OM physician preceptors in clinical courses (NGR 6205L, NGR 6207L, and NGR 6700L) in clinical settings (e.g. University Community Occupational Health Services, Lakeside Occupational Health Services, Bay Health Services, Kennedy Space Center, OSHA Regional Office, St. Josephs Hospital Occupational Health Services, Tampa General Hospital Employee Health) to care for individual employee/patients (e.g. pre-employment physicals, DOT screenings, drug

testing, worker illness, occupational injury, worker's compensation claims etc.) and participate in planning, implementing and evaluating worker health education/health promotion programs.

2. Recruit and retain qualified graduate students including minorities and individuals from underserved areas.

Of the current 9 students in the program, 3 are Hispanic, and 3 are African American / Black.

3. Develop Special Projects/Directed Research and theses in areas of occupational health nursing.

While research training is not a goal of master's level education, the OHN program requires trainees to begin to develop a research focus consistent with NORA priorities while enrolled in the OHN program through enrollment in Nursing Research, Biostatistics, and Epidemiology courses, and the conduct of a research focused Special Project. The Special Project is a synthesizing experience in which trainees develop a project with a faculty mentor. Dr. Stuart Brooks supervises the OHN students in the COPH requirement PHC 6877 Special Project. Trainees have the opportunity to complete their project in a broad range of topics. Additionally, Dr. Audrey Nelson, Associate Chief Nursing Research, James A. Haley Veterans Hospital, Courtesy Faculty, COPH, currently has approximately \$1.5million in extramural funding for studies in ergonomics back injury in nursing personnel. Students have the opportunity to participate in the conduct of these studies and to serve as Research Assistants. Joanne Shea, MS, ARNP, Director, Employee Health, Tampa General Health Care, Courtesy Faculty, College of Nursing is currently conducting research in the areas of latex drug allergies and blood borne pathogens. Students are able to participate in her studies and conduct their Special Project in these areas. Candace M. Burns, PhD, ARNP recently completed a DOD Disaster Relief and Humanitarian Management Center funded research study on occupational stress and compassion fatigue in health care providers during disasters. Additionally, Dr. Burns received CDC/HPPI funding examining the relationship between weight management and exercise using a pedometer. OHN trainees continue to investigate relevant topics with COPH faculty including occupational lung disease (Drs. Brooks and Hammad) and ergonomics and heat stress (Dr. Thomas Bernard).

4. Plan, implement and evaluate interdisciplinary continuing education programs for OHNs.

The Florida State Association of Occupational Health Nurses (FSAOHN) Annual Conference is co-sponsored with the ERC. This is a very significant partnership between the Sunshine ERC and the FSAOHN. This partnership has significantly enhanced the quality of the speakers and programmatic offerings during the annual conference. The number of high quality speakers on topics relevant to OHNs throughout the state of Florida and southeast region has resulted in significantly increased registrations and attendance at this meeting. An updated Nursing CE Needs Assessment-2005 was conducted at the 2005 FSAOHN Annual Conference. The data are analyzed and together with data from the AOHN annual needs assessment and ERC CE evaluation data are used to plan continuing education offerings for the period 2006-2007 and to plan for the OHN Certificate Program.

OHN students are encouraged to participate the NIOSH Spirometry and CAOHC Hearing Conservation courses to enhance their clinical skills and overall credentials when seeking employment after graduation. Attendance is permitted free-of-charge and students are allowed to "bank" hours to apply toward their clinical practicum courses (NGR 6205L, NGR 6207L, and NGR 6700L).

Outreach activities for the progress report period are described below.

Ms. Bouchard has been an active member of FAOHN including serving as past-Chairperson of Governmental Relations of Heart of Florida Chapter of the FSAOHN. She is now an active member of the Florida Westcoast Chapter. NIOSH funds were used to support OHN trainee attendance at the October 13-15, 2005 FAOHN Annual Meeting in Clearwater, FL. Due to limited funding, two student and one faculty (Ms. Bouchard) attended the conference. They assisted with recruitment of potential students and provided timely and "student focused" information about the program. Attendance at the Annual Conference also provided the student trainee an excellent opportunity to interact with OHNs throughout the state, as well as benefit from the excellent presentations.

Dr. Burns continues as an invited member of the Expert Panel to Develop a National Initiative "Pesticides and National Strategies for Health Care Providers" April 1998 – present. This initiative is co-sponsored by the EPA, DHHS, USDA, and DOL. Dr. Burns represents the National Organization of Nurse Practitioner Faculties and was selected because of her expertise in nurse practitioner education and

curriculum development as well as in occupational health and agricultural issues affecting workers and other individuals. The overall goal of the initiative is to incorporate content in all nursing practitioner educational programs in the nation regarding the recognition, diagnosis and management of illnesses and injuries to workers related to exposure to pesticides. To-date, the *National Pesticide Competency Guidelines for Medical and Nursing Education* were peer reviewed during the Summer 2002, and the total document edited. Publication was published Fall 2005.

Dr. Burns was also appointed to serve on Governor Bush's State of Florida Planning Council for Response to a Flu Pandemic. She has participated in a Table Top Planning and Rehearsal Exercise in preparation for a major exercise Summer 2006.

Dr. Burns continues to serve as Chairperson, Florida Westcoast Chapter of the FSOHN Membership Committee. The chapter received a second place award for recruitment of new members and retention of current membership at the October 2005 State Conference. Dr. Burns also serves as an ongoing member of the USF Safety Committee that reviews occupational injury and illness, worker's compensation claims etc of USF faculty and staff on both the Tampa and St. Petersburg campuses.

1. Program Administration

Candace Burns, Ph.D., A.R.N.P., serves as Program Director for a minimum of 10% budgeted effort. However, she also carries separate unbudgeted teaching and academic advising assignments for occupational health nursing courses, supervision of students in clinical practicums and participation of supervision of students enrolled in their special projects in collaboration with a College of Public Health Faculty. She has served as Program Director since the programs inception in 1995. Previous experiences include Director of the Adult Nurse Practitioner Program and Assistant Dean. She has written and served as a Principal Investigator and Project Director for 10 years of continued funding on HRSA Quentin Burdick Interdisciplinary Training (medicine, nursing, public health, and social work students) in Primary Care in Rural Areas. (Note: The HRSA Quentin Burdick Rural Training initiative is no longer available.) Her recent research includes disaster preparation, deployment /post-deployment burnout and stress, obesity in the workplace and use of a pedometer in an exercise program for health promotion /prevention of illness. Dr. Burns primary affiliation is in the College of Nursing and she has a joint appointment in the College of Public Health, Department of Environmental and Occupational Health. Dr. Burns oversees and coordinates the planning, implementation and evaluation of the program. She has over 34 years of teaching experience and currently teaches the adult nurse practitioner courses and supervises the OHN students in their clinical practicum courses. She is responsible for the recruitment and retention of OHN students and oversees each students program of study by serving as their Major Advisor and mentors them throughout their program. Dr. Burns also prepares and submits additional training grants (e.g. ASPH Environmental Health Nursing, disaster training through DOD and CDC/HPPI research on obesity in the workplace) that enhance the overall goals of the OHN program by increasing awareness and clinical experiences of baccalaureate nursing students regarding environmental and occupational health nursing. She also collaborates with Dr. Thomas Bernard, College of Public Health, chairperson of Environmental and Occupational Health and ERC Faculty in the oversight OHN student Special Projects that are a required component of the OHN dual degree program. Dr. Burns serves in a leadership role in the Florida State Association of Occupational Health Nursing, including serving as Chairperson, Membership Committee for the Florida Westcoast Chapter and is a member of the Board of Directors.

The program is administered by the Director and Deputy Director. Input is also received from a active Advisory Committee and OHN experts in the community who serve as preceptors, guest faculty and consultants. The program has received expert external review from an OHN consultant nearly every year, and as most recently as June 2005. Support and concurrence for the development of the Occupational Health Nursing Certificate program was the primary outcome of the consultation visit. Additionally, as previously described, the OHN program is reviewed as part of ongoing reaccreditation activities on the part of both the Colleges of Nursing and Public Health

2. Program Faculty

The growth and success of the OHN program is the result of committed qualified faculty in the Colleges of Nursing and Public Health with knowledge and expertise in all of the elements essential to the implementation of the program. CON and COPH faculty central to the continued success of the OHN program are noted in the Faculty Table 2.

Christine Bouchard, M.S., M.P.H., COHN-S, A.R.N. P., serves as Co-Director of the Program. She is fully academically prepared and hold national certification in both Occupational Health Nursing (COHN-S) and as an Adult Nurse Practitioner (American Association Credentialing in Nursing). She plans, implements and evaluates OHN courses and related clinical/field nurse practitioner experiences at worksites and occupational health service providers. She identifies and develops new occupational health nurse practitioner clinical and worksite placements for the OHN students, orients preceptors to the program, and explains responsibilities of precepting the OHN Nurse Practitioner Trainees. She teaches the OHN undergraduate elective NUR 4965. She is currently a doctoral student in the College of Nursing where she is planning to conduct a doctoral dissertation on health literacy. Manuscript preparation and submission is a requirement of the doctoral program and she submitted her manuscript to the Journal of the American Association of Occupational Health Nursing and is awaiting review as of the time of this progress report. She also continues to practice as an Occupational Health Nurse Practitioner for Lakeside Occupational Health Services. Thus she serves as an excellent role model and mentor for OHN student trainees.

1. **Proposed Training**

The proposed training program prepared master's level predoctoral students as Occupational and Adult Health Nurse Practitioners. Trainees are prepared to serve in leadership and educator roles in occupational health nursing. The program is an Interdisciplinary awarding a M.S. degree in Nursing and M.P.H. degree in Environmental and Occupational Health.

Purpose The purpose of the Occupational Health Nursing (OHN) Training program is to provide interdisciplinary training for registered nurses to obtain advanced practice preparation as Occupational Health and Adult Health Nurse Practitioners. The program awards the graduate a M.S. in Nursing degree (OHN and ANP) and a M.P.H. (Occupational Health) degree. Graduates are qualified for state of Florida licensure as an Advanced Registered Nurse Practitioner (ARNP) and to take the American Nurses Association Credentialing Examination as an adult nurse practitioner. The program fulfills part of the requirements to write the certification examination as a COHN-S.

Objectives The Objectives of the OHN program are: 1) to plan, implement and evaluate the Interdisciplinary Dual Degree (MS/MPH) program to prepare nursing professionals to practice in advanced practice roles in occupational health in business and industry; 2) recruit and retain qualified graduate students including minorities and individuals from underserved areas into the OHN program; 3) provide research training to utilize research findings, participate in the research process and identify new issues for further investigative development.

The program is comprised of 64 semester credits including 36 credits in Nursing (Theory, Research, Pathophysiology, Advanced Health Assessment, Occupational and Adult Health Nursing specialty courses including clinical/field practicums totaling 540 hours, and 28 credits in Public Health (Epidemiology, Biostatistics, Health Policy Management, OH Administration, Industrial Hygiene, Safety, Plant Operations Field course, Occupational Medicine, Occupational Health Law, a Special Project that is research-to-practice focused and a comprehensive examination).

Student trainees have opportunities for interdisciplinary interaction with students in Industrial Hygiene, Safety Management, Toxicology, Ergonomics, and the Occupational Medicine Residents in the classroom, laboratories, and a field course. Interaction occurs in COPH Core and OH specialty courses. Classroom interaction includes projects and laboratory experiences (e.g., heat stress lab, personal protective equipment lab). Interdisciplinary groups of students collaborate on group projects in the PHC 6354 Safety and Health Administration course. Occupational medicine residents and OHN students can interact in the clinical setting collaborating on the care of patients with occupational illness or injury. Students complete the COPH required PHC 6700 Special Project as part of the required curriculum. Although the project is not a research thesis, student are highly encouraged to examine a topic that relates to the NORA research priorities and research-to-practice in a project appropriate for master's level nursing students.

There have been no changes in the curriculum or program since the last reporting period. Current employers of students were very positive and complimentary about the new graduates and their abilities. Preceptors and clinical sites were also very positive about the skills and abilities of the students during their clinical rotations. Preceptors indicated they would have no hesitation in hiring the students upon graduation. The Advisory Committee is most helpful in recommending updates for courses that might be necessary to the curriculum to meet changing regional and national occupational health nursing trends.

4. Training Program Evaluation

Evaluation of the OHN program effectiveness and quality are an ongoing process. Student trainees complete College of Nursing and College of Public Health standardized End-of-Course evaluations at the end of every course. Evaluation data is used to modify courses as appropriate. Student Trainees also complete Evaluations of Faculty at the end of every course. The evaluations are used by both faculty to improve teaching methods and administrators in the “Annual Administrative Evaluation-Teaching” to provide feedback to faculty to help improve teaching effectiveness. The College of Nursing has a very extensive program of evaluation, headed by a Director of Evaluation, that is part of the College’s preparation for reaccreditation by the Commission on Collegiate Nursing education (CCNE). The College of Nursing sends evaluation forms to employers of graduates at 1,3, and 5 years to obtain an evaluation of graduate effectiveness and preparation and recommendations for improvements of the curriculum. The College of Nursing also send evaluation forms to graduates at 1,3, and 5 year intervals to obtain feedback on their perception of their preparation for positions as nurse practitioners and leaders in nursing. The data is provided to faculty and the College Curriculum Committee to make changes to courses and programs as appropriate.

Student performance on certification examinations is also an important indicator of overall curriculum and program effectiveness. To date, all graduates of the OHN program have passed their appropriate national certification examination on the first attempt, and follow-up interviews with program graduates indicate the graduates report feeling well prepared for their examinations.

Many members of the Advisory Committee are preceptors of student trainees while enrolled in the program and employers of graduates. Evaluation feedback is elicited from them during Advisory Committee meetings. The data is used to modify and strengthen the program as appropriate. Recommendation from NIOSH evaluations are also incorporated into the curriculum. Lastly, the OHN program employed an outside external expert consultant in occupational health nursing June 2005 to review all of the course syllabi in the interdisciplinary dual degree program and meet with the faculty teaching the courses in both the College of Nursing and College of Public Health to make recommendations for strengthening the program. Overall the program was reviewed very positively and recommendations were incorporated as appropriate. There was concurrence and strong support for the development of an Occupational Health Nursing Certificate Program. (Note: An Occupational Health Nursing Certificate program was developed and will be reported in the next progress report.)

5. Trainee Candidates

The program is designed for baccalaureate degree (nursing or other discipline) Registered Nurses (RNs) who desire careers as Occupational Health Nurse Practitioners (OHNPs). Application materials are on-line and feedback is provided to students on-line as well, thus facilitating student application process. They must meet the admission requirements of the Graduate School, CON, and COPH. Admission requirements include a baccalaureate degree, minimum 3.0 GPA in undergraduate work, GRE scores of 1000 in the verbal and quantitative, and three letters of reference describing potential for graduate study. Applicants who meet the admission criteria are admitted to the program. Applicants who do not meet the criteria but appear to be strong, have their application reviewed by the CON Student Affairs Committee (Dr. Burns is a member) and may be provisionally admitted and allowed to enroll in a maximum of three (3) graduate level courses. If students earn a grade of “B” or better in the courses they can then progress to full matriculation and admission.

RNs with a baccalaureate degree in a discipline other than nursing must complete specific prerequisite/bridge courses prior to matriculation into the master’s program. Students are recruited at Information Sessions conducted by the CON Office of Student Affairs, recruitment activities such as participation in “nursing day” at various hospitals, career information days at the many Florida community colleges, web pages, and at professional meetings such as AAOHN and FSAOHN Annual Conferences, and FWCAOHN quarterly CE programs. The College and University conduct recruitment activities focused on recruitment of minority students and students from underserved communities. The College of Nursing actively participate in the University and Health Sciences Center Career Day activities that are aimed at minority high school students and attracting them into health professions.

The Undergraduate Elective course, NUR 4696 Introduction to Occupational Health Nursing is taught at least twice a year and serves as an excellent strategy for not only educating nurses about the subspecialty of Occupational Health Nursing but also recruiting student into the master’s program after graduation.

Appendices

1. Typical Curriculum:

College of Nursing Courses - 36 credits

NGR 6121 - Theoretical Basis of Advanced Practice Nursing (3) (F,SP,SU) (DL)
NGR 6140 - Pathophysiology for Advanced Practice (3) (F,SP, SU) (DL)
NGR 6199 - Pharmacology for Advanced Practice (3) (F,SP, SU) (DL)
NGR 6800 - Nursing Research (3) (F,SP,SU) (DL)
NGR 6001 - *Health Assessment in Advanced Practice(3) (F,SP, SU) (DL)
NGR 6650 - Occupational Health Nursing I (2) (F) (DL)
NGR 6651 - Occupational Health Nursing II (2) (SP) (DL)
NGR 6205 - Primary Care: Adolescent and Young Adults (3) (F, SP,SU) (DL)
NGR 6207 - Primary Care: Adults (3) (F, SP, SU) (DL)
NGR 6271 - Adult Health Management (3) (F,SP,SU) (DL)
NGR 6700 - Advance Practice Nursing Transition (2)
NGR 6205L - * Practicum: Adolescent and Young Adults / Occupational Health (2) (F,SP,SU)
NGR 6207L - * Practicum: Adults / Occupational Health (2) (F,SP,SU)
NGR 6700L - *Advance Practice Transition / Occupational Health Practicum (2) (F,SP,SU)

College of Public Health Courses - 28 credits

PHC 6357 - Environmental and Occupational Health (3) (F,SP,SU) (DL)
PHC 6000 - Epidemiology (3) (F,SP,SU) (DL)
PHC 6050 - Biostatistics I (3) (F,SP, SU) (DL)
PHC 6102 - Principles of Health Policy Management (3) (F,SP,SU) (DL)
PHC 6423 - Occupational Health Law (2) (F)
PHC 6360 - Safety Principles and Practices (2) (F)
PHC 6364 – Plant Operations (Interdisciplinary Field Experience) (2) (SU)
PHC 6356 - Industrial Hygiene (2) (F)
PHC 6351 - Occupational Medicine (3) (F)
PHC 6354 - Occupational Health and Safety Administration (2) (SP)
PHC 6977 - Special Project (3) (F,SP,SU)
Comprehensive Examination

* Total 540 clinical practicum clock hours (1:6 ratio)

2. Updated data Tables 4a, 12a, 12b, and 13 organized by program area (7/1/05-6/30/06): **See Appendix B**
3. Publications by program area of faculty and trainees during the reporting period that have resulted, in whole or part, from ERC training grant support. Please specify all trainee authors by underlining their names.

A. Occupational Medicine Residency Program

B. Program Director: Stuart M. Brooks, MD

C. Program Description:

Goals and Objectives:

There are two overarching goals for the OMR Program: 1) To graduate board-eligible OM physicians who have mastered a broad-range of OM competencies and who will pass the OM boards and 2) to educate physicians with the knowledge and skills to practice evidence-based occupational medicine. In order to achieve these goals, the OMR has several objectives:

- A. To teach residents the core competencies of OM in their practicum and academic work.
- B. To continuously improve resident training and education through a 360° evaluation process.
- C. To individualize the program for each resident in order to meet their career and educational goals.
- D. To provide a well-rounded educational experience with ample interdisciplinary interaction.
- E. To expose residents to the scientific method, evidence-based practice & the importance of lifelong learning.
- F. To encourage scientific inquiry, particularly in NORA-focused areas.
- G. To emphasize the importance of preventive medicine and wellness programs.
- H. To increase interaction with OM professionals through the American College of Occupational and Environmental Medicine (ACOEM), Florida Association of Occupational and Environmental Physicians group, AND American College of Preventive Medicine.

Responsible Conduct of Science Training:

All ERC trainees have multiple opportunities to learn about the responsible conduct of research. The first is during student orientation when all students in the College of Public Health (COPH) receive IRB training for IRB certification, including investigator responsibilities, and also HIPAA training. Students are also required to maintain their IRB certification with annual training and recertification. The second opportunity is in the core epidemiology course in which the first lecture is devoted to ethical research. The lecture is provided by a representative of the IRB and the students are given the Belmont report to read. For those students who work on a research project involving human subjects, they are required to take the training offered by the USF IRB on the Ethical Conduct of Human Research. In the spring semester of 2006, the COPH introduced a new Advanced Seminar on Public Health Research Ethics. *Faculty Participation:*

Program Director: Stuart Brooks, MD. Dr. Brooks has directed OM residency programs for more than 30 years, initially at the University of Cincinnati and now, for the past 14 years, at USF. Dr. Brooks is board-certified in Occupational Medicine, Internal Medicine and Pulmonary Diseases. His research and clinical areas of interest include occupational asthma and occupational respiratory diseases. His role in the residency is as follows: 1) teaching the Occupational Medicine core course, 2) academic advising, 3) providing the general direction for the OMR program, 4) conducting resident evaluations, 5) teaching the weekly basic sciences lectures, 6) coordinating interdisciplinary activities, 7) mentoring and teaching pulmonary fellows about occupational medicine, 8) acting as the preceptor for the 2nd year OMR trainees in their weekly continuity clinic, 9) interacting with the Residency Advisory Committee (RAC) members, including implementing any RAC recommendations and 10) mentoring junior faculty. Dr. Brooks has a full-time position with the University and his responsibilities in this position overlap with his role in the OMR program.

Deputy Director Research Programs: James McCluskey, MD, MPH. Dr. McCluskey is a board-certified occupational medicine physician and is completing his dissertation for a Ph.D. in Toxicology. His research and areas of interest include: antioxidant defenses of the lung and the effects of ozone on the human lung. Dr. McCluskey oversees the laboratory research training for all residents which includes: monitoring, involving, guiding and directing the residents on NORA-related research projects and providing hands-on training in the USF Breath Laboratory. Dr. McCluskey is responsible for overseeing and teaching the course on research methods to the OMR and other interested trainees (a weekly course during the fall and spring semesters). Dr. McCluskey oversees the ACGME compliance, which includes working with the College of Medicine to fulfill institutional ACGME and institutional requirements.

Deputy Director Clinical Programs: Eve Hanna, MD, MSPH. Dr. Hanna is board-certified in occupational medicine and in emergency medicine. She is a graduate of the residency and is now Head of the Occupational Medicine program at the James Haley VA. Dr. Hanna supervise OM residents during their rotations at the James Haley VA, coordinates activities with the Bay Pines VA, is

a member of residents; MSPH committees, mentors woman residents, attends weekly resident conferences, and is a member of the OM Residency Advisory Committee.

Key OMR Faculty: Rosemary Szollas, MD, MSPH. Dr. Szollas is a recent graduate of the OMR Program who will take her OM boards in the fall of 2006. Her research focuses on return to work strategies and preventive medicine. She is responsible for arranging the weekly resident conference which may include: board review, journal club, guest speakers and other activities as appropriate. Dr. Szollas is overseeing the development and successful implementation of a new rotation at Florida Orthopedic Institute which will focus on return to work/work restrictions for non-surgical candidates. Dr. Szollas works with Dr. McCluskey to meet the ACGME and institutional program requirements.

Key OMR Faculty: Karen Olson, MD. Dr. Olson is also a recent graduate of the OMR Program. Her research interests include reproductive hazards in the workplace, wellness in the workplace and preventive medicine. Dr. Olson oversees the development of new rotations related to preventive medicine and wellness. This will include the new rotation for Tampa General Hospital on preventive medicine and the expanded rotations involving preventive medicine and wellness at the Bay Pines VA hospital. Dr. Olson oversees residents on the rotation with Summit Insurance.

Together, Drs. McCluskey, Szollas and Olson are responsible for the day-to-day oversight of the practicum rotations, including monitoring the rotation content to ensure that competencies are being met, monitoring resident rotation progress and adding new rotations. Drs. Szollas and Olson oversee the Chief Resident and the Residency Coordinator to ensure that training runs as smoothly as possible and that any problems which arise are resolved quickly.

Key OMR Faculty: Thomas Truncale, DO, MPH: Dr. Truncale is member of the Pulmonary, Critical Care & Sleep Medicine division in the Department of Internal Medicine, COM. He supervises residents in the Breath Lab, teaches in the occupational medicine course, is a member of some residents' MSPH thesis committees, lectures at OM CE Courses. He is assigned 30% research effort by the James Haley VA and performs research in the Breath Lab. He also has his own occupational pulmonary clinic and he supervises residents in the pulmonary rotation at the Haley VA.

Residency Selection: P.G. Rentos, PhD. Dr. Rentos is responsible for: 1) chairing the residency selection committee, 2) reviewing all applicants to the OMR, 3) organizing the review of the qualified applicants, 4) leading the residency selection team in interviewing, selecting and approving the new residents, 5) making recommendations for marketing the residency program and 6) sending out correspondence to applicants about their acceptance status.

Residency Coordinator: Kristen Kruse Hanna, MA. Ms. Hanna (50% FTE) is responsible for 1) assisting Dr. Brooks and all OM faculty members in day to day residency operations; 2) maintaining resident records; 3) recruiting new residents; 4) corresponding with current residents; 5) overseeing the evaluation process for residents, the rotations and the administration; 6) acting as the point of contact for all residency-related issues, 7) ensuring compliance with the policies and procedures of the College of Medicine, 8) maintaining up-to-date letters of agreement with rotation sites, 9) making all residency related travel arrangements, and 10) coordinating the monthly resident schedule.

Residency Teaching Conferences: The major OMR teaching conferences where faculty and residents interact all take place on Wednesdays. This includes the basic sciences conference (led by S. Brooks), the research conference (lead by J. McCluskey) and the didactic conference (lead by R. Szollas). Administrative meetings between all OMR team members also take place on Wednesdays, 1-2 times per month.

Advisory Committees: The OMR is advised by 3 committees: 1) the Residency Selection Committee (RSC), 2) Residency Advisory Committee (RAC) and 3) the Residency Competency Committee (RCC). The RSC selects the new residents each year. This includes a review of all applicants, interviewing of the most qualified and selection of who to accept into the residency. If applicant numbers are low, this committee will also make recommendations on marketing the OMR. The RAC consists of external OM Physicians and individuals representing academia, industry and labor. It is chaired by an OM physician from the community. This committee meets biannually to establish objectives, discuss problems, identify priorities, discuss the program's progress, and provide agendas for future direction. The RCC consists of core/key OMR faculty and reviews current competencies and suggesting updates as needed especially.

Program Faculty: Faculty involved with the OMR fall predominantly into 2 categories: Academic/Research and Clinical/Preceptor. Those individuals involved with the OMR program/trainees are identified in the table:

Faculty Name	Primary Dept/Affiliation	Role in Program	Area of Expertise
L. Atkinson, MD	Bay Pines VA	Supporting Faculty	Family Med/Chief/Med ed
T. Bernard, PhD, CIH	COPH	Supporting Faculty	IH & Ergonomics
V. Bilotta, MD	Bay Pines VA	Supporting Staff	Orthopedics
S. Brooks, MD	COPH & COM	Core Faculty & Program Director	Occupational & Pulmonary Medicine
C. Burns, PhD	CON	Director, OHN	Preventive Med./Wellness
J. Cook, MPA	USF Safety	Supporting Faculty	Safety & Construction
S. Cuddahpah, MD	Bay Pines VA	Supporting Faculty	Plastic Surgery
E. Demi, MD	Medero Occ. Med. Clinic	Supporting Faculty	Trauma and acute injury
R. Fox, MD	COM	Supporting Faculty	Allergy & Immunology
Y. Hammad, ScD	COPH	Supporting Faculty	Ind. Hygiene & Bioaerosols
C. Garitano, MD	BPVA	Supporting Faculty	Radiology
K. Jenkins, MD, MPH	RAC	Supporting Faculty	Occupat./Preventive Medicine
R. Johnson, MD, MPH	Lakeside Occ Med Clinic	Supporting Staff	Managed Care & Health Svcs
E. Hanna, MD, MSPH	James Haley VA	Core Faculty	Occup./Preventive Medicine
R. Harbison, PhD	COPH	Supporting Faculty	Toxic. & Risk Assessment
R. Lockey, MD	COM	Supporting Faculty	Allergy & Immunology
T. Marinelli, MD	Bay Pines VA	Supporting Faculty	Pulmonary Head
J. McCluskey, MD, MPH	COPH & COM	Core Faculty & Deputy Dir.	Occup. Med. & Toxicology
S. Mlynarek, PhD	COPH	Supporting Faculty	Industrial Hygiene
A. Nelson, PhD	CON	Supporting Faculty	Ergonomics & Patient Safety
R. Nesbit	USF Safety	Supporting Faculty	Construction/Hurricane Safety
K. Olson, MD	COPH	Core Faculty	Occupational Medicine
R. Pavlik, PhD	COPH	Supporting Faculty	IH/OSHA Regulations
K. Phillips, MD, MPH	RAC	Supporting Faculty	Managed Care & Health Svcs
P.G. Rentos, PhD	COPH	Supporting Faculty	Occupational & Plant Safety
I. Richards, PhD	COPH	Supporting Faculty	Toxicology
P. Shenefelt, MD	COM	Supporting Faculty	Contact Dermatitis
S. Siddique, MD	Bay Pines VA	Supporting Faculty	Cardiology
D. Solomon, MD	COM	Supporting Faculty	Pulmonary Med.
H. Stephens, MD, MBA, MPH	COM	Supporting Faculty	Musculoskeletal, Ergo./Ortho.
R. Szollas, MD, MSPH	COPH	Core Faculty	Occupational Medicine
D. Thuriere, MD	Bay Pines VA	Supporting Faculty	Psychiatry
T. Truncale, DO, MPH	COM/COPH	Supporting Faculty	Pulmonary Medicine
C. Vespi	USF Safety	Supporting Faculty	OS&H regulatory
J. Watkins, DO, MPH	RAC	Supporting Faculty	Occup./Prevent. Medicine
J. Wolfson, DrPH, JD	COPH	Supporting Faculty	Occup Health Law, Ethics, Managed Care
S. Zachariah, MD	Bay Pines VA	Supporting Faculty	Neurology

Key: COPH= College of Public Health, COM= College of Medicine

Curricula:

The current program, consists of a minimum of 46 hours of coursework at the COPH and leads to a Masters of Science in Public Health (MSPH) degree. The academic course work consists of four components, including 1) five College core courses which teach many of the basic principles and skills

of preventive medicine (15 CH), 2) nine core courses in Occupational Safety and Health (22 CH), 3) six credit hours of thesis research and 4) three hours of electives. **TABLE A** presents the COPH check list for the MSPH program.

TABLE A : College of Public Health- Program Checklist

Name: _____	Dept: EOH
Advisor: _____	Degree: MSPH
Semester/Year Accepted: _____	Concentration: Occ Med _____
Any grade below a C (C-to F) are required to be retaken. The grade will be included in the student's GPA.	
	Grade Sem/Yr Taken
College Core Courses	Total Needed
PHC 6000 Epidemiology	15
PHC 6050 Biostatistics I	3
PHC 6102 Principles of health Policy and Management	3
PHC 6357 Environmental and Occupational Health	3
PHC 6410 Social and Behavioral Sciences Applied to Health	3
Required Concentration Courses	Total Needed
PHC 6356 Principals of Industrial Hygiene	22
PHC 6351 Occupational Medicine for Health Professionals	2
PHC 6364 Industrial Hygiene Aspects of Plant Operations	2
PHC 6360 Safety Management Principles and Practices (or other approved safety course)	2
PHC 6930 Seminar in Occupational and Environmental Research	1 (4)
PHC 6423 Occupational Health Law	2
PHC 6354 Safety and Health Administration	2
PHC 6310; Environmental/Occupational Toxicology or Occ Hlth Risk	3
6934 Assessment	
PHC 6051 Biostatistics II	3
Electives	Total Needed
PHC 6361 Ergonomics (recommended)	3
Culminating Experiences	
PHC Thesis	6
Comprehensive Concentration Exam (2 credit Hour Enrollment Required)	
	Total GPA Hours
	GPA
	Total Hours Attempted
	46

D. Program Activities and Accomplishments

Progress Toward Goals and Objectives:

Progress toward the accomplishment of the goals and objectives continues to be strong. The goals and objectives of the OMR program are essential to continuing success of the programs.

Trainee Honors, Awards, Scholarships: n/a

Faculty Honors, Awards, Appointments: Presidential Citation Honor Lecture: Irritants Can Be an Irritating - Awarded to Stuart Brooks, MD, FCCP. This award, first conferred in 1970, whose recipient is selected by the current ACCP President, honors an outstanding faculty member speaking at CHEST. One recipient is chosen each year based upon his or her exceptional expertise in a given field. Dr. Brooks was also selected as one of the Best Doctors for Occupational and Pulmonary Medicine for August and September 2006 in the Tampa Bay Metro area. Dr. Brooks was recognized with a 20 years of service award from the College of Public Health and College of Medicine.

Trainee Theses and Dissertations:

Trainee Name	Title of Thesis
Victor Nwiloh	Measurement of Nerve Growth Factor in Induced Sputum and Exhaled Breath Condensate.
Karen Olson	Exhaled Breath Nitric Oxide: Is There a Baseline Difference Due to Pregnancy? (This project was started in the reporting period and will be completed in the 2006-07 reporting period).

Rosemary Szollas	8-Isoprostane Levels in Exhaled Breath Condensate of Pregnant Women Compared to Non-Pregnant Women, Is There a Baseline Difference?
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New Faculty Positions:

Drs. Karen Olson and Rosemary Szollas have been added to the OMR faculty. Drs. Olson and Szollas will oversee many of the practicum related components of the residency and will also work on setting up additional practicum sites. Their contribution to the program will be important since Dr. Robert Haight has left the university.

New Courses: No new courses were added to the curriculum.

Trainee Recruitment, Including Diversity Efforts:

Resident candidates that apply to the OMR come from a wide variety of previous training programs and practice experiences. Trainees are recruited through the COPH website, participation in joint marketing materials with other OM Residencies, advertisements in relevant journals and websites, as well as, networking at the American College of Occupational and Environmental Medicine conferences. In addition, graduates of the program do an exceptional job of marketing the program through word of mouth, often referring potential applicants to the program.

The OMR program benefits from ERC-wide efforts to recruit qualified applicants to our programs. Outreach targeting underrepresented minorities includes advertisement in the various campus publications, personal contacts with the faculty of Historically Black Colleges and Universities, as well as, personal contact with faculty members from of Florida A&M University, Florida International University and the University of Puerto Rico. Throughout the history of the USF OMR, the program has had great success recruiting and retaining qualified minority residents. One of our minority graduates, Dr. Rony Francois, is now the Secretary of Health for the State of Florida.

E. Program Products

Conferences/Symposia Sponsored and CE Courses Presented:

Dr. McCluskey takes a lead role in the planning and development of continuing education programs for OM. Dr. McCluskey and Ms. McCluskey (director of CE) worked extensively to form a partnership between the Sunshine ERC and the Florida Workers' Compensation Institute. Each year the Sunshine ERC works with the Florida Workers' Compensation Institute to offer an annual Workers' Compensation Conference (WC Conference) and the concurrent Florida Safety and Health Conference (FL S&H). The FL S&H Conference was formerly offered as a stand alone program by the Florida Workers' Compensation Institute. To save funds, the FL S&H Conference is now an independent component of the WC Conference (two separate planning committees, two separate locations within the hotel for the courses, two different target groups, etc.). This WC/FL S&H Conference has been tough competition for the Sunshine ERC Continuing Education programs for many years. This conference is the only place where OM Physicians will meet on an annual basis. OM physicians will attend CE programs in their own geographic area or attend the WC/FL S&H Conference. Since 2004, the Sunshine ERC team has emphasized OM as the theme of the training, including the health effects of various chemicals and exposure on individuals.

What makes the CE OM training programs so strong is the fact that the training is organized from an interdisciplinary perspective. Dr. McCluskey arranges for the training sessions to include a physician, an industrial hygienist, a toxicologist and typically a legal representative who works in the OS&H/WC area. Cases are presented and each professional presents based upon his or her area of expertise. The participants are involved in the presentations and asked questions about how the cases could be resolved. Dr. McCluskey and the other physicians take the lead in developing the cases, working up the health effects/medical explanation and setting up how programs will lay out. As a result of this effort, the Sunshine ERC programs are gaining widespread recognition and the OM physicians in the state are showing increasing interest in attending OM programs offered by the Center.

Successful R2P Projects:

An emphasis on Occupational Asthma (OA) provides examples of r2p: [1] patients with OA are referred by practitioners and seen in the interdisciplinary occupational medicine clinic. [2] Dr. Brooks transfers information on OA via his work on ACCP and ATS multidisciplinary and international committees dealing evidence-based approach to the diagnosis, management and prevention of OA; [3] Dr. Brooks, McCluskey and Truncala provide a state of the art chapter on OA for Rom's Text on Occupational & Environmental Medicine to be published in early 2007. Dr. Brooks publishes several peer-reviewed articles on OA. [4] Research in the Breath Lab has pertinence for OA and COPD. .

Research Projects Completed Having Significant Trainee Involvement:

Trainee Name	Title of Project
Victor Nwiloh	Measurement of Nerve Growth Factor in Induced Sputum and Exhaled Breath Condensate.
Rosemary Szollas	8-Isoprostane Levels in Exhaled Breath Condensate of Pregnant Women Compared to Non-Pregnant Women, Is There a Baseline Difference?

Unique Courses Presented:n/a

F. Future Plans

During the next funding cycle, the OMR will emphasize several areas: [1] Formulate an integrative, evidence-based practice (EBP) strategy for OMR and faculty that emphasize investigatory skills & evidence-based scientific or clinical information. This will be accomplished through class work, a focus on research approaches to problems, and incorporating internet sources that provide the information.[2] Establish procedures that incorporate specific cross-cutting competencies of training into the curriculum and field experiences of all programs to enhance interdisciplinary interactions and evaluation processes. Cross-cutting competencies will be emphasized at sites where there is interdisciplinary interactions; [3] Promote new and strengthen existing ERC interdisciplinary research & research training procedures to augment students' critical thinking and provide innovative administrative & management strategies that advance faculty research efforts and potential. This will take place in the Breath Lab. [4] Emphasize prevention by inclusion of preventive medicine and wellness into the training/field experiences. This will occur at various practicum sites especially TGH, BPVA and 30th St Clinic. [5] Improve students' management skills and experiences through changes in curricula and field experiences. The Occupational Safety Administration course will be expanded (spring semester) and a new Administration rotation at BPVA will take place. [6] Augment students' understanding of environmental health science by incorporating topics in to the curricula and field experiences. This will be emphasized in class room and clinical sites. The rotations through KSC and USF Safety offer this focus. [7] Respond to Hispanic workers in FL and the region by reaching out to minority groups/institutions in the state/region.

V. Appendices

1. Program curricula, course requirements, and sample curricula by academic program

Typical Resident Academic Curriculum is detailed below. Dr. Sunita Patel graduated from the program with an MSPH degree and Certificate of Residency Completion in June 2005.

YEAR 1 Fall Semester 2003	Occupational Medicine for Health Professionals Industrial Hygiene Seminar in Occupational Medicine Safety Management Principles and Practice Environmental and Occupational Health	PHC 6351 PHC 6356 PHC 6934 PHC 6360 PHC 6357	2 Credits 2 Credits 1 Credit 2 Credits <u>3 Credits</u> Total = 10
YEAR 1 Spring Semester 2004	Epidemiology Safety and Health Administration Seminar in Occupational Medicine Occupational Health Law*	PHC 6000 PHC 6354 PHC 6934 PHC 6423	3 Credits 2 Credits 1 Credit <u>2 Credits</u> Total = 8
YEAR 1 Summer Semester 2004	Social and Behavioral Sci. Applied to Health* Industrial Hygiene Aspects of Plant Operations	PHC 6410 PHC 6934	3 Credits <u>2 Credits</u> Total = 5
YEAR 2 Fall Semester 2004	Occupational Health Risk Assessment Seminar in Occupational Medicine Biostatistics I Principles of Health Policy & Management*	PHC 6350 PHC 6934 PHC 6050 PHC 6102	2 Credits 1 Credit 3 Credits <u>3 Credits</u> Total = 9
YEAR 2 Spring Semester 2005	Computer Applications for Pub. Health Research Seminar in Occupational Medicine Thesis/Research	PHC 6701 PHC 6934 PHC 6971	3 Credits 1 Credit <u>6 Credits</u> Total = 10

*ACGME Core

2. Updated data Tables 4a, 12a, 12b, and 13 organized by program area (7/1/05-6/30/06): **See Appendix B**
3. Publications by program area of faculty and trainees during the reporting period that have resulted, in whole or part, from ERC training grant support. Please specify all trainee authors by underlining their names.
Brooks SM, Spaul W, McCluskey J. The spectrum of building related asthma CHEST 2005;128:1720–1727
 Rumbak M, Newton M, Truncala T, et al. A prospective, randomized study comparing early verses delayed percutaneous tracheostomy in critically ill medical patients requiring prolonged mechanical ventilation. Crit Care Med 2004; 32(8): 1689-1694.

A. Program Title: Occupational Safety
B. Program Director: Thomas E. Bernard
C. Program Description

1. Goals and Objectives

The Occupational Safety Program offers the Master of Public Health (MPH) degree. The overall requirements of the MPH follow the College of Public Health's requirements to maintain college accreditation (CEPH) and seeks to meet the principal training goals of ABET. Program content was driven by a review of recommendations in 1998 (NIOSH "Guidelines for Graduate Programs in Safety; ABET "Program Criteria for Safety and Similarly named Engineering-Related Programs"; and ASSE "Curriculum Standards for Master's Degrees in Safety"). A recent review of training requirements has not changed and is reflected in the ASSE Scope of the Safety Professional. Based on the review, the learning objectives specific to the safety training are:

1. Recognize safety hazards that cause disease/injury associated with occupations;
2. Apply basic scientific and engineering principles to anticipate and identify actual potential hazards in the workplace;
3. Interpret toxicology literature and chemical and safety data, and incorporate this knowledge into the management of occupational hazards;
4. Apply the principles of engineering in the design of appropriate controls for workplace hazards;
5. Evaluate, use, maintain, and manage the use of appropriate types of personal protective equipment for control of worker exposures;
6. Conceptualize, develop, manage and evaluate occupational safety programs in industry and elsewhere;
7. Communicate to labor, management, and diverse community populations, both verbally and in writing, the nature, risks, and remediation of workplace hazards; and
8. Interpret and assure compliance with applicable government regulations and standards pertaining to occupational safety and health.

2. Responsible Conduct of Research

There are three venues for training in the responsible conduct of research. The first is during student orientation when all students in the College of Public Health receive IRB training for IRB certification including investigator responsibilities and HIPAA training. The students are required to maintain their IRB certification with annual training and recertification.

The second opportunity is in the core epidemiology course which has a lecture (first lecture) and learning objective (#3) on ethical research. The lecture is provided by a representative of the IRB and the students are given the Belmont report to read. In addition, there is a 1 credit doctoral seminar on ethics in research that an interested student can take.

The third opportunity is for those students who work on a research project involving human subjects and for those who have human subjects as part of their project effort. While this third opportunity is not taken by all students, those who do get first hand experience in the proper methods to obtain informed consent, interact with human subjects and/or handle sensitive data.

3. Faculty Participation

Thomas E. Bernard, PhD, CIH, PE, CPE is a professor and chair of the EOH Department and Program Director of Occupational Safety. He teaches *Engineering Systems Safety* and *Industrial Ergonomics*, and has shared *Industrial Hygiene-Physical Agents* and *Control Aspects of Industrial Hygiene*. He contributes to *Introduction to Industrial Hygiene*, *Analytical Methods in Industrial Hygiene I*. Dr. Bernard had responsibility for *Safety Management Principles and Practices* for several years before Dr. Rentos was assigned the class. He was also one of the original co-instructors for the *Safety and Health Administration* course. He advises OHS students in their academic program and special projects.

Dr. Bernard has research programs in heat stress and strain (personal monitoring, exposure assessment, the effects of clothing and personal cooling) and in industrial ergonomics (exposure assessment methods). He is working collaboratively with the University of Utah (exposure assessment methods and teaching a class), with the USF School of Physical Therapy (mentoring a junior faculty in ergonomics), and with the USF Florida Prevention Research Center (development of NIOSH-related intervention research applications), in addition to the University of Puerto Rico (development of NIOSH-related ergonomics research applications). Further, Dr. Bernard has a college assignment to develop mutual teaching, research and service relationships with Florida International University's (FIU) Robert Stemple

School of Public Health. He has just finished six years on the NIOSH Safety and Occupational Health Study Section (June 2006) and the NIH SBIR Special Emphasis Panels for workplace applications (July 2006). Dr. Bernard was Vice Chair (2003 to 2005) and now Chair (2006 to 2008) of the ACGIH TLV Committee for Physical Agents, which is undertaking initiatives in ergonomics. Dr. Bernard is active in the ERC continuing education program.

P. G. Rentos, Ph.D. is an associate professor and Deputy Director of Occupational Safety. He has 30 years of OSH experience through the Public Health Service and NIOSH. Dr. Rentos has been responsible for outreach activities as well as in the development of industrial hygiene and safety courses. He directs the certificate program in Safety Management and teaches *Safety Management Principals and Practice* and *Industrial Hygiene Aspects of Plant Operations*. He advises most of the students in the academic and certificate programs and supervises many of the special projects. Dr. Rentos is also active in a variety of other ERC activities that facilitate interdisciplinary interaction among faculty and students. These duties include Manager of the Occupational Medicine residence program, chair of the OM residency review and admissions committee, and director of the bi-monthly EOH Interdisciplinary NORA Conference.

TBA is a position at the assistant/associate professor level. The announcement for this position sought those with skills and research interests in psychology, epidemiology or interventions. The successful candidate is expected to work with the Florida Prevention Research Center and the Department of Psychology to broaden the training and research associated with occupational safety. At this writing, two candidates have been interviewed and recommended to the chair and dean. The candidate will be responsible for the *Safety and Health Administration* course and advising students on both their program of study and MPH projects.

Paul McCright, Ph.D. is a lecturer in Industrial and Management Systems Engineering in the College of Engineering and an assistant professor in the College of Public Health. For the College of Engineering, his teaching responsibilities include graduate courses in engineering management, occupational safety, construction safety, work physiology and biomechanics, and work design; and undergraduate courses in ergonomics, occupational safety, construction safety, and engineering economics. Research interests include ergonomics, work design, environmental issues and white-collar performance parameters. He teaches *Occupational Safety Engineering*, which is required, *Construction Safety Engineering* and *Work Physiology and Biomechanics*, which is an alternative offering for *Industrial Ergonomics*.

Supporting Faculty in the Occupational Safety Program

Yehia Y. Hammad, Sc.D. is a professor in EOH and Director of the OSHA 21d consultation program (USF SafetyFlorida) and the OSHA Training Institute. Dr. Hammad teaches *Introduction to Industrial Hygiene*, which is taken by all safety students. The consultation program facilitates the placement of safety students in field experiences.

Steve Mlynarek, Sc.D. is an associate professor in EOH. His research interests are in aerosols in general and in the built environment, and in respirator performance. He also has a research program in protective clothing. Dr. Mlynarek teaches *Indoor Air Quality* and *Control Aspects of Industrial Hygiene* and has substantial contributions to *Introduction to Industrial Hygiene* and *Analytical Methods in Industrial Hygiene I*. He is also the principal faculty for the *Environmental and Occupational Health* core class.

Jay Wolfson, Dr.P.H., J.D. is a distinguished professor in the department; Associate Vice President for Health Law, Policy and Safety, Director of the Florida Health Information Center; Director of the Suncoast Center for Patient Safety Evaluation and Research; Co-Director of the USF/Stetson University Consortium for Law and Medicine; and Associate Director of the VHA National Patient Safety Center of Inquiry. He has extensive experience and research in health policy issues and regulatory affairs. Dr. Wolfson teaches *Occupational Health Law*, *Environmental Health Law*, and *Risk Management*.

Ira S. Richards, Ph.D. is an associate professor who is interested in toxicology. He has active research interests in the effects of low-level exposures to industrial chemicals and has developed in vitro models to demonstrate effects of pulmonary irritants. He is also interested in the physiological responses of people to work stress and has collaborated with Dr. Bernard. Dr. Richards teaches *Environmental and Occupational Toxicology*, which is required of all the occupational safety students, as well as *Industrial Toxicology* and courses in anatomy, physiology and pathobiology in the college.

W. Michael Reid, Ph.D. is an associate professor and is the Center Director of the Florida Center for Leadership in Public Health Practice. The Center includes the CDC funded Florida Center for Public Health Preparedness and the CDC funded Public Health Leadership Institute of Florida. Dr. Reid has

taught the *Safety and Health Administration* course and is assisting in the development of the current version.

Curriculum

The Safety Management program is intended for students desiring a professional career in occupational safety. In addition to core public health courses, it builds on a variety of courses enabling the student to recognize, evaluate and control existing and potential hazards. Students are trained to apply these safety principles in engineering controls, administrative practices, personal protective techniques, facility audits in the work place and community, and to know when to consult with other environmental and occupational professionals to prevent or reduce work related injuries, illnesses or discomfort as well as property loss and environmental damage.

The course of study is provided in Exhibit A at the end of this section. All COPH core courses, which are required for CEPH accreditation, are foundational for the Occupational Safety Program. The concentration area required cores provide the profession-specific training. *Safety Management Principles and Practices* is designed to understand the value of properly designed, comprehensive occupational safety and health programs and the role of the safety and health professional in the development, implementation, and management of these programs. *Safety and Health Administration* is a study of techniques and administrative practices that are instrumental in the initiation and maintenance of environmental health, occupational health, and safety programs. The objectives of this class are (1) Describe leadership concepts and practices; (2) Apply personality type to organizational practices, including teambuilding; (3) Illustrate effective communication methods within and outside organizations; (4) Use time management techniques; (5) Describe administrative practices and issues, including decision-making, problem solving, and professional ethics; (6) Distinguish strategic planning from operational planning and develop an operational plan; (7) Develop a program budget; (8) Describe critical human resource issues; (9) Explain the relationship between quality improvement methods and organizational costs; (10) Describe legal and regulatory issues, such as workers' compensation, the Americans with Disabilities Act, and the impact of the Occupational Health and Safety Act; and (11) Apply evaluation techniques in the development of programs and projects. *Occupational Safety Engineering* is an introduction to the principles of designing, maintaining, and managing a workplace free from hazards, and covers mechanical hazards, fall and lifting hazards, climatic and environmental hazards, electrical hazards, fire and explosive hazards, and pressure hazards. The objectives are (1) To develop a good understanding of the principles of safety; (2) To develop a good understanding of the general contents of various safety codes, especially OSHA, and how they are applied in the U.S.; (3) To acquire competency in the application of safety-related skills; (4) To develop a good understanding of the application of engineering design principles to improve safety in the workplace and in product characteristics; and (5) To experience an organizational safety audit from beginning to end. *Engineering Systems Safety* objectives are (1) Acquire system safety skills; (2) Identify potential hazards in engineering designs; (3) Apply the acquired skills for the analysis and design of safe systems; and (4) Develop some analytical structures through which safety decisions can be performed. *Occupational Health Law* provides the student with an understanding of the legal process at the federal and state levels concerning the development, promulgation, enforcement and litigation of laws and standards intended to ensure health and safety in the workplace. The objectives of *Industrial Ergonomics* are to (1) Understand the basic philosophy of ergonomics; (2) Understand the basic attributes and limitations of people to perform work; and (3) Know how to assess the demands of work; (4) Be able to recommend sound workplace designs; and (5) Demonstrate analytical skills. *Introduction to Industrial Hygiene* introduces students to the concept of anticipation, recognition, evaluation and control of the health hazards present in the work environment so that they will be able to (1) Understand and define the attributes of biological, chemical and physical agents and their relationships to occupational diseases; (2) Read, understand and interpret industrial hygiene reports; and (3) Calculate workers exposure and compare it to national standards of safe exposure and safe work practices. The objectives for *Environmental and Occupational Toxicology* are (1) familiarization with basic toxicological principles; (2) recognition of the relationship and nature of chemical-induced injury in disease processes; (3) understanding the role and limitations of toxicity testing in predicting human health effects from chemical exposures; (4) defining the conditions under which a potential chemical hazard becomes a risk to human health; and (5) recognition of the diversity of human biological and behavioral conditions which may modify toxicity.

Occupational Safety students are required to take two electives. Most students are encouraged to take *Industrial Hygiene Aspects of Plant Operations* and *Construction Safety Engineering*. While the plant

operations class was initially intended as an elective for industrial hygiene students before there was a safety program, the class has evolved for safety students, OHN students and the OMRs as well as the IH students. *Occupational Health Risk Assessment* is a follow-on toxicology course. As alternatives, a student can follow their training with more expertise in environmental health or industrial hygiene with two or more of the environmental health or industrial hygiene offerings. A student may choose one or two electives not on the list and these are approved after consultation with an advisor.

As another elective, *Public Health Capstone Course*, is designed to provide a culminating highly interactive experience for students and to allow for the synthesis and application of core public health disciplines in situations simulating the actual practice of public health. If the student completes the class successfully, the student does not need to take the core class comprehensive examinations (see below). Five of the OHS students took the offering in Spring 2006, and all reported very favorably on it. Both the Dean and the other principal instructor (Reid) also commented on the substantial contributions and quality of preparation that the department students brought to the class.

We recognize the normal tension between providing many details with respect to safety and the teaching of an academic program. While the classes cover specific topics like lock out/tag out, the students are welcome to take any continuing education/outreach classes offered by the ERC at no cost and the fees for continuing education classes at conferences are covered by the ERC. In addition, classes offered by the USF OTI are available to our students. In this way, they can enhance the breadth of knowledge at no additional cost to them. We also believe that encouraging our students to take classes in this format helps to instill the value of continuing professional education, one of the goals of the program.

The seminar class is usually taken near the end of the training period. Depending on the offering the class is either based on student presentations, a collection of department and college seminars, or a mix of both. The culminating experiences are the field experience, special project and comprehensive examination.

The field experience is a 1 to 3 credit hour effort (45 to 135 contact hours in the field) depending on the breadth of the student's experience. The field experience is coordinated by a person in the Dean's Office with the approval of the advisor. During the supervised field experience the student gains valuable knowledge that is not normally available through other courses and is different from the student's other experiences (e.g., employment). It depends on the student's interest and skills.

The special project is a capstone effort that ties the student's training together to address a safety and health problem and prepare a report. Supervision is provided by either the academic advisor or another faculty member with whom there is a joint interest. Table 10 provides a list of topics for recent MPH special projects in occupational safety.

There are two comprehensive exams. One is based on the core classes and is administered by the Dean's Office. The other one is for the concentration area, which is written and scored by the program faculty but administered by the Dean's Office. Both exams are taken on the same day and offered once a term. While many programs have dropped the comprehensive examination in their concentration areas, occupational safety faculty have decided to keep it. The examine provides a taste of a certification exam and based on prior student feedback in industrial hygiene was very helpful in terms of intellectual demand. If a student successfully takes the ASP or CSP exam, the concentration area exam is waived.

The minimum number of credit hours under the CEPH accreditation is 42. The Occupational Safety students can complete the program with 43 to 45 credit hours depending on the field experience. This would require four to five terms (17 to 21 months) for a fulltime student.

D. Program Activities and Accomplishments

The Occupational Safety Program provides fundamental and comprehensive safety training following ASSE guidelines. The program graduated three trainees in the past year with five trainees currently enrolled. There is one trainee who is Latino and we are planning a new strategy for diversity recruitment through Florida International University.

Dr. Bernard has been appointed to chair the ACGIH Physical Agents TLV Committee. Dr. Wolfson was recently recognized as a Distinguished University Professor.

We are recruiting for an assistant / associate professor for the safety program to support the new directions described in Section F. The new hire will guide us toward more psychological and interventions training, which are key to a successful occupational safety program.

E. Program Products

For publications, only the principal faculty for OS are listed.

1. Gonzalez, N. W., T. E. Bernard, N. L. Carroll, M. A. Bryner, J. P. Zeigler. Maximum sustainable work rate for five protective clothing ensembles with respect to moisture vapor transmission rate and air permeability. *Journal of Occupational and Environmental Hygiene* 3:80-86, 2006
2. Drinkaus, P, D. S. Bloswick, R. Sesek, C. Mann, T. Bernard. Job level risk assessment using task level Strain Index scores: A pilot study. *International Journal of Occupational Safety and Ergonomics* 11:141-152, 2005
3. Bernard, T. E., C. L. Luecke, S. W. Schwartz, K. S. Kirkland, C. D. Ashley. WBGT clothing adjustments for four clothing ensembles under three relative humidity levels. *Journal of Occupational and Environmental Hygiene* 2:251-256, 2005.
4. Fogleman, M., L. Fakhrzadeh, T. E. Bernard. The relationship between outdoor thermal conditions and acute injury in an aluminum smelter. *International Journal of Industrial Ergonomics* 35:47-55, 2005

The most important r2p outcome was based on the Bernard, et al paper on clothing adjustment factors. This was the principal source of information on which the recent update to the heat stress TLV was based.

F. Future Plans

In preparation for the next five years, the occupational safety faculty along with other center faculty articulated a number of goals for our trainees. These include:

1. Provide a training program that includes commonly accepted rubrics (see Section C.1 above)
2. Provide interdisciplinary experiences
3. Require a field experience that broadens trainee perspectives on safety
4. Encourage professional certification
5. Instill the value of lifelong learning
6. Instill the value of professional involvement

The current model for occupational safety follows the NIOSH/ASSE/ABET paradigm of anticipation, recognition, evaluation and control, and where controls strategies include general controls (training, surveillance and program review) and job specific controls (safe work practices, engineering controls, administrative controls and personal protection). In the implementation of controls, there is generally a top-down, often standards-driven approach. While this is a simplification of reality in which controls are negotiated to some extent with labor and management representatives or in the world of joint health and safety committees, there is still a standards-driven, one-direction approach to many hazards.

The new direction for the occupational safety program in its teaching and research mission will re-examine this paradigm from a different perspective. The usual way to picture safety in the workplace is to consider (1) The job requirements are dictated by the work that must be accomplished and the organization of the work (e.g., shifts, piece rate); (2) These job requirements are met by the individual work activities and the systems to support them; (3) From the work activities and supporting system (combined they form the system boundary in a systems safety analysis), there is the risk of an accident; (4) The accident may lead to a worker impairment, loss of property and/or environmental damage; and (5) The final event is worker disability (versus an impairment with continued work). USF plans to complement our understanding and training along the usual path with course work and research in the areas of workplace psychosocial factors and the organization of work as well as individual (personal) factors that include the psychological state and traits and individual work styles. Two skills that are readily obvious are in industrial and organizational psychology and another in injury epidemiology. These will help us to articulate the organizational climate (psychosocial factors and organization of work) and the individual characteristics including psychological features and work styles; and to link these to deleterious outcomes. This framework also highlights more clearly other opportunities for intervention and the form of the intervention.

The second area for training and research is focused on interventions. The CDC-funded Florida Prevention Research Center uses a social marketing model to improve health, safety and well-being. Dr. Bernard has been working with the Co-Directors (Bryant, McDermott and Baldwin) on a model of intervention in the workplace that is a hybrid of conventional interventions with the social marketing model. This model is in its early stages. More immediately, the Florida Prevention Research Center has developed a program of eye safety for migrant orange crop harvesters. One of the interesting outcomes of that work is why safety glasses are valued by workers (keeps dust out) versus the high value protection (keeps branches out). Initial work has increased the use of eye protection from very low (near zero) to about 50%. This work is ongoing with the goal of increasing the rate of usage. The point being

that social marketing is widely accepted in the public health community but not well known in the safety community. USF plans to develop this concept of workplace intervention in the next five years with concrete action taken already (submission of an R03 application for a young investigator).

Appendices

1. Typical Curriculum: **Exhibit A**
2. Updated data Tables 4a, 12a, 12b, and 13 organized by program area (7/1/05-6/30/06): **See Appendix B**
3. Publications by program area of faculty and trainees during the reporting period that have resulted, in whole or part, from ERC training grant support. Please specify all trainee authors by underlining their names.
Menzel, N. N., S. M. Brooks, T. E. Bernard, A. Nelson. The physical workload of nursing personnel: association with musculoskeletal discomfort. International Journal of Nursing Studies 41:859-867,2004
Drinkaus, P, D. S. Bloswick, R. Sesek, C. Mann, T. Bernard. Job level risk assessment using task level Strain Index scores: A pilot study. International Journal of Occupational Safety and Ergonomics 11:141-152, 2005
Bernard, T. E., C. L. Luecke, S. W. Schwartz, K. S. Kirkland, C. D. Ashley. WBGT clothing adjustments for four clothing ensembles under three relative humidity levels. Journal of Occupational and Environmental Hygiene 2:251-256, 2005
Fogleman, M., L. Fakhrzadeh, T. E. Bernard. The relationship between outdoor thermal conditions and acute injury in an aluminum smelter. International Journal of Industrial Ergonomics 35:47-55,2005

Exhibit A: Degree Requirements for an MPH in Occupational Safety

Public Health		
Core Courses		15
PHC 6000	Epidemiology	3
PHC 6050	Biostatistics	3
PHC 6102	Principles of Health Policy and Management	3
PHC 6357	Environmental and Occupational Health	3
PHC 6410	Social and Behavioral Sciences Applied to Public Health	3
	Subtotal	15
Concentration Area		
PHC 6360	Safety Management Principles and Practices	2
PHC 6354	Safety and Health Administration	2
EIN 6216	Occupational Safety Engineering	3
EIN 6215	Engineering Systems Safety	3
PHC 6423	Occupational Health Law	2
PHC 6361	Industrial Ergonomics	2
	(OR EIN 5245 Work Physiology and Biomechanics)	(or 3)
PHC 6356	Introduction to Industrial Hygiene	2
PHC 6310	Environmental and Occupational Toxicology	3
	Subtotal	19 (20)
	(2 Required from the following or other approved	
Electives	electives)	
PHC 6364	Industrial Hygiene Aspects of Plant Operations	2
EIN 6934	Construction Safety Engineering	3
PHC 6350	Occupational Health Risk Assessment	3
PHC 6351	Occupational Medicine for Health Professionals	3
PHC 6422	Environmental Health Law	2
ENV 5345	Solid Waste Control	3
PHC 6303	Community Air Pollution	3
PHC 6301	Analysis of Water and Wastewater	3
PHC 6934	Public Health Capstone Course	3
	Subtotal	4 - 6
Other Requirements		
PHC 6930	Public Health Seminar	1
PHC 6977	Special Project	3
PHC 6945	Supervised Field Experience	1 - 3
	Comprehensive Examination	---
	Subtotal	5 - 7
	Total	43 - 48

- A. Continuing Education Program**
- B. Program Director: Diana McCluskey, MPH**
- C. Program Description:**

Background:

The Continuing Education (CE) Program is an integral part of the Sunshine ERC. The purpose of the CE program is to offer high quality, comprehensive, affordable short-term training programs for industrial hygienists, safety professionals, physicians, nurses and other professionals that work in the field of occupational safety and health (OS&H).

The goal of the CE program is to offer high quality, comprehensive, affordable short-term training programs for industrial hygienists, safety professionals, physicians, nurses and other professionals that work in the field of occupational safety and health (OS&H). The objectives of the CE program are as follows:

- Evaluate the effectiveness of CE Training programs through analysis of impact and needs assessments and program evaluations completed by course participants.
- Enhance and expand CE programs based on data collected in impact and needs assessments and evaluations.
- Identify opportunities and methods for promoting R2P through the CE programs.
- Provide a venue for researchers and faculty to convene with practitioners and OS&H professionals to encourage exchange of research findings and identify practical uses for research concepts and findings.
- Increase accessibility of training courses through frequent scheduling and at various regional locations.
- Tailor programs to meet the specific training needs of different disciplines.
- Survey industries in the region and identify the need(s) for specialized training or programs for underserved populations.
- Offer high quality, low cost training programs on OS&H topics in order to encourage employer support for increasing the number of trained individuals in the workforce.
- Expand the geographical range of courses offered to include areas outside the state of Florida.
- Partner with other state and local government agencies which share similar goals and objectives, to increase the resources available for short-term training programs.
- Solicit external input on course content and design to ensure courses are current, relevant and high quality.
- Increase the number of occupational medicine physicians and industrial hygienists attending training programs.
- Increase collaboration and interaction with statewide and regional professional associations representing the OS&H disciplines, including the AIHA, ACOEM, AAOHN and ASSE.
- Monitor minority and underserved population participation in training programs, to ensure that training needs of these groups are being met and that individuals from the groups are attending OS&H training programs.

D. Program Activities and Accomplishments

During the year, the Continuing Education Program maintained a large number of trainees in our programs. This was accomplished through the continued hard work of Ms. Diana McCluskey, the CE Program Director, and the CE team; together they ensured that the CE program continued to be a successful part of the Sunshine ERC. Part of this success has come from the ability to work with other organizations in the community. Partnerships with outside groups have been formed, which has helped to bring in more trainees to the Sunshine ERC CE programs. Though there are many partnerships, however two are noteworthy of mentioning: The Sunshine ERC/Workers' Compensation/Florida Safety and Health Conference Partnership and the Florida Occupational Health Nurses/Sunshine ERC partnership. Formerly the two outside groups independently organized and offered conferences covering many OS&H topics, causing a considerable amount of competition to the Sunshine ERC CE programs. By partnering with these two groups, the quality of the training has improved significantly and there is no longer a problem of competition.

The breakdown of trainees by discipline for the 2005-06 year was as follows: 58 MDs, 223 nurses, 49 industrial hygienists, 223 safety professionals and 1,640 in the category of other. This breakdown is relatively similar to previous years. Because the number of physicians and industrial hygienists has been a little low, increasing these numbers will become a focus of the CE team in future years.

CE trainee candidates represent a diverse population. As seen above, most trainees from the previous year are identified in the category of other. This has been the case in the past. Each attendee is required to complete a registration sheet which has a blank for position title. While some attendees fall into traditional OS&H categories, many do not. In Florida, it is not unusual for safety duties to be assigned to an individual in Human Resources or an Administrative Assistant. In addition, there are many technicians who perform duties related to Industrial Hygiene. In the category of other, the most common position titles are lawyer, engineer, administrator, coordinator, technician, environmental specialist, and project manager. The CE team will continue to track this information so that the category of Other is clearly defined with an explanatory occupation for each person.

A continued successful plan for the CE programs for this year was offering the courses at no cost to the participants. This is done for our non certification courses. This is accomplished by sponsorship with companies in the community with specializations in the safety and Industrial Hygiene fields. Some of these sponsors are past graduates of the ERC programs at USF.

Another training technique that has proven effective in increasing the number of participants in our courses is offering courses in 3 hour segments. Trainees attend courses each spring for 3 hours. New training materials are often piloted in this fashion and developed into full day or multi-day courses after the 3 hour program has been taught and evaluations reviewed. There are many topics/courses where information is essential, but no one wants to pay a fee. These are the programs scheduled in the Spring Soiree and Summer Institute where training is offered free of charge. For example, courses that do not fulfill a mandatory certification requirement such as: Respiratory Protection – A Hands On Course; Recognition, Evaluation and Control of Non-Mold Exposures at the Work Environment; The New OSHA Hexavalent Chromium Standard; Program Elements for Ergonomics; Public Warehousing and Storage; and Health Hazard Awareness all fall into this category. We have found that courses which provide vital information but do not respond to a certification requirement, are difficult to fill when a fee is charged. By eliminating the fee that the participant might incur, we have increased interest and participation in these courses.

For our certification courses, we are continuing to have success with participation in those. Participation numbers continue to be steady and, due to our knowledgeable and effective instructors, remains effective in training participants. We continually have positive evaluations of these CE courses. We look forward to continuing this positive momentum and would like to see these courses expand to other areas in and around Tampa.

Outreach:

Outreach is an important part of the Sunshine ERC programs. Faculty are heavily involved in outreach from industrial hygiene, occupational medicine, occupational safety and occupational health nursing. The faculty sit on national committees for review of grants, study sections for federal agencies and planning committees for national conferences. Volunteer lectures are provided in academic courses at different educational institutions and at statewide and national conferences. The faculty members keep an open door policy and often will take 3-5 phone calls per week to answer questions related to their discipline. For example, many family and internal medicine physicians will contact Drs. Brooks and McCluskey for input on occupational medicine, pulmonary and toxicology problems.

Drs. Brooks and McCluskey provide volunteer lectures at conferences around the state. For example, Dr. Brooks recently lectured at a conference for prison wardens on TB in the occupational setting. Dr. McCluskey will often deliver presentations on bloodborne pathogens, exposure assessment, occupational exposures and toxicology at numerous conferences around the state as well. Dr. McCluskey also provides walk-throughs for different companies, followed by a lecture on an important topic. For example, during the project period he went to Formosa Plastics in Texas and provided a walk through of the plant and delivered an intense lecture to employees on Benzene and the Risk of Brain Cancer.

Drs. Bernard, Mlynarek and Hammad spend a significant amount of time providing input to individuals in the community on mold, indoor air quality concerns, ergonomics, heat stress and sampling. Dr. Bernard's website for ergonomics and physical agents provides free tools for individuals visiting his web site that they can download to help as they examine issues in ergonomics, on heat stress and physical agents. It generates about 15,000 hits per year with many requests to use the material in other training programs and within a plant or company.

Dr. Burns has an active outreach effort as well. She serves on professional committees and associations. For example, Dr. Burns serves as chairperson of the Florida Westcoast Chapter of AAOHN

Membership Committee. In this role, the chapter has received 3 awards from the state and national AAOHN associations for recruitment of new members and retention of current members in the professional association. As a member of the FWCAOHN Board of directors, she provides expert input into annual programming and other activities of the chapter. In addition, Dr. Burns was invited and served on a White House Expert panel to develop a National Initiative, "Pesticides and National Strategies for Health Care Providers" from 2002-2005. Expert testimony and input from stake holders was received by the panel in 2000-2002 (prior to this reporting period) Then the panel was divided into two work groups. Dr. Burns worked on the "Curriculum Work Group". (There was also a work group that focused on clinical practice.) This initiative was cosponsored by the EPA, DHHS, USDA, and DOL. The Curriculum Work Group was comprised of representatives from medical education as well as nursing education. The overall goal of the initiative was to develop competencies (both educational and clinical) and a detailed curriculum guideline for all medical and nursing education programs in the nation regarding the recognition, diagnosis and management of illnesses and injuries to workers related to exposure to pesticides. The *National Pesticide competency Guidelines for Medical and Nursing Education* were peer reviewed during the Summer and Fall of 2003. Revisions were made in 2004 and the document was released and distributed to the stakeholders, including medical and nursing education organizations in 2005.

Dr. Burns was invited to participate in Governor Jeb Bush's Expert Committee 2005-2006 for "*Homeland Security: Avian Influenza Epidemic Table Top Exercise for the State of Florida*". The focus and outcome of this exercise conducted in March 2006 at the Emergency Operations Center in Tallahassee Florida was for all the key participants to participate in an exercise scenario of an avian influenza outbreak. Health care services including quarantine issues were addressed. Additionally, second and third order effects, especially the impact on businesses and employers (due to the highly significant loss of a workforce due to illness and death) and resulting economic impact were also rehearsed as part of the exercise.

Dr. Burns serves as a member of the University of South Florida Safety Committee.. This committee reviews and recommends policy and procedure changes to the University Administration regarding occupational illnesses and injuries, worker compensation claims etc. of USF faculty and staff on both the Tampa and St. Petersburg Campus.

During the project period, there were no major changes to the faculty members or their commitment to the program. There were a few changes to the staff in the HST programs. Ms. McCluskey continues her role as the Program Director. In the past year, her management team included Mr. Alex LeBeau and Mr. Michael Martinez. Ms. Kimberly Fink (the former coordinator) left the ERC when she graduated from her training program in School Psychology and began her career in that field. Mr. LeBeau has replaced Ms. Fink as the Educational Coordinator. He has been in this role since May of 2005. Mr. Martinez was also involved in the HST programs from 2005-06.

E. Program Products

Needs Assessment:

The needs forms that we have utilized in the past have been very helpful in obtaining ideas for courses that participants would find useful. We have been able to tailor the programs to what individuals in the safety and industrial hygiene fields would find beneficial. In the past, it has been challenging to successfully have a large number of trainees complete the forms, even though participation numbers were high. During the 2005-06 year, the CE team piloted a plan where trainees were offered incentives in the form of a drawing at the end of each CE course. This was done for all training programs except: the ERC/Florida OHN conference and the ERC/ Florida Safety and Health/Workers' Compensation Institute. For the ERC/Florida OHN conference a nursing specific needs assessment form was completed by participants. The same form will be updated and used in the future ERC/Florida OHN conference as well.

For all other non-HST CE training programs offered by the Sunshine ERC, trainees were asked to complete all three forms and return them to one of the CE team members. The needs assessment form asks for the name of the individual completing the form. It is from this stack of forms that a winner's name is drawn. This approach has been very successful for the HST programs. It has not been as successful in the CE programs. We will offer better incentives for completion of the forms in the CE programs to see if this makes a difference. The summarized form for the 05-06 year is included in the appendices. Information collected in this form is used to plan future programs.

Closing Comments:

The CE team is constantly involved in trying to improve and expand the program to train as many individuals as possible in order to promote safety and health in the workplace. Judging by the interest we have had in the past for our courses, the potential for future growth is extremely high. We welcome this expansion and will continue to provide the highest quality of training possible.

F. Future Plans:

For the 2006-07 year, 23 open enrollment courses are scheduled. It is expected that additional courses will be added to the schedule based upon needs assessment results, involvement with the USF OTI and OSHA 21-D program and other opportunities as well. The courses that are scheduled are as follows (broken down by discipline):

Occupational Medicine:

- Sunshine ERC/FWCI/National Underwriter – Annual Sunshine ERC/Workers’ Compensation/Florida Safety and Health Conference - August 13-16.
- Spring Soiree – Avian and Pandemic Flu - February 7.
- Spring Soiree – Reproductive Hazards in the Workplace – February 28.
- Spring Soiree – Bloodborne Pathogens and Emerging Infections – March 14.
- Sunshine ERC/FWCI/National Underwriter – Annual Sunshine ERC/Workers’ Compensation/Florida Safety and Health Conference - August 12-15, 2007.
- FAOEM/Sunshine ERC Training Workshop – February of 2007 (date TBD).

Occupational Health Nursing:

- Sunshine ERC/FSAOHNN – Florida State Association of Occupational Health Nurses Annual Conference - October 26-28.
- NIOSH Approved Spirometry – March 12-13.
- Hearing Conservation in Industry: CAOHC Certification – March 28-30.
- Hearing Conservation in Industry: CAOHC Recertification – March 29.

Occupational Safety:

- Spring Soiree – Risk Communication: Helping Your Community Cope After a Disaster & Mental Health in the Aftermath of Disaster – February 14.
- Spring Soiree – Workplace Violence – March 7.
- Spring Soiree – OSHA Recordkeeping Update – March 28
- 4th Annual Summer Training Institute for Industrial Hygienists, Safety Professionals and Hazardous Materials Workers – Hurricane Preparedness & Safety for Workers – May 23.

Industrial Hygiene:

- 4th Annual Summer Training Institute for Industrial Hygienists, Safety Professionals & Hazardous Materials Workers – Everyday Ergonomics – May 16.
- 4th Annual Summer Training Institute for Industrial Hygienists, Safety Professionals & Hazardous Materials Workers – Fundamentals of Chemical Protective Clothing – May 30.
- 4th Annual Summer Training Institute for Industrial Hygienists, Safety Professionals & Hazardous Materials Workers– Conducting an Accident Investigation & Controlling Construction Hazards – June 6.
- 4th Annual Summer Training Institute for Industrial Hygienists, Safety Professionals & Hazardous Materials Workers – Mold and Other Important Indoor Biocontaminants – June 13.
- 4th Annual Summer Training Institute for Industrial Hygienists, Safety Professionals & Hazardous Materials Workers – Introduction to Heat Stress and Strain in the Workplace – June 27.
- Comprehensive Industrial Hygiene Review Course and Certified Safety Professional Course – Dates TBD – Collaboratively offered with the North Carolina ERC.

Occupational Health Psychology:

- Workplace Aggression Management Workshop – October 27.
- Spring Soiree – TBD - April 4.
- Spring Soiree – TBD – April 11.

The schedule for 2006-07 models what will be offered each year during the proposed project period. The exception will be the expansion of more CE programs being scheduled in other states across the region. This will increase the number of training programs offered. Generally, the CE team and ERC faculty expend a great deal of time and effort in two major conferences in the late summer and fall each year: The ERC/FWCI/National Underwriter – Annual Sunshine ERC/Workers’ Compensation/Florida Safety and Health

Conference and the Sunshine ERC/FSAOHNN – Florida State Association of Occupational Health Nurses Annual Conference. In the spring, the CE team focuses on training programs targeting Industrial Hygienists and Safety Professionals. Now that the OHP Program is funded by the Sunshine ERC, training programs targeting professionals in this discipline will be added to the spring schedule of programs

Appendices

1. Typical Curriculum- **Not Applicable.**
2. Updated data Tables 4a, 12a, 12b, and 13 organized by program area (7/1/05-6/30/06): **See Appendix B**
1. Publications by program area of faculty and trainees during the reporting period that have resulted, in whole or part, from ERC training grant support. Please specify all trainee authors by underlining their names. – **Not Applicable.**

A. Hazardous Substances Training Program

B. Program Director: Diana McCluskey, MPH

C. Program Description:

Goals and Objectives:

The goal of the HST program is to offer high quality, comprehensive, low cost training programs that prepare individuals to address the management and control of hazardous materials and waste sites. The objectives of the HST program are as follows:

- Evaluate the effectiveness of the Hazardous Substance Training programs through the analysis of impact assessments, needs assessments and program evaluations completed by course participants.
- Enhance and expand the HST programs based upon the data collected in the evaluations, impact assessments and needs assessments.
- Increase accessibility of training courses through frequent scheduling and at various regional locations.
- Tailor programs to meet the specific training needs of different disciplines and industries.
- Survey industries in the region and identify any need(s) for specialized training or programs for underserved populations.
- Offer high quality, low cost training programs on hazardous substances in order to encourage employer support for increasing the number of trained individuals in the workforce.
- Expand the geographical range of courses offered to include areas outside the state of Florida.
- Partner with other state and local government agencies which promote similar goals and objectives, to pool and increase the resources available for short-term training programs.
- Partner with the University of North Carolina Occupational Safety and Health Education and Research Center (NC ERC) and the Deep South Center for Occupational Health and Safety (Deep South Center) to offer jointly sponsored programs and to conduct annual regional impact assessments/needs assessments.
- Expand the scope of training programs offered to address the new problems facing workers who deal with hazardous substances, materials or wastes.
- Solicit external input on course content and objectives to ensure that the courses are current, relevant and high quality.
- Increase the number trainees who represent state and local health and environmental professionals and other professionals involved in evaluating, managing and handling hazardous substances.

Responsible Conduct of Science Training: Not applicable.

Faculty Participation:

The HST programs are directed by Ms. Diana McCluskey. In this capacity, Ms. McCluskey oversees all administrative aspects of the program from planning, marketing and expansion to evaluation, impact assessment and continuous quality improvement. Ms. McCluskey's area of expertise is in program leadership, management, administration and oversight. She has a Master of Public Health (MPH) in Health Organizations and Management and has been with the Sunshine ERC since funding began in 1997.

For administrative support, Mr. Alex LeBeau and Mr. Michael Martinez are the HST Coordinators. Mr. LeBeau works oversees the HST budgets and financing and manages the day to day operations of the HST programs. He is responsible for managing the training courses when they are offered, implementing the CE training program plan and he is the liaison to the course instructors. Because the majority of HST courses require a significant amount of hands on activities and scenario training, Mr. LeBeau has to dedicate a larger amount of time to working with the instructors who are teaching the courses. On-site management of the HST courses is much more demanding than on-site management of the CE Courses. Mr. Martinez is responsible for off-site courses, impact assessment/evaluations/minority tracking, statistical data collection and professional credits.

Ms. Robin DeHate is the Faculty Content and Training Director. For all 29 CFR 1910.120 HAZWOPER related courses and the CHMM Review Course, Ms. DeHate develops the course materials, establishes the curriculum for new programs and teaches. Typically Ms. DeHate is also the individual responsible for recommending new courses, developing the materials for these courses or for selecting additional outside instructors to use in teaching the courses. Ms. DeHate has over twenty years of experience in the occupational and environmental health and safety field. Her qualifications

include being a CHMM, an MPH in Safety Management and Ph.D. candidate in Toxicology at the College of Public Health.

When Ms. DeHate is not involved in planning a new course, Ms. McCluskey collaborates with other faculty at the Sunshine ERC (based upon their respective areas of expertise). One example is a newly planned course called Chemical Hazards and Emergency Response. Mr. John Smyth, an adjunct faculty member at the College of Public Health, in the department of Environmental and Occupational Health, will act as the course director. Other individuals from the community will also be involved in teaching the course; however, Mr. Smyth will instruct a portion of the course, oversee the course direction, approve course materials and take responsibility for the course overall. All ERC faculty members help to contribute to the CE and HST programs and are vital to the continued growth and success of the programs.

Curricula:

A brief description, course title and the name of the course director for the HST Programs are identified below:

- *General Site Worker 40-Hour Training Course – Hazardous Waste Site Operations & Emergency Response*, Course Director: Robin DeHate, CHMM, MPH-This training course helps employees assess the hazards associated with uncontrolled hazardous waste sites in order to determine whether work can be conducted in a safe manner. Required competencies will be addressed through a combination of lecture, group exercises, and hands-on exercises. This course fulfills the OSHA training requirement for individuals entering or working at a hazardous waste site. CFR:29 CFR Part 1910.120 (e)
- *General Site Worker 8-Hour Refresher Course – Hazardous Waste Site Operations & Emergency Response*, Course Director: Robin DeHate, CHMM, MPH - This refresher training course assists employees to assess the hazards associated with uncontrolled hazardous waste sites in order to determine whether work can be conducted in a safe manner. This course meets the refresher requirements for site workers as specified in CFR: 29 CFR Part 1910.120 (e)
- *Site Supervisor 8-Hour Course – Hazardous Waste Operations & Emergency Response*, Course Director: Robin DeHate, CHMM, MPH - This training course aids supervisors in assessing the hazards associated with uncontrolled hazardous waste sites in order to determine whether work can be conducted in a safe manner Supervisors will review safety and health program requirements in addition to establishing a personal protective equipment program, spill containment program, and health hazard monitoring procedure and techniques. CFR: 29 CFR Part 1910.120 (e)
- *Certified Hazardous Materials Manager Review Course (CHMM)*, Course Director: Robin DeHate, CHMM, MPH - This training course is designed to provide a review session for those individuals who plan to sit for the Certified Hazardous Materials Manager Examination. This certification is important because environmental programs are vital to our public health and safety and, within that field; the management of hazardous materials requires proven and unquestionable skill and competence. Quality control over the professionals involved in programs of national importance, and particularly of public safety, is best accomplished through certification.
- *Hazardous Materials Generated in Methamphetamine Laboratories*, Course Director: James McCluskey, MD, MPH - This course provides a detailed overview about the health effects of an acute, chronic or incidental exposure to methamphetamine. The scope of the problem is detailed, including a brief review of the total methamphetamine clandestine laboratory incidents during the year 2005. Common chemicals and their hazards are covered, followed by a thorough description of the common production methods.
- *First Responders Operations Level 4 Hour Refresher Training Course - Hazardous Waste Operations & Emergency Response*, Course Director: Robin DeHate, CHMM, MPH - This training course assists employees to assess the risks associated with hazardous materials incidents and provide guidance on defensive actions to be taken. Required competencies will be addressed through a combination of lecture, group exercises, and hands-on exercises. CFR: 29 CFR Part 1910.120 (q).
- *40 Hour Hazardous Materials Technician Course*, Course Director: Robin DeHate, CHMM, MPH CFR: 29 CFR Part 1910.120 (q) - This course complies with the regulations promulgated by the OSHA requirements set forth in 29 CFR Part 1910.120(q). Hazardous Materials technicians are individuals who respond to releases or potential releases for the purpose of stopping the release. They assume a more aggressive role than a first responder at the operations level in that they will

approach the point of release in order to plug, patch or otherwise stop the release of a hazardous substance.

A. Program Activities and Accomplishments

Progress Toward Goals and Objectives:

Progress toward the accomplishment of the goals and objectives continues to be strong. The goals and objectives of the HST program are essential to continuing success of the programs.

Trainee Honors, Awards, Scholarships: Not Applicable.

Faculty Honors, Awards, Appointments: Ms. Diana McCluskey was appointed as the Executive Director for the Florida Association of Occupational and Environmental Medicine Physicians.

Trainee Theses and Dissertations: Not Applicable

New Faculty Positions: There were no new appointments to the HST program.

Trainee Recruitment, Including Diversity Efforts:

The HST team markets the training programs through traditional brochures, course fliers, post cards, reminder letters (for annual refresher requirements), the Sunshine ERC newsletter, the Sunshine ERC list serve and the NIOSH ERC course listing. Word of mouth is a tremendous advantage for marketing the programs as well. The Tampa Area OSHA office distributes the HST fliers and directs individuals in the community to the Sunshine ERC programs. The USF SafetyFlorida Consultation Program and the USF OTI also distribute HST fliers to individuals during site visits or when conducting training programs.

Every fall a large mail out is generated to announce all of the HST and CE courses for the upcoming year. A needs assessment and/or impact form are also included in this mail out. The large mail out is sent to individuals across the region in the following disciplines: Industrial Hygiene, Occupational Safety, Occupational Health Nursing, Occupational Medicine and individuals in the hazardous waste and hazardous substances fields. Individuals due for an annual refresher course are sent a reminder letter and flier and letter approximately 2 months before the next available course. Approximately 3 months before a course, marketing materials for the courses are mailed to the appropriate target group.

The Sunshine ERC maintains an internal database with 2,452 people on it. This list is made up of past attendees from the CE and HST programs as well as graduates of the academic programs at the Sunshine ERC. Individuals on this list receive marketing materials, impact assessments, needs assessments and other Sunshine ERC materials several times throughout year. In addition, a Sunshine ERC list serve was created. After each course attendees are given the option to join the group. To date, approximately 190 people have opted to join the list serve. Individuals on this list serve receive the monthly ERC newsletter as well as the schedule and fliers for each ERC training program. Information is sent to individuals on the list serve at least 2 times per month. Fliers for upcoming courses are also passed out while training programs are taking place.

Tracking the racial and ethnic status of attendees has not been done by the Sunshine ERC HST or CE programs in the past. Starting in August 2006, this information will be collected for each course. The purpose of collecting this data is to ensure that the training programs are being delivered to minority populations as well as disadvantaged populations. A voluntary data collection form was developed and approved by the university general counsel office (included in the appendices). This form will be handed out at every training course and the data collected will be used for planning purposes. If it is found that minority and disadvantaged population participation is low in the training programs, then a plan for directly recruiting trainees from these populations will be developed by Ms. McCluskey and her team. There are several offices on main campus and at the Health Sciences Center who can provide help in devising a solid plan that will result in increasing the training numbers. These offices include: The University Area Health Education Center and the Diversity and Equal Opportunity Offices, are two offices that can provide input on the successful development of such a plan.

B. Program Products

Conferences/Symposia Sponsored and CE Courses Presented:

A listing of the training programs offered is provided in appendix 12a and 12b.

Successful R2P Projects: Not Applicable.

Research Projects Completed Having Significant Trainee Involvement: Not Applicable.

Unique Courses Presented:

A new course was added to the schedule: *Hazardous Materials Generated in Methamphetamine Laboratories*, Course Director: James McCluskey, MD, MPH - This course provides a detailed overview about the health effects of an acute, chronic or incidental exposure to methamphetamine. The scope of the problem is detailed, including a brief review of the total methamphetamine clandestine laboratory incidents during the year 2005. Common chemicals and their hazards are covered, followed by a thorough description of the common production methods. The purpose of this course was to provide awareness training to law enforcement officers and first responders about the hazardous conditions involved in a methamphetamine laboratory.

C. Future Plans

For the 2006-07 year, thirty courses are scheduled as open enrollment. It is expected that 15-25 additional courses will be added to the schedule for specific agencies and organizations (not open-enrollment). The courses that are scheduled are as follows:

- General Site Worker 40-Hour Training Course – Hazardous Waste Site Operations & Emergency Response: August 14-18, October 9-13, January 8-12, March 19-23, April 2-6, May 21-25
- General Site Worker 8-Hour Refresher Course – Hazardous Waste Site Operations & Emergency Response: August 21, September 18, October 16, November 17, January 18 (Clearwater, FL), January 19, March 26, May 31 & June 29
- Site Supervisor 8-Hour Course – Hazardous Waste Operations & Emergency Response: October 17 & June 1
- Certified Hazardous Materials Manager Review Course: November 6-8, March 5-7 & June 11-13
- Environmental Risk Communication Workshop: November 13-14
- DOT Hazardous Materials Transportation Certification: December 5-6 & April 24-25
- Chemical Hazards and Emergency Response: December 6
- Hazard Communication: February 21
- Hazardous Materials Generated in Methamphetamine Laboratories: March 21
- Permit Required Confined Spaces – 8-Hour Training Course: May 9
- DOT Hazardous Materials Transportation Certification Refresher: June 20
- Southeastern Conference on Occupational Safety and Health: June 27-29

Several training programs are added to the schedule on a recurrent basis. These classes are scheduled for specific agencies as requested. For the most part, these courses are not for open enrollment. The attendees are made up of employees from the specific agency or organization.

- The First Responders Operations Level 4 Hour Refresher Training Course - Hazardous Waste Operations & Emergency Response course is offered several times during the spring each year. This course is scheduled as requested by specific agencies or organizations (i.e. Publix Supermarkets). It is anticipated that this will be added to the schedule 5-10 times in the spring of 2007.
- 8-Hour HAZWOPER Refresher Courses will be added to the schedule for Sarasota, West Palm Beach, Tallahassee and South Florida. The agencies requesting the training include: Sarasota County Government – Environmental Services Hazardous Waste Division, Sarasota, FL; the Florida Department of Environmental Protection (FDEP), West Palm Beach, FL and Tallahassee, FL; and the South Florida Water Management District, Okeechobee, FL and Miami, FL. In addition, the Sunshine ERC provides the 8-Hour HAZWOPER Refresher as part of the FDEP Household Hazardous Waste Program Workshop.
- The 40-Hour HAZWOPER (a course for part q and a course for part e) will also be added to the schedule as requested for the Local Emergency Planning Council.
- The 40-Hour HAZWOPER (part e) will be offered October 16-20, 2006 in Columbia, SC to individuals at the South Carolina Department of Labor, Licensing and Regulation.

The schedule for 2006-07 models what will be offered each year during the proposed project period. The exception will be the expansion of more HST programs being scheduled in other states across the region. This will increase the number of training programs offered. The HST team will maintain a minimum average of 30-35 training programs per year. Ideally, with the expansion of the programs into other states across the region, the program may average 40-50 programs per year.

During the next five years, the plan is to expand the programs beyond the state of Florida. One way of accomplishing this is through a strategic partnership with the NC ERC and the Deep South Center. In early 2006, the Continuing Education/HST (CE) Program Directors at The University of

South Florida, Sunshine Education and Research Center (Sunshine ERC), North Carolina Occupational Safety and Health Education and Research Center (NC ERC) and the Deep South Center for Occupational Health and Safety (Deep South ERC) began discussing the possibility of collaborating to meet regional education needs. While plans are in a formative stage at the time of this submittal, several discussions about feasibility have led to the drafting of a five year plan for consideration of implementation. The following is a summary of that plan.

The Program Directors have reviewed a needs assessment completed in 2006 by the Deep South ERC and have used the results to develop tentative plans that will incorporate three major levels of activity:

- An annual jointly sponsored training conference
- An annual NORA Symposia for faculty, trainees, researchers and practitioners
- An annual coordinated regional impact/needs assessment

The first Conference/Symposium would be held in June 2008. Two days would include traditional CE/HST training programs, and the third day would be a symposium on NORA research and research to practice (R2P). The purpose of the NORA symposium will be to provide faculty, trainees and practitioners in the entire southeastern U.S. with an opportunity to share and interact about NORA research findings and their applicability to practice. Each year a theme, a location, and lead center will be selected to plan and coordinate the Southeastern Conference on Occupational Safety and Health. Plans for the year 1 collaborative program are as follows: June 2008: 1 day Industrial Hygiene Workshop, 1 day Hazardous Substances Training Workshop, NORA Research Symposium, Pensacola, FL. Lead: Deep South ERC.

We believe that the formation of this partnership can make a significant impact on the work practices of occupational and environmental health and safety practitioners in our regions. By combining our resources, the ERCs can avoid possible duplication of effort, while offering dynamic and state-of-the-art training opportunities for practitioners and researchers, while broadening the awareness of NIOSH programs.

In addition to the three part strategic partnership between the Sunshine ERC, NC ERC and Deep South Center, the HST team at the Sunshine ERC will work collaboratively with the NC ERC each year to offer hazardous substances training programs. The Sunshine ERC will send the General Site Worker 40-Hour HAZWOPER training course to the NC ERC in May of 2007. At the NC Winter Institute, the Sunshine ERC will also provide bioreadiness and disaster response training to the participants. The NC ERC will send their CIH review course to the Sunshine ERC in the spring of 2007. This partnership enhances the training available in each of the states. Currently, the Sunshine ERC does not offer a CIH review course. Faculty from the Sunshine ERC will be involved in this collaboration by providing specific training sessions during the course. Likewise, the NC ERC does not offer a 40-Hour HAZWOPER Training course. Through the partnership, each center will have the opportunity to reach new trainees and expand the geographical scope of course offerings. When the Sunshine ERC sends the 40-Hour HAZWOPER to North Carolina, the NC ERC will provide a hands-on trainer for the many exercises and group activities. This plan will be duplicated each year.

Appendices

1. Typical Curriculum- **Not Applicable.**
2. Updated data Tables 4a, 12a, 12b, and 13 organized by program area (7/1/05-6/30/06): **See Appendix B**
3. Publications by program area of faculty and trainees during the reporting period that have resulted, in whole or part, from ERC training grant support. Please specify all trainee authors by underlining their names. Not Applicable.

ERC Applicant Institution: University of South Florida, Sunshine ERC
 Program Director: Yehia Hammad
 Discipline: Industrial Hygiene

Table 4a
Academic Training Report
Previous Budget Period: July 1, 2005 to June 30, 2006

Degree Awarded	How Does Degree Read?	# Full-Time Trainees Enrolled ¹	# Full-Time NIOSH-Supported Trainees	# Part-Time Trainees Enrolled	# Part-Time NIOSH-Supported Trainees	# Other Trainees Taking OS&H Courses ²	# Trainees Graduated
Baccalaureate/associate degree							
Master's degree							
MSPH	Master of Science in Public Health	6	3	5	0	54	2
Doctorate degree							
PhD	Doctor of Philosophy	5	3	3	1	0	0
Post-doctoral (Include formally registered Occupational Medicine residents in all years of the residency.) ³							
Other (specify, e.g., undergraduate Certificate program trainees)							

Refer to: Supplemental Instructions, page 8.

¹ Trainee counts include all students in the approved programs.

² Does not include trainees counted in any of the full-time or part-time categories

³ In this case, there may be double counting between Doctorate degree and Post-doctoral categories.

ERC Applicant Institution: University of South Florida, Sunshine ERC
 Program Director: Yehia Hammad
 Discipline: Industrial Hygiene

Table 13
Minority Recruitment Data¹
Previous Budget Period: July 1, 2005 to June 30, 2006

Page

GROUP DATA			INDIVIDUAL DATA			
# of Minorities Applied	# of Minorities Offered Admission	# of Minorities Entered Program	For those who entered program: Identify by sequential #	Current Status (in training, graduated, left the program, etc.)	Sources of Support	Subsequent Career Development/ Employment
2	2	2	1; 2;	1-still in program; 2-still in program	1-NIOSH; 2-CDC	1-still in program; 2-still in program

Refer to: Supplemental Instructions, page 11.

¹ First three columns are a group total; last four columns refer to individual trainees.

ERC Applicant Institution: University of South Florida
 Program Director: Candace Burns
 Discipline: Occupational Health Nursing

Table 4a
Academic Training Report
Previous Budget Period: July 1, 2005 to June 30, 2006

Degree Awarded	How Does Degree Read?	# Full-Time Trainees Enrolled¹	# Full-Time NIOSH-Supported Trainees	# Part-Time Trainees Enrolled	# Part-Time NIOSH-Supported Trainees	# Other Trainees Taking OS&H Courses²	# Trainees Graduated
Baccalaureate/associate degree							
Master's degree							
MS/MPH	MS Nursing	5	5	3	0	0	0
	MPH Occupational Health						
Doctorate degree							
Post-doctoral (Include formally registered Occupational Medicine residents in all years of the residency.)³							
Other (specify, e.g., undergraduate Certificate program trainees)							
NUR 4696	N/A					13	

Refer to: Supplemental Instructions, page 8.

¹ Trainee counts include all students in the approved programs.

² Does not include trainees counted in any of the full-time or part-time categories

³ In this case, there may be double counting between Doctorate degree and Post-doctoral categories.

ERC Applicant Institution: University of South Florida
 Program Director: Candace Burns
 Discipline: Occupational Health Nursing

Table 13
Minority Recruitment Data¹
Previous Budget Period: July 1, 2005 to June 30, 2006

Page

GROUP DATA			INDIVIDUAL DATA			
# of Minorities Applied	# of Minorities Offered Admission	# of Minorities Entered Program	For those who entered program: Identify by sequential #	Current Status (in training, graduated, left the program, etc.)	Sources of Support	Subsequent Career Development/ Employment
0	0	0	0	N/A	N/A	N/A

Refer to: Supplemental Instructions, page 11.

¹ First three columns are a group total; last four columns refer to individual trainees.

ERC Applicant Institution: University of South Florida, Sunshine ERC
 Program Director: Stuart Brooks
 Discipline: Occupational Medicine

Table 4a
Academic Training Report
Previous Budget Period: July 1, 2005 to June 30, 2006

Degree Awarded	How Does Degree Read?	# Full-Time Trainees Enrolled ¹	# Full-Time NIOSH-Supported Trainees	# Part-Time Trainees Enrolled	# Part-Time NIOSH-Supported Trainees	# Other Trainees Taking OS&H Courses ²	# Trainees Graduated
Baccalaureate/associate degree							
Master's degree							
Doctorate degree							
Post-doctoral (Include formally registered Occupational Medicine residents in all years of the residency.) ³							
MPH	Master of Public Health	0	0	0	0	0	0
MSPH	Master of Science in Public Health	5	5	1	1	55	2
Other (specify, e.g., undergraduate Certificate program trainees)							

Page

Refer to: Supplemental Instructions, page 8.

¹ Trainee counts include all students in the approved programs.

² Does not include trainees counted in any of the full-time or part-time categories

³ In this case, there may be double counting between Doctorate degree and Post-doctoral categories.

ERC Applicant Institution: University of South Florida, Sunshine ERC
 Program Director: Stuart Brooks
 Discipline: Occupational Medicine

Table 13
Minority Recruitment Data¹
Previous Budget Period: July 1, 2005 to June 30, 2006

Page

GROUP DATA			INDIVIDUAL DATA			
# of Minorities Applied	# of Minorities Offered Admission	# of Minorities Entered Program	For those who entered program: Identify by sequential #	Current Status (in training, graduated, left the program, etc.)	Sources of Support	Subsequent Career Development/ Employment
0	0	0	N/A	N/A	N/A	N/A
*9	*1	*1	1	Graduated	University/NIOSH	Medero Medical Clinic

Refer to: Supplemental Instructions, page 11.

¹ First three columns are a group total; last four columns refer to individual trainees.

*= applicants to the residency program. The first line of data in each year, represents the academic program.

ERC Applicant Institution: Sunshine ERC
 Program Director: Thomas Bernard
 Discipline: Occupational Safety

Table 4a
Academic Training Report
Previous Budget Period: July 1, 2005 to June 30, 2006

Degree Awarded	How Does Degree Read?	# Full-Time Trainees Enrolled ¹	# Full-Time NIOSH-Supported Trainees	# Part-Time Trainees Enrolled	# Part-Time NIOSH-Supported Trainees	# Other Trainees Taking OS&H Courses ²	# Trainees Graduated
Baccalaureate/associate degree							
Master's degree							
MPH	Master of Public Health	5	5	6	5		3
Doctorate degree							
Post-doctoral (Include formally registered Occupational Medicine residents in all years of the residency.)³							
Other (specify, e.g., undergraduate Certificate program trainees)							
Graduate Certificate	Grad Cert in Safety Mgt					22	5

Refer to: Supplemental Instructions, page 10.

¹ Trainee counts include all students in the approved programs.

² Does not include trainees counted in any of the full-time or part-time categories

³ In this case, there may be double counting between Doctorate degree and Post-doctoral categories.

ERC Applicant Institution: University of South Florida, Sunshine ERC
 Program Director: Diana McCluskey, MPH

**Table 12a
 CE Course Offerings by Program Area
 Previous Budget Period: July 1, 2005 to June 30, 2006**

Program Area:

Course/Seminar Title ¹	Program Area	Total Trainees	Length of Course	Total Pers Days	# Trainees by Profession					# Trainees by Employer						
					MD	NURS	HYG	SAFETY	OTHER	Private Industry	Fed Gov	State Gov	Local Gov	Foreign Country	Academic	Other
Ergonomics 101 - 7/6/2005	IH	16	8 hours	16	0	2	1	3	10	13	0	0	3	0	0	0
Primer for Occupational Ergonomics 01/17/06	IH	13	3 hours	5	1	2	0	0	10	13	0	0	0	0	0	0
Mold and its Effect on the Construction Industry - 02/22/06	IH	60	3 hours	23	0	0	7	3	50	25	3	0	5	0	1	26
Investigating an Occupationally Related Mold Exposure 03/08/06	IH	30	3 hours	10	0	0	4	4	22	10	2	0	4	0	1	13
Respiratory Protection- A Hands on Course- 05/24/06	IH	20	8 hours	17	0	0	4	4	12	14	1	1	2	0	0	2
The New OSHA Hexavalant Chromium Standard and Program Elements for Ergonomics	IH	18	8 hours	14	0	0	5	5	8	10	2	0	1	0	0	5

i

6/7/06																
Recognition, Evaluation and Control of Non-Mold Exposures at the Work Environment	IH	15	8 hours	11	0	0	3	2	10	4	1	1	1	0	1	7
6/28/2006																
Subtotal [Program]	IH	172	41	96	1	4	24	21	122	89	9	2	16	0	3	53
ERC/FOHC Occupational Health Nursing Conf. - 10/13-15/05	OHN	101	16 hours	202	0	101	0	0	0	101	0	0	0	0	0	0
NIOSH Approved Spirometry 03/13-14/06	OHN	14	16 hours	28	5	5	0	0	4	5	0	0	0	0	9	0
Hearing Conservation in Industry CAOHC Certification - 03/15-17/06	OHN	20	24 hours	60	4	5	0	4	7	3	1	0	0	0	15	1
Hearing Conservation in Industry CAOHC Recertification - 03/16/06	OHN	8	8 hour	8	0	5	0	1	2	5	0	0	0	0	1	2
Hearing Conservation in Industry CAOHC Certification - 04/12-14/06	OHN	13	24 hours	39	0	13	0	0	0	13	0	0	0	0	0	0

Subtotal [Program]	OHN	156	88	337	9	129	0	5	13	127	1	0	0	0	25	3
FL Safety & Health Conf/Workers' Comp Educational Conf. 08/21-24/05	OM	735	13 hours	597	45	52	0	127	511	662	0	41	22	0	10	0
Mental Health in the Aftermath of Disaster - 02/09/06	OM	13	2 hours	3	1	4	0	0	8	13	0	0	0	0	0	0
Pulmonary Function Testing 03/28/06	OM	17	2 Hours	4	1	4	0	0	12	17	0	0	0	0	0	0
Subtotal [Program]	OM	765	17	604	47	60	0	127	531	692	0	41	22	0	10	0
Bloodborn Pathogens & Workplace Violence - 11/09/05	OS	13	3 hours	5	1	6	0	0	6	13	0	0	0	0	0	
Becoming an OSHA Compliant Small Business - 02/01/06	OS	5	3 hours	2	0	0	0	2	3	0	0	0	3	0	2	0
Conducting an Accident Investigation- 02/08/06	OS	26	3 hours	10	0	0	0	3	23	6	2	0	6	0	1	11
Health and Safety Resources on the Internet - 02/15/06	OS	10	3 hours	4	0	1	0	0	9	1	0	0	3	0	1	5
OSHA Site-Specific Targeting 03/01/06	OS	12	3 hours	5	0	0	2	2	8	5	1	0	1	0	3	2
Public Warehousing and Storage Course - 06/14/06	OS	17	8 hours	8	0	0	4	3	10	6	1	0	0	0	0	10

Health Hazard Awareness Course	OS	15	8 hours	12	0	0	3	6	6	9	1	0	2	0	0	3
06/21/06																
Subtotal [Program]	OS	98	31	46	1	7	9	16	65	40	5	0	15	0	7	31
40-Hour HAZWOPER	HST	48	40 hours	240	0	0	0	5	43	25	0	4	16	0	3	0
08/15-19/05																
8-Hour HAZWOPER	HST	68	8 hours	68	0	0	6	5	57	54	0	1	11	0	2	0
Refresher																
08/29/05																
8-Hour HAZWOPER	HST	21	8 hours	21	0	0	0	1	20	19	0	0	2	0	0	0
Supervisor/																
Manager - 08/30/05																
40-Hour HAZWOPER	HST	27	40 Hours	135	0	0	0	3	24	10	0	0	17	0	0	0
09/12-16/05																
Bradenton, FL																
40-Hour HAZWOPER	HST	47	40 Hours	235	0	0	2	17	28	20	0	0	2	0	18	7
10/10-14/05																
8-Hour HAZWOPER	HST	38	8 Hours	38	0	0	2	2	34	24	0	1	10	0	1	2
Ref. - 10/19/05																
8-Hour HAZWOPER	HST	10	8 Hours	10	0	0	0	1	9	8	0	0	0	0	1	1
Supervisor/																
Manager - 10/20/05																
Hazardous Materials	HST	31	8 Hours	31	0	0	0	0	31	0	0	0	0	0	31	0
Course 12/12/05																
Columbia, SC																
40-Hour HAZWOPER	HST	39	40 Hours	195	0	0	0	0	39	19	0	3	7	0	1	9
01/09-13/06																
8-Hour HAZWOPER	HST	45	8 Hours	45	0	0	2	3	40	13	1	5	14	0	2	10
Refresher																
01/19/06																
8-Hour HAZWOPER	HST	5	8 Hours	5	0	0	0	0	5	2	0	0	2	0	0	1
Supervisor/																
Manager - 01/20/06																
8-Hour HAZWOPER	HST	28	8 hours	28	0	0	0	0	28	0	0	22	3	0	0	3
Refresher																

West Palm																
Beach, FL																
02/7/06																
HAZMAT Refresher	HST	11	6 Hours	6	0	0	0	0	11	11	0	0	0	0	0	0
Training Atlanta, GA																
03/07/06																
HAZMAT Refresher	HST	11	6 Hours	11	0	0	0	0	11	11	0	0	0	0	0	0
Training																
Deerfield Beach, FL																
03/09/06																
Certified Hazardous	HST	5	24 Hours	0	0	0	0	0	5	4	0	0	0	0	0	1
Materials Manager																
(CHMM)																
03/20-22/06																
4-Hour HAZWOPER	HST	62	4 Hours	31	0	0	0	1	61	61	0	0	0	0	0	1
Refresher																
Lakeland, FL -																
04/19/06 a.m.																
4-Hour HAZWOPER	HST	17	4 Hours	8	0	0	0	3	14	17	0	0	0	0	0	0
Refresher																
Lakeland, FL -																
04/19/06 p.m.																
4-Hour HAZWOPER	HST	12	4 Hours	6	0	0	0	4	8	12	0	0	0	0	0	0
Refresher																
Lakeland, FL -																
04/28/06																
40-Hour HAZWOPER	HST	56	40 hours	280	0	0	0	2	54	9	1	3	13	0	4	26
05/01-05/06																
8-Hour HAZWOPER	HST	95	8 Hours	95	0	0	4	3	88	39	0	5	43	0	2	6
Refresher																
05/11/06																
8-Hour HAZWOPER	HST	12	8 Hours	12	0	0	0	2	10	5	0	2	1	0	0	4
Supervisor/																
Manager - 05/12/06																
40-Hour Hazardous	HST	17	40 Hours	85	0	0	0	0	17	0	0	0	17	0	0	0
Materials																
Technician Course -																

05/15-19/06																
8-Hour HAZWOPER Refresher	HST	39	8 Hours	39	0	0	0	0	39	0	0	39	0	0	0	0
Okeechobee, FL																
05/23/06																
8-Hour HAZWOPER Refresher	HST	46	8 Hours	46	0	0	0	0	46	0	0	46	0	0	0	0
West Palm Beach, FL																
05/24/06																
8-Hour HAZWOPER Refresher	HST	44	8 Hours	44	0	0	0	0	44	0	0	44	0	0	0	0
Miami, FL																
05/25/06																
HAZMAT Refresher Training	HST	11	8 Hours	11	0	0	0	0	11	11	0	0	0	0	0	0
Deerfield Beach, FL																
05/26/06																
8-Hour HAZWOPER Refresher	HST	30	8 Hours	30	0	0	0	0	30	0	0	30	0	0	0	0
Kissimme, FL																
06/12/06																
Certified Hazardous Materials Manager (CHMM)	HST	8	24 Hours	24	0	0	0	2	6	2	1	0	3	0	1	1
06/26-28/06																
Hazardous Materials Generated at Meth Labs	HST	44	2 hours	11	0	0	0	0	44	0	0	0	0	0	0	44
06/27/06																
Subtotal [Program]	HST	927	434	1,790	0	0	16	54	857	376	3	205	161	0	66	116
Disaster Training and Workplace Violence	Other	38	2 Hours	10	0	10	0	0	28	0	0	0	0	0	0	38
5/4/06 a.m.																

Disaster Training and Workplace Violence 5/4/06 p.m.	Other	37	2 Hours	7	0	13	0	0	24	13	0	0	0	0	0	24
Subtotal [Program]	Other	75	4	17	0	23	0	0	52	13	0	0	0	0	0	62

Refer to: Supplemental Instructions, page 10.

¹ Group together by Program Area and provide sub-totals for each Program Area in Table 12b. Add or delete rows as necessary.

ERC Applicant Institution: University of South Florida, Sunshine ERC
 Program Director: Diana McCluskey, MPH

Table 12b
Summary of CE Course Offerings by Program Area
Previous Budget Period: July 1, 2005 to June 30, 2006

Course/Seminar Title ¹	Program Area	Total Trainees	Total # of Courses	Total Pers Days	# Trainees by Profession					# Trainees by Employer						
					MD	NURS	HYG	SAFETY	OTHER	Private Industry	Fed Gov	State Gov	Local Gov	Foreign Country	Academic	Other
Subtotal IH	IH	172	7	96	1	4	24	21	122	89	9	2	16	0	3	53
Subtotal OHN	OHN	156	5	337	9	129	0	5	13	127	1	0	0	0	25	3
Subtotal OMR	OMR	765	3	604	47	60	0	127	531	692	0	41	22	0	10	0
Subtotal OS	OS	98	7	46	1	7	9	16	65	40	5	0	15	0	7	31
Subtotal HST	HST	927	29	1790	0	0	16	54	857	376	3	205	161	0	66	116
Subtotal Ag S&H	Ag S&H	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal Other Category	OT	75	2	17	0	23	0	0	52	13	0	0	0	0	0	62
GRAND TOTALS (All Program Areas)		2,193	53	2,890	58	223	49	223	1,640	1337	18	248	214	0	111	265

Page

Refer to: Supplemental Instructions, page 10.

¹ Group together by Program Area and provide sub-totals for each Program Area.

Sunshine ERC Sponsored Programs of Study

Program	Participating College(s)	Degree(s) Offered
Industrial Hygiene	Public Health	MSPH, PhD
Occupational Medicine	Public Health & Medicine	MSPH
Occupational Nursing	Public Health & Nursing	MPH
Safety Management	Public Health & Engineering	MPH

Course Requirements for ERC Sponsored Courses of Study

			Programs & Degree						
			Industrial Hygiene (MSPH)	Industrial Hygiene (PhD)	Safety Management (MPH)	Occupational Medicine (MSPH)	Occupational Nursing (MS Nursing / MPH Occupational Health)	Occupational Health Psychology (PhD)	
College of Public Health	EOH Core	PHC 6000 Epidemiology	3	X		X	X	X	X
		PHC 6050 Biostatistics	3	X		X	X	X	
		PHC 6102 Principles of Health Policy and Management	3	X		X	X	X	
		PHC 6357 Environmental and Occupational Health	3	X		X	X	X	
		PHC 6410 Social and Behavioral Sciences Applied to Health	3	X		X	X		
	Occ Health Core	PHC 6310 Environmental and Occupational Toxicology	3	X		X	X		
		PHC 6351 Occupational Medicine for Health Professionals	2				X	X	
		PHC 6354 Safety and Health Administration	2			X	X	X	X
		PHC 6356 Principles of Industrial Hygiene	2	X		X	X	X	
		PHC 6360 Safety Management Principles and Practices	2	X		X	X	X	X
		PHC 6361 Industrial Ergonomics	2	X		X	X		X
		or EIN 5245 Work Physiology and Biomechanics for Safety Management	3						
		PHC 6364 Industrial Hygiene Aspects of Plant Operations	2					X	
		PHC 6423 Occupational Health Law	2	X		X	X	X	
		Industrial Hygiene Doctoral Students Only	Advanced Biostatistics Course	3		X			
	Required courses for concentration area or equivalent		12		X				
	Required doctoral level courses (7000 level)		13		X				
	Elective Courses		†		X				
	Directed Research		†		X				
	Dissertation (minimum credit requirement)		18		X				
	Evidence of teaching proficiency		†		X				
	Tools of research (2 areas)		†		X				
	College of Engineering	EIN 6215 Engineering System Safety	3			X			
		EIN 6216 Occupational Safety Engineering	3			X			
		PHC 6053 Categorical Data Analysis	3						X
		PHC 6358C Physical Agents	2	X					
		PHC 6362 Industrial Ventilation	2	X					
		PHC 6365C Analytical Method in Industrial Hygiene I	2	X					
		PHC 6366C Analytical Method in Industrial Hygiene II	2	X					
		PHC 6367 Control Aspects of Industrial Hygiene	2	X					
		PHC 6930 Public Health Seminar	1	X		X			
		PHC 6945 Supervised Field Experience (credit requirement varies based on student's professional experience)	1 - 3	X		X			
		PHC 6971 Thesis	6	X			X		
		PHC 6977 Special Project	3			X		X	
		Electives (requirement varies based on program)	4 - 6	X		X	X		
College of Nursing		NGR 6001 Health Assessment in Advanced Practice	3					X	
		NGR 6121 Theoretical Basis of Advanced Nursing Practice	3					X	
	NGR 6140 Pathophysiology for Advanced Practice	3					X		
	NGR 6199 Pharmacology for Advanced Practice	3					X		
	NGR 6205 Primary Care of Adolescents and Women	3					X		
	NGR 6205L Primary Care Practicum: Adolescents and Women	2					X		
	NGR 6207 Primary Care: Adults	3					X		
	NGR 6207L Primary Care Practicum: Adults	2					X		
	NGR 6271 Adult Health Management	3					X		
	NGR 6650 Occupational Health Nursing I	2					X		
	NGR 6651 Occupational Health Nursing II	2					X		
	NGR 6700 Advanced Practice Nurse Transitions	2					X		
	NGR 6700L Advanced Practice Nurse Transitions Practicum	2					X		
	NGR 6800 Nursing Research	3					X		
	College of Arts & Sciences	EXP 6608 Cognitive Psychology							X
INP 6935 Industrial/Personnel Psychology								X	
INP 6935 Industrial/Personnel Psychology								X	
INP 7097 Organizational Research Methods								X	
INP 7097 Research in Industrial & Organizational Psychology								X	
INP 7097 Seminar on Occupational Health Psychology								X	
INP 7097 Seminar on Work & Family								X	
PHC 6053 Categorical Data Analysis								X	
PSY 6217 Univariate Statistics								X	
PSY 7931 Ethics & Professional Practice								X	
SOP 6058 Personality								X	
SOP 6266 Advanced Social Psychology								X	
SOP 6266 Stress and Coping								X	
SOP6266 Psychometrics								X	
Other courses as required by student's committee									
Comprehensive Exam Required			X*		X		X		
Total Credit Hours			49 - 51	90 [‡]	43 - 48	42	64		

* Comprehensive exam not required if CIH or CSP certified

† Defined by doctoral committee

‡ Coursework beyond 90 credits may be required based on the specified in the plan of study

College of Public Health Courses

Environmental and Occupational Health Core Courses

Epidemiology
Biostatistics
Principles of Health Policy and Management
Environmental and Occupational Health
Social and Behavioral Sciences Applied to Health

Occupational Health Core Courses

Safety Management Principles and Practices
Occupational Health Law
Industrial Hygiene
Environmental Occupational Toxicology
Safety and Health Administration
Occupational Medicine for Health Professionals
Industrial Ergonomics
Work Physiology and Biomechanics (*Safety Management may substitute for Industrial Ergonomics*)

Other Public Health Courses

Public Health Seminar
Supervised Field Experience
Industrial Hygiene - Physical Agents
Analytical Method in Industrial Hygiene I
Analytical Method in Industrial Hygiene II
Control Aspects of Industrial Hygiene
Industrial Ventilation
Special Project (Safety Management and Occupational Nursing requirement)
Thesis (Industrial Hygiene and Occupational Medicine requirement)
Engineering System Safety
Occupational Safety Engineering
Electives

Industrial Hygiene Doctoral Program Requirements

Advanced Biostatistics Course
Required courses for concentration area or equivalent
Required doctoral level courses (7000 level)
Elective Courses
Directed Research
Dissertation
Evidence of teaching proficiency
Tools of research (2 areas)

College of Nursing Courses

NGR 6001	Health Assessment in Advanced Practice
NGR 6121	Theoretical Basis of Advanced Nursing Practice
NGR 6140	Pathophysiology for Advanced Practice
NGR 6199	Pharmacology for Advanced Practice
NGR 6205	Primary Care of Adolescents and Women
NGR 6205L	Primary Care Practicum: Adolescents and Women
NGR 6207	Primary Care: Adults
NGR 6207L	Primary Care Practicum: Adults
NGR 6271	Adult Health Management
NGR 6650	Occupational Health Nursing I
NGR 6651	Occupational Health Nursing II
NGR 6700	Advanced Practice Nurse Transitions
NGR 6700L	Advanced Practice Nurse Transitions Practicum
NGR 6800	Nursing Research

1. Typical Curriculum:

College of Nursing Courses - 36 credits

NGR 6121 - Theoretical Basis of Advanced Practice Nursing (3) (F,SP,SU) (DL)
NGR 6140 - Pathophysiology for Advanced Practice (3) (F,SP, SU) (DL)
NGR 6199 - Pharmacology for Advanced Practice (3) (F,SP, SU) (DL)
NGR 6800 - Nursing Research (3) (F,SP,SU) (DL)
NGR 6001 - *Health Assessment in Advanced Practice(3) (F,SP, SU) (DL)
NGR 6650 - Occupational Health Nursing I (2) (F) (DL)
NGR 6651 - Occupational Health Nursing II (2) (SP) (DL)
NGR 6205 - Primary Care: Adolescent and Young Adults (3) (F, SP,SU) (DL)
NGR 6207 - Primary Care: Adults (3) (F, SP, SU) (DL)
NGR 6271 - Adult Health Management (3) (F,SP,SU) (DL)
NGR 6700 - Advance Practice Nursing Transition (2)
NGR 6205L - * Practicum: Adolescent and Young Adults / Occupational Health (2)
(F,SP,SU)
NGR 6207L - * Practicum: Adults / Occupational Health (2) (F,SP,SU)
NGR 6700L - *Advance Practice Transition / Occupational Health Practicum (2)
(F,SP,SU)

College of Public Health Courses - 28 credits

PHC 6357 - Environmental and Occupational Health (3) (F,SP,SU) (DL)
PHC 6000 - Epidemiology (3) (F,SP,SU) (DL)
PHC 6050 - Biostatistics I (3) (F,SP, SU) (DL)
PHC 6102 - Principles of Health Policy Management (3) (F,SP,SU) (DL)
PHC 6423 - Occupational Health Law (2) (F)
PHC 6360 - Safety Principles and Practices (2) (F)
PHC 6364 – Plant Operations (Interdisciplinary Field Experience) (2) (SU)
PHC 6356 - Industrial Hygiene (2) (F)
PHC 6351 - Occupational Medicine (3) (F)
PHC 6354 - Occupational Health and Safety Administration (2) (SP)
PHC 6977 - Special Project (3) (F,SP,SU)
Comprehensive Examination

* Total 540 clinical practicum clock hours (1:6 ratio)

2. Updated data Tables 4a, 12a, 12b, and 13 organized by program area (7/1/05-6/30/06): **See Appendix B**

3. Publications by program area of faculty and trainees during the reporting period that have resulted, in whole or part, from ERC training grant support. Please specify all trainee authors by underlining their names.