



18 October 2011

Vivian S. Lee
Senior Vice President for Health Sciences
Bldg 550, 5th Floor
Campus

Dear Vice President Lee,

Enclosed is the proposal for the creation of a Doctor of Philosophy in Occupational and Environmental Health which was approved by the Graduate Council on September 26, 2011. Included in this packet are the proposal, letters of support and signature page.

Please forward this packet to the President's Office for his signature before being forwarded to the Academic Senate to be placed on the information calendar for the next meeting of the Senate.

Sincerely,

Charles A. Wight
Dean, The Graduate School

Signature Page to Accompany Regents' Proposals

Institution Submitting Proposal:

University of Utah

College, School or Division in Which Program/Administrative Unit Will Be Located:

School of Medicine

Department(s) or Area(s) in Which Program/Administrative Unit Will Be Located:

Department of Family and Preventive Medicine

Program/Administrative Unit Title:

Division of Occupational and Environmental Health

Recommended Classification of Instructional Programs (CIP) Code: 51.2202

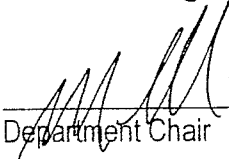
Certificate, and/or Degree(s) to Be Awarded:

Doctor of Philosophy in Occupational and Environmental Health


Proposed Beginning Date:

July 1, 2012

Institutional Signatures (as appropriate):




Department Chair 9/1/11 Date



Dean or Division Chair 9/1/11 Date

Career and Technical Education Director



Graduate School Dean 10/18/2011 Date

Chief Academic Officer Date

President Date

SECTION I: The Request

The University of Utah School of Medicine requests approval to offer the *Doctor of Philosophy in Occupational and Environmental Health* effective Fall 2012. This program has been approved by the Institutional Board of Trustees on _____.

Executive Summary

Program Description

This program request proposes the addition of a transdisciplinary Ph.D. degree in Occupational and Environmental Health (OEH) to complete a complement of graduate degrees in OEH at the University of Utah. The proposed degree would have three closely-related emphasis areas (Industrial Hygiene, Occupational Injury Prevention, and General Occupational and Environmental Health). Select students from the University of Utah's Master of Science in Occupational Health (MSOH) degree program will be the typical source of students for this program.

The proposed University of Utah Ph.D. in OEH Degree meets significant market demands for which there are no alternatives in Utah or elsewhere in the Intermountain West. For example, students wishing to earn a Ph.D. that emphasizes occupational injury prevention must currently enroll in the Ph.D. in Public Health. That degree while nicely meeting the needs of its primary student population, requires the completion of 74 credits with many credits unhelpful to the occupational injury prevention student. With an appropriate prior master's degree, this proposed OEH Ph.D. in OIP is 40credits that are more relevant to occupational injury prevention.

Currently, the Ph.D. in Public Health requires 74 semester hours. In addition to the large number of credit hours, the Council on Education for Public Health (CEPH) has focused accreditation standards on including a substantial number of dedicated public health content requirements. These changes have had the following impact on the Rocky Mountain Center for Occupational and Environmental Health (RMCOEH) students:

1. It is difficult for Occupational Injury Prevention students to receive adequate content in occupational health, safety and occupational injury prevention courses.
2. The potential solution of using the excellent Ph.D. in Public Health for Industrial Hygiene students is no longer practical. There is no room for the required courses and the considerable industrial hygiene-specific chemistry and toxicology course content.

3. There is currently no General Occupational and Environmental Health emphasis capability.

Demand for RMCOEH graduates is robust. The numbers of masters students is at an all-time high for the 34 year history of the programs. All students graduating in 2010 and 2011 were rapidly placed in jobs. However, the jobs are increasingly complex, and necessitate interdisciplinary problem solving. For example, prevention of injuries in a particular area of a manufacturing facility often requires the combination of a safety specialist, industrial hygienist and the plant medical personnel. These increasing complexities have been taken into consideration when designing this degree program by including skill development courses that actually address such interdisciplinary problem solving situations.

The proposed Ph.D. in OEH requires 40 additional graduate credit hours for those with an appropriate masters degree and prior courses and 64 for those without a masters degree. The Ph.D. program and these three emphases will be taught with current RMCOEH and Departmental faculty by utilizing existing courses to efficiently provide the required epidemiological and biostatistical courses and the elective offerings. As with the implementation of the MSOH degree, we anticipate no net impact on the enrollment of the current Public Health Program. We do, however, anticipate increased applications to our OEH degree programs (e.g., from other masters level programs at University of California at Los Angeles, University of California at San Francisco, University of Washington, University of Colorado) because of the attractiveness of the Ph.D. option, resulting in a net increase our Department's number of matriculated students.

This proposal completes the complement of graduate degrees in fields of occupational and environmental health and safety at the University of Utah. It provides graduates to meet the needs of Utah for professionals to make Utah's economy more competitive, including for businesses (e.g., mining, manufacturing, healthcare transportation), workers compensation insurers, academia, Labor Commission, Departments of Health and other governmental units.

The doctoral degree includes core, dissertation field, qualifying examination and dissertation requirements. The core is composed of a sequence of semester graduate courses in occupational and environmental health and safety totaling 24 credits. Doctoral students will complete a minimum of 6-8 credits required for their emphasis. (Those with a prior master degree will also need to complete any core coursework not previously completed in addition to the other requirements.) The qualifying examination will demonstrate the academic ability of the candidate to undertake independent research through a high quality examination. The dissertation will then be proposed, prepared and defended (14+ dissertation credits).

Faculty are well prepared for the rigors of implementation a Ph.D. in OEH. Faculty have supervised many masters degrees and many of the faculty for this proposed

degree program have also successfully supervised doctoral candidates for over 20 years. Faculty have extensive educational experiences, with over 200 years of combined graduate training experiences. Faculty also undergo regular training to improve educational methods.

The statutorily required Rocky Mountain Center for Occupational and Environmental Health Advisory Board (SB234, 2007 G.S.), and three active advisory committees are in place to supervise the curriculum and program. These entities have had input in the conceptualization of this proposal and will actively advise the program going forward.

There is no comparable program in Utah. There is no comparable program in the Intermountain West.

Section II: Program Description

Complete Program Description

Faculty from the University of Utah's Departments of Family and Preventive Medicine (OEH, Public Health), Mechanical Engineering, and Internal Medicine will provide a broad, transdisciplinary background for state-of-the-art education of students in OEH. As OEH problems in industry tend to be complex and solved by interdisciplinary or transdisciplinary teams, a transdisciplinary background is important for producing well-trained graduates that can fill the need for this type of employment demand and capability.

The OEH Ph.D. addresses the needs of all three types of OEH students with three emphases: 1) industrial hygiene, 2) occupational injury prevention, and 3) general occupational and environmental health. This program also addresses two major needs for 1) future, highly trained faculty in OEH, and (2) highly trained professionals placed in prominent businesses, insurers and government positions who require doctoral level skills.

1. Industrial Hygiene includes education in the sciences associated with recognition of potential risks to human health; development and/or use of measurement methods to evaluate the hazards to which people are or may be exposed; providing guidance for setting acceptable exposure limits; and implementation of exposure controls (e.g., personal protection, and/or engineering or administrative controls) when needed. This program has been heavily involved in the inception of the National Children's Study (Ed Clark, MD, PI) to establish criteria for agent to be monitored and monitoring methods to be used, and to provide guidance on the performance of collecting measurements that will be used to ascertain environmental and occupational exposures.
2. Occupational Injury Prevention Research Training is a more recent discipline that involves studying injuries and working to prevent them (it is analogous to the Injury Center at the University of Utah, but this discipline is particularly focused on the unique exposures of workplaces and needs of workers). This transdisciplinary program at the University has utilized students from both engineering and health sciences backgrounds.
3. The General Occupational and Environmental Health emphasis designed to give students a broad background without concentration in one area. This emphasis is particularly valuable for advanced level programmatic administration in large employers, government and academia.

We request the diploma granted to graduates includes the student's emphasis. Those emphases would be: (i) "Industrial Hygiene," (ii) "Occupational Injury Prevention," and (iii) "General Occupational and Environmental Health."

To help provide a high-quality educational experience, the OEH Ph.D. program will selectively enroll students who share faculty member(s) research interests. The program will be primarily designed for full-time students which are the RMCOEH's primary educational targets, however, part-time students will be accommodated on a select basis after development of a clear plan to attempt to assure successful completion.

The Ph.D. in OEH Degree Program consists of: 1) a Core Curriculum that is emphasis-specific, 2) Elective courses, and a 3) doctoral dissertation. As part of a master's degree, or doctoral degree if not masters degreed, all students will also have completed the Occupational Safety and Health (OSH) Solutions class and a Practicum. The 'Solutions class' takes Occupational Safety and Health problems in businesses, analyzes them in the classroom and returns solutions to the workplaces, providing a practical, problem-solving experiences.

The Ph.D. in OEH Degree Program's Core Curriculum for each program emphasis is depicted in Appendix A. Electives will be selected from a list of options with guidance from the student's assigned faculty advisor. The electives will generally focus on those needed for the student's area of emphasis (e.g., industrial hygiene, chemistry and toxicology for the Industrial Hygiene emphasis). All Ph.D. in OEH students will additionally complete a doctoral dissertation. All Ph.D. in OEH emphases will be a minimum 40 credit hours for those with an appropriate prior master's degree and 64 for those without a prior master's degree.

The Industrial Hygiene emphasis is designed to meet the American Board of Engineering Technologies (ABET) Applied Science Accreditation Commission (ASAC) requirements for those programs (as discussed below – also see Appendix A).

The following are the current credit requirements for the proposed Ph.D. in OEH programs.

| | Ph.D. in OEH (with a prior Master's* degree that included the core OEH courses) | Ph.D. in OEH (either without an appropriate prior Master's degree or lacking the core OEH courses)** |
|--|--|---|
| Current (or proposed) Credit Requirements | 40 | 64 |

*Generally a Master of Science in Occupational Health (MSOH) or Master of Occupational Health degree. Other degrees are possible and will be considered on a case-by-case basis.

**Those having successfully completed some of the prior core courses (e.g., through a Master of Public Health degree that did not include all of the OEH core courses) may receive partial credit with a decrease in the total number of credits required for the Ph.D..

Requirements for completing the Ph.D. in OEH are as follows:

Ph.D.. Supervisory Committee

Upon admission, all students will be assigned a Primary Faculty Mentor from among the Program's core faculty. That mentor will be matched to the student based on the projected area of research interest. It is anticipated the Primary Faculty Mentor will also serve as the Supervisory Committee Chair.¹

During the first semester, a Ph.D. Supervisory Committee will be formed consisting of five faculty members, the majority of whom will be regular doctoral faculty in the Program, one of whom will be the Primary Faculty Mentor. The primary criteria for Supervisory Committee selection are interest and expertise in a topic relevant to the student's projected dissertation research topic. The Committee will be drawn with close input and advice from the Primary Faculty Mentor who will assume the role of Supervisory Committee Chair. One member of the committee may be from another department at the University of Utah. Another member may be external to the university whose expertise is relevant to the student's anticipated dissertation topic. The Supervisory Committee will be responsible for approving the student's academic program, preparing and judging the qualifying examination, approving the dissertation subject, and administering the final oral examination (dissertation defense).

Program of Study

Doctoral students will complete a minimum of approximately three semesters (six semesters if no prior appropriate master degree) of full time course work as approved by the Supervisory Committee and reflected in an approved Program of Study. Part-time study plans are possible for highly select students, but will be *carefully* evaluated on a case-by-case basis for detailed plans to enhance successful completion (especially preclude dropouts), and require prior approval from the Supervisory Committee.

Graduate OEH Ph.D. Core Coursework

For students with an accredited Master of Science in Occupational Health (MSOH) that included the prior core coursework, evidence of successful course completion will result in waiving this requirement. For those with a comparable master's degree from Utah or elsewhere, the graduate OEH core may be waived based on review of the comparable course for content and successful completion. For those without this degree, the graduate core is required although individual courses may

¹ Exceptions will likely be rare. Exceptions are anticipated to occur primarily due to a change in the thrust of the research dissertation).

be waived by the Advisory Committee based on comparable graduate work at Utah or elsewhere. For most students without an accredited MSOH degree, completing the core courses will require the equivalent of approximately three semesters of full academic year of study.

| | Core Courses | Credits |
|----------------------------------|---|----------------|
| FP MD 6100 (6190) | Biostatistics I (Online) | 3 |
| FP MD 6370 | Intro to Occupational Epidemiology | 3 |
| FP MD 6750 | Fundamentals of Industrial Hygiene | 2 |
| MEEN 6100 | Ergonomics | 3 |
| FP MD 6760 | Admin and Management of Health and Safety Programs | 3 |
| FP MD 7100 | Biostatistics II | 3 |
| FP MD 6715 | Occupational and Health Solutions | 3 |
| <u>Varies (one of:)</u> | Ethics Course (choose one:) MDCRC 6430 Bioethical Issues in Clinical Research Phil 7550 Research Ethics | 1-3 |
| Varies (choose 3 credits total:) | Adv. Epidemiology (choose one:) FPMD 7300 Epidemiology II FPMD 7720 Occupational Injury Epidemiology MDCRC 6260 Behav. Community Intervention MDCRC 6160 Pharmacoepidemiology MDCRC 6110 Intermediate Epidemiology FPMD 7xxx Adv Occupational Epidemiology | 3 |
| | Total Core Credits | 24 |

Coursework: Emphasis of Study

Students will take required coursework for the emphasis of study (e.g., industrial hygiene, occupational injury prevention). Students will work with the Primary Faculty Mentor/Supervisory Committee Chair and Supervisory Committee to select additional electives to complete their formal coursework requirements (see Appendix A).

Minimum credits with Masters = 40

Minimum credits without Masters = 64

Language Requirement

English language proficiency is required. Unless determined as necessary by the Supervisory Committee based on the nature of the dissertation work anticipated,

there will be no other language requirement (Spanish language proficiency may be required for highly select research topics addressing, e.g., workplace injuries in immigrant populations).

OEH Qualifying Examination

The OEH Qualifying (preliminary) Examination will be a combined oral and written examination that includes ascertainment of mastery of both the core OEH coursework, as well as the emphasis specific coursework. The MSOH and MOH (Master of Occupational Health) program has a high quality examination that includes both standardized examination questions as well as short answer/essay. That examination will be the template for the written part of the qualifying examination, although with doctoral level material.

Dissertation Research Proposal

Candidates will prepare and defend their proposal for a dissertation. They will first prepare a 3-page structured proposal of the proposed topic and methods which must be approved by the Supervisory Committee. After 1) approval of the proposal, 2) successful completion of core coursework (if applicable) and 3) successful passage of the qualifying examination, the candidate may commence the research project.

Dissertation

The candidate will incept and execute a quality, scientific research project. They must prepare, submit and defend a dissertation embodying the results of their scientific research. The dissertation will provide evidence of originality and the ability to do independent investigation and it must contribute to knowledge. The style will be either: 1) traditional dissertation format or 2) publishable paper format (with at least 3 papers).² The style and format will be based on the plan negotiated with the Supervisory Committee, which will incorporate the candidate's career goals.

A minimum of 14 credits in dissertation research will be required. Timing of those credits may be negotiated with the Supervisory Committee.

Minimum Dissertation credits = 14

Purpose of Degree

The University of Utah's Ph.D. in OEH will address needs for well-trained graduates in OEH for multiple diverse audiences that include businesses, academia, workers compensation insurers and governmental agencies. Expected outcomes include furthering the research mission of the University, Departments and the RMCOEH. The program will also help improve the probability of successful upcoming competitive renewal of the University of Utah's largest training grant, the RMCOEH's National Institute for Occupational Safety and

² Formatting must meet the requirements of the Graduate School Thesis Office.

Health (NIOSH) training grant (RMCOEH NIOSH ERC Training Grant, 3TC42OH008414), with a site visit expected Fall 2012.

Until the proposal for the MSOH programs was approved by the Board of Regents in January 2008, students graduating from the occupational medicine, industrial hygiene, and hazardous substances academic training programs did so in the context of receiving master-level public health degrees [Master of Public Health (Occupational Medicine) or Master of Science in Public Health (Industrial Hygiene)] from the Department of Family and Preventive Medicine's Public Health Program. Since approval of the MSOH Program, student enrollment has increased substantially (now over 30 in the MSOH and MOH). The quality of this more focused training has also increased for these students through its more occupationally-relevant curriculum. A survey of the University of Utah RMCOEH's graduates (n=151 returned surveys) this past year found a lofty "9 out of 10" rating on preparedness for their jobs, with a higher rating for those graduating with MSOH degrees more recently compared with other degrees more remotely.

The RMCOEH students currently have access to two existing doctoral programs, a Ph.D. in Mechanical Engineering, or Ph.D. in Public Health. The Ph.D. in Mechanical Engineering addresses the needs for doctoral training in Ergonomics and Safety, although it requires calculus and other engineering courses more relevant to a career in engineering. Similarly, the Ph.D. in Public Health has required coursework that only partially addresses the needs of the Occupational Injury Prevention doctoral students through its more broadly encompassing curriculum. Most importantly, however, there is no Ph.D. program currently available Utah or in this region that is able to provide relevant advanced training for the Industrial Hygiene students.

While as noted, the University's exceptional Ph.D. in Public Health has helped address the doctoral training needs of some students in the Occupational Injury Prevention Program, the academic accrediting body for public health (the Council on Education for Public Health - "CEPH") has been understandably increasing its emphasis on a focus on the 5 core disciplines of public health, but thereby making the number of credit hours needed for a focus on occupational health prohibitive. As an added complication, CEPH prohibits noting areas of tracks, emphasis, or other designation of area of training without meeting stringent criteria that are currently impractical at the UU, which conflicts with RMCOEH's NIOSH grant sponsor's requirements to support more specific occupational health training.

Lastly, there is no degree program to train General Occupational and Environmental Health doctoral students. This emphasis is desirable for those who need to supervise advanced programs in large industries that include research, governmental entities and academia. Students who wish doctoral level training are left to pursue a Ph.D. in some related field.

In view of these factors, this proposal addresses the needs of these three types of students and several industry sectors that are critical to the state of Utah's business climate.

Institutional Readiness

The Department of Family and Preventive Medicine contains four divisions (Family Medicine, Occupational and Environmental Health (OEH), Physician Assistant Studies and Public Health). These DFPM divisions are the University of Utah's main concentration of 'population sciences,' which are a major thrust of this proposal. The Department has the largest graduate programs in the University's Health Sciences Center. These graduate programs have produced quality graduates for over 35 years. There are no new organizational or administrative structures required for implementation or delivery of this program.

The OEH division also houses the Rocky Mountain Center for Occupational and Environmental Health (RMCOEH), which was established in 1977. In 1980 the Center was designated as a National Institute for Occupational Safety and Health (NIOSH) Education and Research Center (ERC). The RMCOEH has a major component in the College of Engineering's Department of Mechanical Engineering. It has continued as a NIOSH Center to the present, being one of only 17 such NIOSH Centers in the nation. This center was founded and continues to operate with the largest training grant at the University of Utah. Trainees obtain a variety of well-established degrees (Master of Occupational Health, Master of Science in Occupational Health, Master of Science in Mechanical Engineering, Ph.D. in Mechanical Engineering and Ph.D. in Public Health).

At the most recent NIOSH site visit in February 2007, the Center received a score of 140 (scale: 100= no concerns to 500=not fundable), one of the best scores any ERC has obtained and the best of the seven centers competing head-to-head that year (Johns Hopkins, UAB, UC Berkeley/UCSF, U Colorado, U South Florida, U Minnesota). The score has meant continued funding support for the past five years with a 17% increase (in the context of a tight funding environment) which has recently been extended for a sixth year. The Center faculty members are currently planning the next competitive renewal submission to NIOSH. The Center currently receives approximately \$1.5 million per year in NIOSH support, with 60% of individual academic program funding restricted to student support. This represents the largest educational grant in the School of Medicine.

As a NIOSH Center, the RMCOEH is required to provide graduate programs in the diverse aspects of occupational health (OH). These aspects/emphases include industrial hygiene (IH), hazardous substances academic training (HSAT, considered a subset of IH), ergonomics and safety (E&S, located in Mechanical Engineering), and occupational injury prevention research training (OIPRT, located in both School of Medicine and College of Engineering) (See Appendix A for brief descriptions of these fields). It is also required to provide training for occupational medicine residents. Because they are already trained at the doctoral level, OM

residents are not a major part of this proposal, although an occasional resident could be a prospective student for this Ph.D. program. The Center also has an extensive continuing education (CE) program providing over 120 courses a year to over 5,000 registrants. Each of the above emphases is separately supported by NIOSH under the umbrella of the ERC grant.

Thus, as the educational structures are already in place in the OEH Division and DFPM, this proposal does not require the development of new administrative structures. Additionally, the development of a Ph.D. program is expected to provide classes with a broader background of students which will further enhance training of the master's students.

Faculty

The Department of Family and Preventive Medicine's Occupational and Environmental Health Division and RMCOEH are considered to have some of the nation's outstanding occupational and environmental health faculty. Research accomplished by the faculty is groundbreaking. The faculty are the only faculty at a center nationally that have incepted two large scale prospective cohort studies, one on distal upper extremity musculoskeletal disorders and the second on back pain. Faculty lead efforts to reduce mortality and morbidity from truck crashes. There are no additional faculty members needed to support this doctoral program.

Current Faculty Preparedness

Faculty for this proposed program have extensive experiences in robust curriculum design (baccalaureate, masters, doctoral, residency), administration, furnishing quality mentorship, monitoring progress, instructional methods, evaluation strategies, accreditation compliance, and assuring that students graduate with a quality educational experience and credentials. Recent graduate survey data noted the profound quality of these OEH courses of study. Together, they have over 200 years of combined academic experience. All have current or past responsibilities for student advising and service on committees. Adjunct faculty, bringing extensive "real-world" experience, will also serve such roles as needed to meet the needs of the students.

Faculty and student research preparedness for a doctoral program is also engrained in this proposal. The RMCOEH has conducted major research work throughout its existence. Current large studies provide a diversity of laboratory and field studies that are requisites for a quality doctoral program. These projects fit the needs of society and funding sources, and appropriately match needs for the graduates' skills in the workforce. The RMCOEH is currently running two of the largest prospective cohort studies of musculoskeletal disorders ever conducted that include the most common 'soft tissue' abnormalities afflicting humans, including low back pain, tennis elbow, shoulder/rotator cuff tendinosis, and carpal tunnel syndrome. Faculty also have developed technology for evaluating

standards for respirator protections in low wind velocity conditions that are ubiquitous in the workplace, yet understudied and necessary for protection of human health. Faculty are conducting a large scale cross sectional study of truck driver's health, which appears related to approximately 10-20% of the 4,500 annual fatalities. Faculty are investigating solubility of agents such as beryllium and silica to analyze and predict adverse effects on health. Prospective students thus have an existing diversity of laboratory and field experiences that provide a foundation for a successful dissertation and career.

Faculty credentials are provided in Appendix C.

The core departmental faculty are:

- Professor Kurt T. Hegmann, M.D., MPH
- Associate Professor Stephen Alder, Ph.D.
- Instructor Jeremy Biggs, M.D., MSPH
- Professor Donald Blowski, Ph.D., CPE
- Assistant Professor Hannah Edwards, M.D., MPH
- Assistant Professor Matthew Hughes, M.D., MPH
- Associate Professor Rod Larson, Ph.D., MS, CIH
- Assistant Professor Andrew Merryweather, Ph.D.
- Associate Professor Maureen Murtaugh, Ph.D.
- Assistant Professor Leon Pahler, Ph.D., MSPH, CAIH
- Assistant Professor Darrah Sleeth, Ph.D., MPH
- Assistant Professor Matthew S. Thiese, Ph.D., MSPH
- Associate Professor James VanDerslice, Ph.D.
- Assistant Professor Eric Wood, M.D., MPH

Supporting the core faculty are four other contract faculty:

- Instructor Jeff Burton, MS, PE, CIH
- Instructor Frank D. DeRosso, MSPH, CIH
- Associate Professor Dean R. Lillquist, Ph.D., MSPH, CIH
- Assistant Professor, Phillip Smith, Ph.D., CIH
- Professor Royce Moser, Jr., M.D., MPH

A review of faculty preparedness is noted in the table below*:

| Status | Tenure # | Contract # | Adjunct # |
|--------------------------------------|----------|------------|-----------|
| Faculty with Doctoral degrees (n)** | 7 | 7 | 3 |
| Faculty with Master's degrees (n)*** | 2 | 0 | 2 |
| Other Faculty (n) | | | |

*Does not include approximately 75 additional adjunct faculty (MSPH, PhD and MD/DO) who may on infrequent or rare occasions be involved in the PhD in OEH Program.

**Includes Faculty in Mechanical Engineering (2) who have major contributions to the Occupational Injury Prevention Program. Includes Faculty in Internal Medicine (1) with role directing the RMCOEH's Statistical and Economic Evaluation Unit.

***Includes Faculty who graduated when a Master's degree was the terminal degree.

Faculty development procedures include discussions in regularly scheduled faculty meetings, formal and informal mentorship programs, annual retreats that uniformly include faculty development topic(s), and encouragement to attend University of Utah educational seminars for improving teaching methods. Dr. Hegmann completed a medical education fellowship and also mentors faculty in many of these issues. Other senior faculty have extensive experience with the combined teaching experiences of the faculty exceeding 200 years, providing a rich educational background for students.

Staff

No additional professional staff will be needed to support the doctoral degree. The program coordinator and secretarial support will derive from existing positions who have the time to devote to this program. Because all doctoral student advising is provided by the major professors and because advising for the small number of anticipated enrollment in the Ph.D. will be spread among the faculty members, no one faculty member will be over-burdened. The RMCOEH has a research team including approximately 9 research assistants, thus additional research staff are not required. Most doctoral students will be supported by the RMCOEH's NIOSH training grant.

Library and Information Resources

University and RMCOEH library resources necessary for supporting doctoral studies is of national caliber. OEH students primarily utilize electronic resources. These are highly satisfactory as demonstrated by the OEH successful efforts to collect and analyze 15,000 studies for production of evidence-based guidelines.

Admission Requirements

Ph.D. in OEH students will typically have completed masters training in occupational and environmental health or public health (MSOH or MSPH). Occasional, exceptional students may matriculate with extensive, sciences and math-based baccalaureate backgrounds and outstanding Graduate Record Examinations (GRE) scores. Typical Industrial Hygiene students will have backgrounds in chemistry or biology.

Application materials will be screened for suitability for doctoral work. These materials will include the curriculum vitae, GRE scores, transcripts, reference letters, personal statement and where applicable, writing samples. Prospective student's projected dissertation topic and suitability will be evaluated during the application process.

The Doctoral Admissions Committee will screen applications for preliminary suitability for consideration to extend an interview. All prospective students will also be interviewed by the Doctoral Admissions Committee. A faculty member must be identified to mentor and supervise the student, prior to being extended an offer of admission. Faculty consensus is required prior to admission.

Student Advisement

All students will have focused, detailed and individualized advising. Student advisement will be consistent with the established, highly successful advising practices within the Department of Family and Preventive Medicine's Occupational and Environmental Health and RMCOEH's students that have successfully trained and placed all students over the past few years. Each doctoral student will be advised by at least one faculty member. We will update our extensive Student Policies and Procedures Handbook to reflect the doctoral degree.

Justification for Graduation Standards and Number of Credits

Students must successfully complete all requirements for graduation. There will be no exceptions. Otherwise, this section is not applicable.

External Review and Accreditation

All three emphases are currently funded and have been developed under the 34-year old Rocky Mountain Center for Occupational and Environmental Health (RMCOEH). The Center is sponsored by a federal grant from the National Institute for Occupational Safety and Health of over \$1,530,000/year.

Doctoral Curriculum development is guided by one external advisory board and three advisory committees, including the statutorily mandated Rocky Mountain Center for Occupational and Environmental Health Advisory Board (SB 234, 2007 G.S.) (Rosters are attached in Appendix D as well as recent meeting minutes.). The Board and committees are composed of members external to the program. The board's role is to address overall center support, funding, and interactions with the businesses, trade organizations and labor. The advisory committees (i.e., Industrial Hygiene and Hazardous Substances Academic Training Advisory Committee, Ergonomics & Safety and Occupational Injury Prevention Advisory Committee and the Occupational Medicine Residency Advisory Committee) advise the program directors including regarding more intimate details of curricular design, implementation and evaluation.

Additionally, the Industrial Hygiene and Ergonomics and Safety program directors annually meet with the other directors nationally and NIOSH to share information on training and research. This proposal incorporates important discussion points from these groups.

We plan to maintain accreditation of the masters level degrees through the American Board of Engineering Technologies (ABET) Applied Science Accreditation Commission (ASAC), which currently accredits the University of Utah's Industrial Hygiene, Hazardous Substances Academic Training, and Ergonomics and Safety programs. The University's Master of Science in Occupational Health is currently accredited by ABET-ASAC and was recently reaccredited for a maximum allowable term of 6-years through 2017. The University's Mechanical Engineering degrees used by the RMCOEH's academic

programs are also fully accredited by ABET. There is no national accreditation body for the Occupational Injury Prevention and General OEH emphases. (The nationally renowned Occupational Medicine residency program is also accredited for a maximum 5-year term, without any citations, through the Accreditation Council for Graduate Medical Education (ACGME)'s Preventive Medicine Residency Review Committee.)

We do not anticipate seeking additional accreditation of the Ph.D. program due to high cost combined with lack of additive value beyond maintaining ABET-ASAC accreditation of the master's degree that is due in 2017.

It is unclear if ABET accreditation of a masters degree is necessary as major programs nationally have dropped their ABET accreditation due to cost concerns. Estimated costs will be \$17,000 in fees per accreditation cycle (6 years) plus hours spent in preparation for annual reports and site-visits for purposes of program evaluation by an ABET team once every 6 years. We anticipate meeting and exceeding all ABET requirements.

Projected Enrollment (please see more details by emphasis below)

| Year | Student Headcount | # of Faculty* | Student-to-Faculty Ratio | Accreditation of Req'd Ratio |
|-------------|--------------------------|----------------------|---------------------------------|-------------------------------------|
| 1 | 3-5 | 14.8 | 1:3.7 (0.27) | Not applicable |
| 2 | 6-10 | 14.8 | 1:1.85 (0.54) | Not applicable |
| 3 | 6-10 | 15.8 | 1:1.96 (0.51) | Not applicable |
| 4 | 6-10 | 15.8 | 1:1.96 (0.51) | Not applicable |
| 5 | 6-10 | 17.0 | 1:2.1 (0.47) | Not applicable |

*Includes four supporting faculty at 0.2 per faculty.

Ph.D. in OEH Full Time Effort Students per Year

| Program | Matriculating Students per Year | Full Time Student Totals |
|--------------------------------|---------------------------------|--------------------------|
| Industrial Hygiene | 1-2 | 2-4 |
| Occupational Injury Prevention | 1-2 | 2-4 |
| General OEH | 1 | 2 |
| Totals | 3-5 | 6-10 |

Five Year Projection for Ph.D. in OEH Full Time Effort Students per Year

| Program | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|--------------------------------|------------|-------------|-------------|-------------|-------------|
| Industrial Hygiene | 1-2 | 2-4 | 2-4 | 2-4 | 2-4 |
| Occupational Injury Prevention | 1-2 | 2-4 | 2-4 | 2-4 | 2-4 |
| General OEH | 1 | 2 | 2 | 2 | 2 |
| Totals | 3-5 | 6-10 | 6-10 | 6-10 | 6-10 |

Expansion of Existing Program

Not applicable.

SECTION III: Need

Program Need

The importance of occupational health and safety (OHS) is supported by the Bureau of Labor Statistics (2009) which states that the number of new cases of occupational illness and injury were 3,277,700, cases with lost time from work were 965,000 and there were 4,551 injury fatalities. The economic costs in 1997 were \$26 billion related to illness, and \$145 billion related to injury. Thus, the tangible benefits of occupational health professionals reducing those injuries is considerable.

Traditionally, masters level training in these fields has been sufficient for practicing professionals. However, the need for doctoral training at the University of Utah is based on at least 4 major factors:

1. Occupational and environmental health challenges have become increasingly complex (e.g., combinations of ergonomic, cardiovascular and behavioral risks producing disease/injury), necessitating doctoral training to effectively solve problems in the private sector (industrial sectors, trade organizations, labor organizations) as well as government (departments of labor, health),
2. Complexity of research findings and publications has increased markedly (e.g., design, implementation, statistical analyses). Proper interpretation of findings to ascertain whether costly changes should be implemented increasingly requires doctoral training,
3. Growth in the Intermountain West is producing the need for more highly trained faculty at other institutions, and
4. There is a need to replace senior faculty at the University of Utah as they retire.

This proposed doctoral program has demonstrable market demand. National and regional demand for industrial hygiene trainees has not been quantified. However, the demand for the RMCOEH's industrial hygiene trainees is such that, despite a recessionary-like environment, all master's students were placed in job positions before completing their training program in both 2010 and 2011. Requests for RMCOEH Industrial Hygiene students continue to be so high that it is not possible to provide sufficient students for the summer externship positions that local, regional and national industry would like the RMCOEH to fill each summer. The need for future quality faculty is intense. The need for Ph.D.'s in industry has also been confirmed locally, regionally and nationally.

Occupational Injury Prevention Research is a relatively new field involving interdisciplinary solutions to workplace injury problems. The RMCOEH has successfully received Ph.D. funding for this program. Job demand is flourishing and all graduates have received excellent job positions in both industry and academia. Similarly, our occupational injury graduates are promptly placed prior to

graduation. There is need for these trainees in industry as well as workers compensation carriers, e.g., one position remains unfilled locally, another is unfilled at a prominent national company that is seeking a graduate from our programs, and others are open regionally and nationally.

The numbers of masters and doctoral students placed per year average:

| Program | Ave. number of students placed/year |
|--|-------------------------------------|
| Industrial Hygiene | 7 |
| Hazardous Substances Academic Training | 1.5 |
| Occupational Medicine* | 6 |
| Ergonomics & Safety** | 6 |
| Occupational Injury Prevention Research Training (Ph.D.) | 1 |

*The Occupational Medicine Residency Program is currently expanding based on a newly received HRSA training grant after receiving the best score of any Occupational Medicine Residency Program in the United States (scores were released nationally, May 2010).

**Ergonomics and Safety is combined in the engineering department. They are different yet related fields.

The numbers of positions available for graduates is very difficult to quantify. We currently have no students who graduate and are not placed in positions. We are routinely contacted for additional graduates and have none available. This is despite the increase in size of our programs since the new MSOH and MOH degree programs were approved by the Board of Regents in January 2008. High demand is further supported by the lack of sufficient students for summer externships. An additional factor is that many of the initial graduates from the RMCOEH in the 1970s are now at retirement age, and the new challenge of attrition has already begun to appear in the RMCOEH Graduate Surveys. With retirements of former graduates already beginning, it is a near certainty that a coming wave of retirements is likely to exacerbate these shortfalls of occupational health and safety professionals.

The numbers of students interested in the RMCOEH's programs has been rising. Currently, there are 7 new IH and HSAT students entering this fall and another two are interested in entering January 2012. There is an average of approximately 20 applications for five occupational medicine positions each year. Each year, multiple telephone calls are received from students without engineering backgrounds who seek graduate training in ergonomics and/or safety. Currently, training cannot be provided to them, a need which this proposed degree program will fill. We are also pleased to note that six aerospace medicine residents have been sent to our MOH program by the US Air Force for training over the past three years after the MOH degree program approval by the Utah Board of Regents. This strengthens our ties with Hill Air Force Base for mutually beneficial educational activities. While not a primary focus, a few occupational medicine

residency program graduates may take the Ph.D. in OEH curriculum in preparation for advanced academic or other research careers and would most likely utilize the General OEH emphasis.

In summary, there is demonstrable need for the program.

Supply

Currently, there are approximately 20 universities that altogether offer comparable doctorates and none of them are large. Numbers of doctoral graduates nationally have not been quantified but are estimated at 10-12/year in industrial hygiene and 9-11/per year in occupational injury prevention. Thus, there is a sparse supply for the U.S.

The RMCOEH has graduated over 465 graduate students from its programs since the founding of the Center at the University of Utah in 1977. There is continuing, strong student demand for RMCOEH programs, as has been the case for over 34 years. This source of supply of mostly masters level students has been constant, and if anything, higher in recessionary environments where attention appears to shift to cost/expense reduction.

Labor Market Demand

Demand for graduates is from corporations, trade and industry sectors, workers compensation insurers, academia, state departments of health and labor. Some additional demand occurs from non-profit sectors. There is anticipated to be no programmatic impact based on market changes as this proposal is anticipated to be able to only partially meet demand.

Academic Demand

Quantification of academic demand is difficult as there are no quality data. Many academic positions nationally have difficulty being filled. The University of Utah has conducted several searches in recent years and the qualified candidate pool is typically about one to at most three deep, suggesting scarce graduates. Programs locally have attempted to hire some OEH doctoral graduates to supplement their public health faculty, yet they too have found difficulties. Faculty at the University of Utah are concerned about the sparse supply of future doctoral graduates to fill needs at the University as well as neighboring and regional institutions. Overall regional academic demand is estimated at approximately 8 positions. With projected retirements, there are another 10 positions expected over the coming 10 years.

Private Sector Demand

Most of the demand for graduates from RMCOEH's funded programs is from the private sector. There are approximately 9 open IH positions currently. There are approximately 8 open OIP positions. The challenges in the private sector also include retirements that are surging (training in OSH began in earnest in the 1970s).

Demand in the Public and Non-Profit Sectors

Public sector jobs are primarily in three four agencies: 1) the National Institute for Occupational Safety and Health, 2) U.S. Dept. of Labor, 3) Centers for Disease Control and 4) State/local departments of health. Demand is strong and positions are difficult to fill in the government sector, as there are insufficient graduates for the private sector where remuneration is more lucrative.

Non-Profit demand is somewhat difficult to quantify. However, there is increasing interest internationally for doctoral training in OEH. This appears driven by similar issues as in the US identified above (e.g., complex problem solving). As an example, we currently have one serious inquiry from Ghana. The non-profit sector is not incorporated in our conservative student headcount projections, however we do anticipate some demand.

Summary Demand and Supply

The demand for OEH doctoral graduates is demonstrably high. The supply is quite weak nationally. This produces a stark gap between the supply and demand in favor of incepting this new degree program to particularly address the needs of the businesses and economy in the State of Utah.

Student Demand

Many students have inquired to ask when we plan on starting the Ph.D. in OEH. This includes many current and former masters students. We receive several dozen inquires by email each year. Queries include the University of Utah's current Endowed Chair in Mine Safety who has authored a letter of support (Tom Hethman). Student demand is robust and will outstrip available funded positions. It will require continuation of our careful selection procedures outlined elsewhere.

Similar Programs

There are no similar programs in the state of Utah or the Intermountain Region.

Collaboration with and Impact on Other USHE Institutions

This proposal addresses a unique need at the University of Utah and in the State of Utah that include prevention of, and reductions in work-related deaths and injuries, reductions in workers compensation costs, reduced injuries among University of Utah employees, major research projects including support for the National Children's Study through providing the environmental measurements necessary for that project, as well as several other extramurally funded research projects. The RMCOEH is also unique in the breadth and extent of the interdisciplinary, cross-campus collaborations that are utilized for both educational and research missions. The proposed Ph.D. in OEH Program will further increase these educational and research missions and therefore, this proposal is an institutional priority.

This proposal is expected to result in no net loss of students in the University of Utah's Public Health Programs (MSPH or MPH Programs) or Mechanical Engineering Programs. There are no comparable public or private programs elsewhere in the State of Utah that could be adversely impacted. Instead, this proposed program would help to supply qualified, trained faculty to baccalaureate and master's programs at Utah State University and Brigham Young University.

However, this program will continue to work with the University of Utah's Public Health Program and the Department of Mechanical Engineering to continue to emphasize synergistic efforts and identify ongoing areas of mutual interest, including research areas. This program will rely on the Public Health Programs particularly for Biostatistics courses. It will also rely on the Ergonomics and Safety Program for additional graduate coursework in those areas as it has for over 25 years. This proposed program will also provide even better courses for the other programs (e.g., Mechanical Engineering's Ergonomics and Safety students taking DFPM courses and vice versa).

Benefits

There are many projected benefits of the Ph.D. in OEH that are likely to be realized. These include:

1. Improved educational experiences for all occupational health students (including MSOH, MOH; MS and Ph.D. in Mechanical Engineering; MSPH, MPH, and Ph.D. in Public Health) through enrichment of the student bodies,
2. Increased breadth and depth of research opportunities in OEH at the University of Utah through having more advanced graduate student capabilities,
3. Enrichment of transdisciplinary activities across the University of Utah campus
4. Better abilities to solve businesses OEH problems with a more advanced capable student population given directions by faculty.
5. Improved business climate in the State of Utah, and
6. Increased probability of a successful competitive NIOSH renewal grant

Thus, the Ph.D. in Occupational and Environmental Health has numerous benefits for the students, faculty, University, businesses, labor organizations, workers compensation insurers, governmental units, and trade organizations. Letters of support are provided from many campus units.

Consistency with Institutional Mission

The University of Utah Ph.D. in Occupational and Environmental Health Program will fill an unmet need at the University of Utah and in the State of Utah. Though occupational health training has been available for 34 years, changes in external accreditation standards no longer allow for quality education experiences for some of these Occupational Injury Prevention students, and doctoral training has been unavailable for the Industrial Hygiene students. These programs target previously identified areas for Utah State Higher Education (USHE) development involving

health, engineering and the environment through enhancing and preserving renowned programs; retaining access of students to such programs in Utah; providing businesses in Utah with access to a supply of diverse, well-trained occupational and environmental health professionals; developing faculty to teach these disciplines; and continuing to improve the business climate of the State of Utah. The improved competitiveness for business is provided through programs that prevent occupational injuries and illnesses, lower workers compensation costs, and make Utah more competitive than other states as businesses seek expansion sites.

SECTION IV: Program and Student Assessment

Program Assessment

Goals and measures of achievement for the Ph.D. in Occupational and Environmental Health are adapted from the Master of Science in Occupational Health degree with expansion to address needs of doctoral graduates in essentially all prospective OEH employment settings.

Expected Standards of Performance

To demonstrate seamlessness between the goals, objectives, and assessment measures, these have been incorporated within the goals and objectives below. They have been summarized in text that follows this outline. Standards and competencies for the Ph.D. in OEH Program have been chosen to assure the program's graduates are able to effectively function in high-level positions whether in businesses, academia or the public sector. Successful completion of the Ph.D. in Occupational and Environmental Health will provide demonstrable evidence the student has advanced, doctoral level capabilities.

Goal 1: Master Occupational and Environmental Health Core Knowledge

Objective 1: Successfully complete Core Courses

Measure 1: Complete all Core Courses with a grade of "B" or better

Objective 2: Demonstrate ability to perform high level analyses of published, peer-reviewed OEH literature

Measure 1: Participate in the Journal Club

Measure 2: Present, evaluate and provide a detailed critique of at least 3 articles per year

Measure 3: Apply grading methods to score peer-reviewed publications and compare with faculty scores

Objective 3: Pass the Qualifying Examination that includes Core Knowledge³

³ The Master of Science in Occupational Health and Master of Occupational Health programs administer a high-quality comprehensive examination that is required for graduation. That examination includes standardized items on core knowledge and other standardization procedures that are used for national certification (or board) examinations. This examination prepares the graduate to successfully pass national

Measure 1: Successfully complete the Qualifying Examination

Goal 2: Successfully Complete a Program of Study in a Doctoral Occupational and Environmental Health Emphasis (IH, OIP, General OEH)

Objective 1: Propose a Program of Study to the Supervisory Committee

Measure 1: Agreement of the Supervisory Committee on the proposed Program of Study

Objective 2: Successfully complete the Program of Study

Measure 1: Achieve grade of “B” or better in all courses

Objective 3: Pass the Qualifying Examination that includes Core Knowledge

Measure 1: Successfully complete the Qualifying Examination

Goal 3: Properly analyze and interpret complex research data and reports.

Objective 1: Demonstrate ability to perform high level analyses of published, peer-reviewed OEH literature

Measure 1: Participate and lead discussion in the Journal Club

Measure 2: Present, evaluate and provide a detailed critique of at least 3 articles per year

Measure 3: Apply grading methods to score peer-reviewed publications and compare with faculty scores

Measure 4: Provide a dissertation proposal with a comprehensive background section (see below)

Goal 4: Develop quality teaching skills

Objective 1: With guidance from the course director, act as lead instructor for at least one graduate level class

Measure 1: Plan, implement, deliver and evaluate teaching methods under senior faculty guidance

Measure 2: Complete at least one semester as course director

Measure 3: Review course evaluations with the Primary Mentor for areas of improvement

Objective 2: Mentor at least one Occupational Safety and Health Solutions project for graduate students

Measure 1: Participate and mentor one OSH Solutions project with graduate students

Measure 2: Review course evaluations with the Primary Mentor for areas of improvement

Objective 3: Plan and conduct at least 4 Outreach teaching activities to the broader Occupational and Environmental Health communities

Measure 1: Identify 4 outreach activities with the Primary Mentor

Measure 2: Deliver these activities

certification examinations (e.g. Certified Industrial Hygienist). The MSOH/MOH comprehensive examination will serve as the foundation for the Ph.D. in OEH Program’s Qualifying Examination.

Measure 3: Review lecture evaluations with the Primary Mentor (if applicable)

Goal 5: Solve complex OEH problems

Objective 1: Mentor at least one Occupational Safety and Health Solutions project for graduate students

Measure 1: Participate and mentor one OSH Solutions project with graduate students

Measure 2: Review outcomes data for success of the OSH solution (if applicable)

Measure 3: Supervise at least one graduate student team in preparation of a written report and presentation of project outcomes.

Goal 6: Incept, conduct and report original research in a dissertation in Occupational and Environmental Health

Objective 1: Successfully complete and present a Dissertation Proposal

Measure 1: The Supervisory Committee determines the proposal and presentation are successful and gives approval to proceed

Objective 2: Author at least one PHS 398 application or equivalent (i.e., research proposal).

Measure 1: The Supervisory Committee or course director reviews at least one PHS 398 proposal (e.g., K01, R03, R21) and, likely after revision(s), determines it is at least satisfactory.

Objective 3: Research is conducted successfully according to the Proposal plan

Measure 1: The Supervisory Committee determines the dissertation defense was successful

Objective 4: A high-quality systematic review of the background is conducted as determined by the Supervisory Committee

Measure 1: The search for the specific dissertation topic is comprehensive

Measure 2: The background incorporates standards for high quality systematic reviews

Measure 3: The Supervisory Committee determines the background is of high quality

Objective 5: The dissertation reporting incorporates a high quality that achieves peer-review status as determined by the Supervisory Committee

Measure 1: The dissertation writing style adheres to the recommendations of both the Graduate Programs in

Occupational and Environmental Health Policies and Procedures⁴, the University of Utah's Graduate School, as well as the peer-reviewed journal targeted for publication

Measure 2: The Supervisory Committee determines the background is of high quality

Measure 3: The research is presented in at least one (inter)national meeting

Measure 4: The research is accepted and/or reported in peer-reviewed publications (generally 3 or more unique papers).⁵

Expected Standards of Performance

Successful completion of the Ph.D. in Occupational and Environmental Health will provide demonstrable evidence the student as advanced, doctoral level capabilities. The doctoral graduates will have abilities to:

- 1) Master OEH core knowledge,
- 2) Develop state-of-the art knowledge in a specific area of OEH science,
- 3) Incept, conduct and report original research in OEH,
- 4) Properly analyze and interpret complex research data and reports,
- 5) Solve complex OEH industrial problems, and
- 6) Have skills to manage OEH programs.

Critical benchmarks include:

1. Developing and successfully completing a Program of Study approved by the Supervisory Committee
2. Successfully completing all coursework
3. Successfully complete the qualifying examination which will test the broad field of Occupational and Environmental Health, as well as the emphasis-specific area
4. Preparing a dissertation proposal approved by the Supervisory Committee
5. Preparing and successfully defending a dissertation submitted to the Supervisory Committee

The successful student will accomplish all of the following to demonstrate competencies:

- Complete all graduate coursework successfully
- Successfully pass the qualifying examination
- Act as course director for at least one graduate level class, with supervision and mentorship by an experienced faculty member to include all basic curricular functions (e.g., planning implementation, delivery, evaluative methods).
- Mentor at least one Occupational Safety and Health solutions project for graduate students.

⁴ This document will be renamed upon approval of this proposal. It is currently named for the masters level occupational health degrees.

⁵ This measure may occur after graduation.

- Complete and defend a research project to address an important OEH issue
- Submit 3 peer-reviewed publications, generally on the basis of the dissertation work
- Present at least one abstract or conference proceedings at a relevant national or international meeting
- Write at least one PHS 398 application (i.e., a research proposal). This may include a draft K01 application or an R03/R21 application.
- Plan and conduct at least 4 outreach activities

SECTION V: Finance

Budget

Table 1. Five year revenue and expense projections for the RMCOEH

| RMCOEH - Five-Year Projected Revenue & Expense | | | | | |
|---|--------------------|--------------------|--------------------|--------------------|--------------------|
| | 2012- 2013 | 2013- 2014 | 2014- 2015 | 2015- 2016 | 2016- 2017 |
| Revenue | | | | | |
| NIOSH ERC Training Grant | \$1,532,793 | \$1,532,793 | \$1,532,793 | \$1,532,793 | \$1,532,793 |
| Other Training Grants | \$494,425 | \$494,425 | \$494,425 | \$494,425 | \$494,425 |
| Research Grants | \$35,000 | \$125,000 | \$130,000 | \$135,000 | \$140,000 |
| Contracts | \$440,000 | \$445,000 | \$450,000 | \$460,000 | \$470,000 |
| Continuing Education | \$740,000 | \$745,000 | \$750,000 | \$755,000 | \$760,000 |
| Ph.D. MBM Formula | | | \$17,000 | \$34,000 | \$54,000 |
| MOH/MSOH MBM Formula** | \$85,000 | \$85,000 | \$85,000 | \$85,000 | \$85,000 |
| Student Tuition Differential | \$75,000 | \$80,000 | \$85,000 | \$90,000 | \$95,000 |
| E Mayne OEH Appropriation | \$150,000 | \$150,000 | \$150,000 | \$150,000 | \$150,000 |
| Tax Credit Donations*** | \$180,000 | \$185,000 | \$190,000 | \$195,000 | \$200,000 |
| Income | \$3,732,218 | \$3,842,218 | \$3,884,218 | \$3,931,218 | \$3,981,218 |
| | | | | | |
| Expenses | | | | | |
| Faculty Salaries/Benefits* | \$1,580,346 | \$1,625,696 | \$1,674,467 | \$1,724,701 | \$1,776,442 |
| Staff Salaries/Benefits* | \$720,263 | \$741,871 | \$764,127 | \$807,051 | \$810,662 |

| | | | | | |
|--|--------------------|--------------------|--------------------|--------------------|--------------------|
| Tuition and Stipends paid from NIOSH ERC Grant | \$474,014 | \$488,234 | \$523,881 | \$539,598 | \$555,806 |
| Ph.D./MOH/MSOH Operations | \$30,000 | \$32,000 | \$34,000 | \$36,000 | \$38,000 |
| Operations | \$929,595 | \$954,416 | \$887,742 | \$843,868 | \$800,327 |
| Expenses | \$3,732,218 | \$3,842,218 | \$3,884,218 | \$3,931,218 | \$3,981,218 |
| Net (loss) | \$0 | \$0 | \$0 | (\$0) | \$0 |

*Includes E&S faculty/staff salary and benefits budgeted on ERC grant

**MBM formula (\$170 per student x 20 credit hours x # students)

*** Primarily dollar for dollar tax credits against workers compensation premiums paid by qualified donors under S.B. 159, 2005 General Legislative Session; extended maximum 10-year duration 2010 General Legislative Session.

Table 2. Five year revenue and expense projections, Ph.D. in OEH Program

| | 2012-2013 | 2013-2014 | 2014-2015 | 2015-2016 | 2016-2017 |
|--|-----------------|-----------------|------------------|------------------|------------------|
| Revenue | | | | | |
| NIOSH ERC Training Grant | \$57,214 | \$58,930 | \$64,879 | \$50,335 | \$57,900 |
| Ph.D. MBM formula* | | | \$17,000 | \$34,000 | \$54,000 |
| Tuition Differential | \$10,200 | \$13,600 | \$20,400 | \$27,200 | \$34,000 |
| Tax Credit Donations | \$6,000 | \$6,400 | \$6,800 | \$7,200 | \$0 |
| E Mayne OEH Appropriation | \$7,400 | \$7,500 | \$7,600 | \$7,700 | \$0 |
| Income | \$80,814 | \$86,430 | \$116,679 | \$126,435 | \$145,900 |
| Expenses | | | | | |
| Faculty Salaries / Benefits | \$40,000 | \$43,000 | \$50,366 | \$54,308 | \$69,519 |
| Staff Program Support | \$3,000 | \$3,090 | \$3,183 | \$3,280 | \$3,377 |
| Ph.D. Student stipends paid from NIOSH ERC Grant | \$21,180 | \$21,180 | \$42,360 | \$42,360 | \$42,360 |
| Ph.D. tuition /fees | \$14,634 | \$16,660 | \$17,770 | \$22,989 | \$26,644 |
| Ph.D. Operational Expense | \$2,000 | \$2,500 | \$3,000 | \$3,500 | \$4,000 |
| Expenses | \$80,814 | \$86,430 | \$116,679 | \$126,435 | \$145,900 |

| Net (loss) | \$0 | \$0 | \$0 | (\$0) | \$0 |
|--|-----|-----|-----|-------|-----|
| * MBM formula: \$170.00per student x 20 credit hours x # students | | | | | |

Yr 2015 = \$170.00 per student x 20 cr hrs x # students plus # Ph.D. graduates x \$4000

Funding Sources

The budget table above illustrates how the program will be funded. The program will be supported through a combination of the RMCOEH's NIOSH training grants, tuition revenues, a state appropriation (1SSB15, 2009 GS) and a worker's compensation premium tax credit mechanism (SB159, 2007 GS; renewed for maximum possible 10 years in 2010 (1SHB221, 2010 GS). It is important to note that all funds necessary to support doctoral instruction have already been developed for this purpose, consistent with the RMCOEH and DFPM strategic plans.

Reallocation

Numbers of doctoral and masters students will be adjusted based on stipends and other sources of funding from training grants, especially the RMCOEH's NIOSH training grant. Substantial reallocation is not anticipated.

Impact on Existing Budgets

There will be no substantial impact on existing budgets, either of the RMCOEH, DFPM, Public Health, Mechanical Engineering or other programs or entities.

Finance Discussion

From the beginning, the doctoral program will be financially feasible

Budgets Combined for MOH/MSOH and Ph.D. in OEH Program

For budget purposes, the MOH/MSOH and Ph.D. in OEH degree programs are inseparable. Students will be taking many of the same courses taught by the same instructors at the same times, and the programs share the same administrative support structure. The sole significant difference between the MOH/MSOH and Ph.D. in OEH for budget purposes is the added time, student credit hours and ultimately the expense involved in the *dissertation* component of the Ph.D. in OEH student curriculum. The MOH/MSOH and Ph.D. in OEH are therefore presented together in the following program revenue and expense projections.

Required Ph.D. in OEH Courses Are Currently Taught

With few exceptions, the Ph.D. in OEH curriculum is already taught as courses through either: 1) the MSOH/MOH degree programs, 2) DFPM Graduate Program in Public Health, 3) Dept. of Mechanical Engineering's Ergonomics and Safety Program and/or 4) Masters in Clinical Investigation. We are fortunate that

implementation of the Ph.D. in OEH curriculum does not require extensive preparation or teaching of new courses. The budgetary impact on the RMCOEH of teaching costs of implementing the new degrees is relatively minimal.

No Additional State Funds Requested

The RMCOEH receives no direct allocation of state funds and no additional state funds are requested to fund the Ph.D. in OEH programs.

Mission Based Management (MBM) Educational Funds (SCH Support)

Host departments of educational activities and programs within the University Health Sciences Center (HSC) receive educational funds (state, tuition, and other) through a formula developed and administered by the HSC Mission Based Management Advisory Committee (MBMAC). The relevant funding formula for allocations associated with the Ph.D. in OEH program would be derived from student contact hours (SCH's) and from a Ph.D. student head count. Currently, the Department of Family and Preventive Medicine already receives the SCH related funds for the existing RMCOEH-based courses destined for the Ph.D. in OEH degree programs.

Calculation of MBM Student Contact Hour Support

Student contact hours for the Ph.D. in OEH are estimated to be at an average of 18.4 credit hours per student, per year. For budget purposes, MBM educational funding projections are based on current dollar per SCH figures. This formula is \$327 per credit hour X student contact hours X number of students per year, with \$327 being the balance of \$460 per student contact hours minus a departmental overhead of 29%). The differential tuition will also apply. For budgeting purposes, it is projected that there will initially be 3-5 students entering the Ph.D. in OEH program each year for two years, with an annual total active student headcount of 6-10.

ERC Grant Support for RMCOEH and the Ph.D. in OEH Program

As a NIOSH Education and Research Center, faculty time (in FTE's), including time spent teaching courses, is supported in part by the ERC grant. It is difficult to separate ERC supported teaching time, as would be associated with the Ph.D. in OEH program and the MOH/MSOH programs, from other faculty activities. It is the faculty FTE (up to 40%) that is supported by the grant and not their specific activities. The relationship between the ERC grant funding and support of the Ph.D. in OEH programs is therefore substantial, but difficult to separate as a specific Ph.D. in OEH revenue source.

Program Budgets are Part of the Overall RMCOEH Budget

Because of these overlaps in funding sources for the whole of RMCOEH and of the Ph.D. in OEH degrees, **Table 1** represents the entire RMCOEH budget with the Ph.D. in OEH *specific* portion highlighted with bold/italics. **Table 2** is an estimated stand-alone budget for the Ph.D. in OEH programs, applying approximate portions of the ERC grant and other RMCOEH funding that would be relevant to these programs.

Financial Analysis

The budget in Table 1 above is spread across all the programs. There are no adverse budgetary impacts anticipated from the Ph.D. in OEH program. It is anticipated that the Ph.D. in OEH program will modestly enhance RMCOEH-related revenues. Those revenues will be needed to offset the higher faculty and staff costs for increased student headcounts and programmatic operations.

Tuition courses/fees are directly related to conservative projections of enrollments in the Ph.D. in OEH program, budgeting at in-state tuition rates. It is anticipated that many of the students in the Industrial Hygiene and Occupational Injury Prevention emphases would have tuition paid by the NIOSH grant.

The tax credit donation has been footnoted in the tables. It is a dollar for dollar tax credit against the tax on state workers compensation premiums paid by qualified

donors that is then routed to the RMCOEH in support of occupational and environmental health programs at the center. Potential donors include workers compensation insurers and self-insured companies. This tax credit was enacted in the 2005 General Legislative Session (S.B. 159) and was further extended by statute by unanimous votes to the maximum extent (10-years) allowable under law in the 2010 General Legislative Session (H.B. 221) which underscores the major legislative support for the RMCOEH, DFPM, University of Utah and its OEH programs.

The Mission Based Management (MBM) formula for funding allocations is a student contact hours driven formula in the University of Utah's Health Sciences Center that is routed to the generating Department chair for purposes of budgeting with HSC. These figures are the estimates of revenues for the Ph.D. in OEH program that would devolve to the RMCOEH's budget based on these conservative projections.

**Appendix A: Ph.D. in Occupational and Environmental Health Program
Curriculum**

All Program Courses

| Course # | Title | Credit Hours |
|---|--|---------------------|
| Core Courses | | |
| FP MD 6100 (6190) | Biostatistics I (Online) | 3 |
| FP MD 6370 | Intro to Occupational Epidemiology | 3 |
| FP MD 6750 | Fundamentals of Industrial Hygiene | 2 |
| MEEN 6100 | Ergonomics | 3 |
| FP MD 6760 | Admin and Management of Health and Safety Programs | 3 |
| FP MD 7100 | Biostatistics II* | 3 |
| FP MD 6715 | Occupational Health and Safety Solutions | 3 |
| <u>Varies (one of:)</u> | Ethics Course (choose one:)* MDCRC 6430 Bioethical Issues in Clinical Research Phil 7550 Research Ethics | 1-3 |
| <u>Varies (choose 3 credits total:)</u> | Adv. Epidemiology (choose one+)* FPMD 7300 Epidemiology II FPMD 7720 Occup. Injury Epidemiol. MDCRC 6260 Behav. Community Intervention MDCRC 6160 Pharmacoepidemiology MDCRC 6110 Intermediate Epidemiol. FPMD 7xxx Adv Occup. Epidemiol | 3 |
| | Sub-Total | 24 |
| Emphasis Specific Requirements: IH | | |
| FP MD 6752 | Introduction to Toxicology** | 3 |
| FP MD 6751 | Advanced Industrial Hygiene** | 3 |
| FP MD 6753 | Industrial Ventilation** | 2 |
| | Sub-Total | 8 |
| Emphasis Specific | | |

| | | |
|------------------------------|--|---|
| Requirements: OIP | | |
| FP MD 7720 | Occupational Injury Epidemiology+ | 3 |
| FP MD 7xxx | Advanced Occupational Epidemiology+ | 3 |
| | Subtotal (OIP only) | 6 |
| ELECTIVES | | |
| FP MD 7300 | Epidemiology II | 3 |
| FCS 6120 | Demographic Methods | 3 |
| MDCRC 6240 | Community Intervention Studies | 2 |
| MDCRC 6160 | Pharmacoepidemiology | 1 |
| MDCRC 6040 | Design and Implementation of Clinical Trials | 2 |
| MDCRC 6120 | Cost-Effectiveness Analysis | 1 |
| FP MD 6311 | Research Design | 2 |
| FP MD 7310 | Advanced Research Design | 3 |
| Biostatistics | | |
| MDCRC 6210 | Regression Models | 1 |
| MDCRC 6130 | Introduction to Decision Analysis | 1 |
| MDCRC 6140 | Intermediate Decision Analysis Modeling | 1 |
| MDCRC 6200 | Meta Analysis | 1 |
| FP MD 6730 | Quantitative risk assess | 3 |
| FP MD 6106 | Categorical Data Analysis | 3 |
| MATH 5040 | Stochastic Processes and Simulation I | 3 |
| MDCRC 6020 | Data Management | 3 |
| FP MD 6101 | Data Analysis using SAS | 3 |
| Ergonomics and Safety | | |
| MEEN 6120 | Human Factors Engineering | 3 |
| MEEN 6110 | Industrial Safety | 3 |
| MEEN 7100 | Advanced Ergonomics | 3 |
| MEEN 7105 | Advanced Ergonomics Lab | 3 |
| MEEN 7110 | Systems Safety | 3 |
| MEEN 7120 | Functional Musculoskeletal Anatomy for Engineers | 3 |
| MEEN 6960 | Work Physiology and Occupational Heat Stress | 2 |
| Management | | |

| | | |
|---|--|---------|
| FP MD 6400 | Public Health Policy and Administration | 3 |
| MGT 6051 | Managing and Leading in Organizations | 1.5-3.0 |
| Toxicology | | |
| FP MD 6752 | Introduction to Toxicology** | 3 |
| PHTX 7114 | Principles of Toxicology | 2 |
| PHTX 7620 | Analytical Toxicology | 2 |
| PHTX 7630 | Mechanism of Toxicology | 2 |
| Finance | | |
| ECON 7320 | Advanced Health Economics | 3 |
| ACCTG 5110 | Financial Accounting I | 3 |
| MDCRC 6230 | Health Services Research | 3 |
| FINAN 5270 | Business Risk Management | 3 |
| Hazardous Substance Course | | |
| FP MD 6756 | Hazardous Substances | 3 |
| Evidence Based Practice Course | | |
| PHIL 7570 | Case Studies and Research Ethics | 1 |
| PHIL 6540 | Engineering, Ethics, and Society | 3 |
| FP MD 6504 | Clinical Behavioral Aspects of Preventive Medicine | 3 |
| Industrial Hygiene, Occupational Injury and Disease Course | | |
| FP MD 6751 | Advanced Industrial Hygiene** | 3 |
| FP MD 6730 | Quantitative Risk Assessment | 3 |
| FP MD 6753 | Industrial Ventilation** | 2 |
| FP MD 6754 | Noise and other Physical Agents | 2 |
| FP MD 6703 | Clinical and Behavioral Aspects of Occupational Injuries and Disease | 3 |
| Ventilation | | |
| ME EN 6700 | Intermediate Fluid Dynamics | 3 |
| ME EN 6710 | Aerodynamics | 3 |
| Subtotal Electives | | 24 |
| Dissertation | | |

| | | |
|-------|----------------------|--------------|
| FP MD | Dissertation | 14 |
| | | |
| | Total Credits | 40+ to 64+ ‡ |

*Course generally not taken during MSOH curriculum, but a Core Course for Ph.D. in OEH. Thus, these credits must be added in to the subtotals to account for credit requirements for those with a prior MSOH.

**Required for Ph.D. in OEH (IH emphasis, 8 credits)

+Required for Ph.D. in OEH (OIP emphasis, 6 credits)

‡ At least 40 credits with appropriate master degree and all core courses completed. At least 64 credits without appropriate master degree and no core courses completed.

New Courses to be Added in the Next Five Years

| | | |
|------------|---|-------------|
| FP MD XXXX | OEH Doctoral Dissertation | 1-9 credits |
| FP MD 7XXX | Advanced Occupational Epidemiology | 3 credits |
| FP MD 7XXX | Independent Studies: Doctoral | 1-3 credits |
| FP MD 7XXX | Faculty Consultation: Doctoral Faculty consultation on dissertation research. | 3 credits |
| FP MD 7XXX | Continuing Registration: Doctoral Continuing registration for doctoral students. | 0 credits |

Appendix B: Program Schedule

Students with Accredited Master of Science in Occupational Health Degree

Ph.D. in OEH with MSOH [This is for a typical student in the Ph.D. in OEH in the IH emphasis without having previously had 3 Core OEH courses (Biostatistics II, Ethics and an Advanced Epidemiology course). This includes 8 IH emphasis required course credits, 18 elective/dissertation field credits and 14 dissertation credits.]*

| Course # | Course Title | Credit Hours |
|----------------------------------|------------------------------|--------------|
| First Fall Semester | | |
| Varies | Advanced Epidemiology Course | 3 |
| FP MD 7100 | Biostatistics II | 3 |
| | Elective/ Dissertation Field | 3 |
| | Subtotal | 9 |
| First Spring Semester | | |
| FP MD 6752 | Introduction to Toxicology | 3 |
| FP MD 6751 | Advanced Industrial Hygiene | 3 |
| | Elective/ Dissertation Field | 3 |
| | Subtotal | 9 |
| Second Fall Semester | | |
| FP MD 6753 | Industrial Ventilation | 2 |
| | Electives/Dissertation Field | 3 |
| MDCRC 6430 | Ethics Course | 1 |
| FP MD 7XXX | Dissertation | 2 |
| | Subtotal | 8 |
| Second Spring Semester*** | | |
| FP MD 7xxx | Electives/Dissertation Field | 6 |
| FP MD 7XXX | Dissertation | 3 |
| | Subtotal | 9 |
| Third Fall Semester€ | | |
| FP MD 7XXX | Dissertation | 6 |
| Third Spring Semester*** | | |
| | Subtotal | 6 |
| FP MD 7xxx | Electives/Dissertation Field | 3 |
| FP MD 7XXX | Dissertation | 3 |
| | Subtotal | 6 |
| | Total hours | 47** |

*The OIP emphasis merely substitutes the OIP emphasis required courses plus one elective/dissertation field for FPMD 6751, 6752 and 6753. The General emphasis substitutes electives/dissertation field for those courses.

** Please note 47 credits is for a typical student in the Ph.D. in OEH in the IH emphasis **without** having previously had 3 Core OEH courses (Biostatistics II, Ethics and an Advanced Epidemiology course.) This could be reduced to a minimum 40 credits if the Core Courses had been previously completed.

***Mentoring an OSH Solutions project would occur in either of the two final Spring Semesters.
€Serving as a Graduate-level course's Course Director would typically occur in one of the final semesters.

Doctoral students in all emphases are also expected to participate in our highly successful, biweekly Journal Club (no credit) for purposes of developing and refining critical skills for faculty-guided critical methodological analysis and grading of literature in an interdisciplinary forum. Four Outreach activities are also to be accomplished over the duration of the curriculum to obtain experiences teaching and interacting with diverse audiences.

Additional educational experiences are possible. These include CTLE courses for new Teaching Assistants, as well as courses in Cyber Pedagogy that may be particularly helpful for select students depending on career goals.

Students without Accredited Master of Science in Occupational Health Degree

(This is for a typical student in the Ph.D. in OEH in the IH emphasis without having had any of the Core OEH courses. This includes 8 IH emphasis required course credits, 18 elective/dissertation field credits and 14 dissertation credits.)*

| Course # | Course Title | Credit Hours |
|-------------------------------|--|---------------------|
| First Fall Semester | | |
| FP MD 6370 | Intro to Occupational Epidemiology | 3 |
| FP MD 6750 | Fundamentals of IH | 2 |
| MEEN 6100 | Ergonomics | 3 |
| | Subtotal | 8 |
| First Spring Semester | | |
| FP MD 6760 | Admin and Management of Health and Safety Programs | 3 |
| | Elective/ Dissertation Field | 3 |
| FP MD 6100 (6190) | Biostatistics I (Online) | 3 |
| | Subtotal | 9 |
| Second Fall Semester | | |
| Varies | Advanced Epidemiology Course | 3 |
| | Electives/ Dissertation Field | 6 |
| | Subtotal | 9 |
| Second Spring Semester | | |
| FP MD 6752 | Introduction to Toxicology | 3 |
| FP MD 6751 | Advanced Industrial Hygiene | 3 |
| FP MD 6715 | Occupational Safety and Health Solutions | 3 |
| FP MD 7100 | Biostatistics II | 3 |
| | Subtotal | 12 |
| Third Fall Semester | | |
| | Electives/Dissertation Field | 6 |
| FP MD 7XXX | Dissertation | 3 |
| | Subtotal | 9 |
| Third Spring Semester* | | |
| FP MD 6753 | Industrial Ventilation | 2 |
| FP MD 7xxx | Electives/Dissertation Field | 3 |
| FP MD 7XXX | Dissertation | 3 |
| | Subtotal | 8 |

| | | |
|--------------------------------|--------------------|-------------|
| Fourth Fall Semester € | | |
| MDCRC 6430 | Ethics Course | 1 |
| FP MD 7XXX | Dissertation | 5 |
| Fourth Spring Semester* | Subtotal | 6 |
| FP MD 7XXX | Dissertation | 3 |
| | Subtotal | 6 |
| | Total hours | 64** |

*The OIP emphasis merely substitutes the OIP emphasis required courses plus one elective/dissertation field for FPMD 6751, 6752 and 6753. The General emphasis substitutes electives/dissertation field for those courses.

**This could be reduced if some Core Courses had been previously completed.

***Mentoring an OSH Solutions project would occur in either of the two final Spring Semesters.
 €Serving as a Graduate-level course's Course Director would typically occur in one of the final semesters.

Doctoral students in all emphases are also expected to participate in our highly successful, bi-weekly Journal Club (no credit) for purposes of developing and refining critical skills for faculty-guided critical methodological analysis and grading of literature in an interdisciplinary forum. Four Outreach activities are also to be accomplished over the duration of the curriculum to obtain experiences teaching and interacting with diverse audiences.

Additional educational experiences are possible. These include CTLE courses for new Teaching Assistants, as well as courses in Cyber Pedagogy that may be particularly helpful for select students depending on career goals.

Appendix C: Faculty

Core Departmental (DFPM and MEEN) Doctoral Faculty

Kurt T. Hegmann, M.D., MPH

Dr. Hegmann is Professor and Center Director of the Rocky Mountain Center for Occupational and Environmental Health (RMCOEH) and Dr. Paul S. Richards Endowed Chair in Occupational Safety and Health. Dr. Hegmann will head the Ph.D. in Occupational and Environmental Health Degree Program. He directs the successful Master of Science in Occupational Health and Master of Occupational Health degree programs. He developed several courses including the required Occupational Epidemiology core course. He is the course director for the Occupational Injury Epidemiology course. He now guest lectures for the core Introduction to Occupational Epidemiology (FPMD 6370, 3 credits), Occupational Injuries and Diseases (FPMD 6703, 3 credits), Clinical Prevention and Behavioral Aspects of Occupational Medicine (FPMD 6504, 3 credits). He has experience teaching graduate courses at introductory and advanced levels. Dr. Hegmann has had extensive experience in accreditation site visits including at two institutions, involving approximately seven programs and five different accreditation organizations. Dr. Hegmann chairs the American Board of Preventive Medicine (primary responsibility to administer standardized examinations to determine "board certification") and has recently been appointed to the Preventive Medicine Residency Review Committee (the accrediting body for occupational medicine). He has completed a Medical Education Fellowship program. Dr. Hegmann's research interests include musculoskeletal disorders and transportation safety.

Stephen Alder, Ph.D.

Dr. Alder is Associate Professor in the Department of Family and Preventive Medicine. He is Chief of the Division of Public Health, which includes directing the graduate programs in public health. He also teaches the Research and Evaluation of Health Behavior course (FPMD 7640). His expertise also includes broad areas of biostatistics.

Jeremy Biggs, M.D., MSPH

Dr. Biggs is Clinical Instructor in the Occupational Medicine Program. He is responsible for teaching Behavioral Aspects of Occupational Injury and Disease (FPMD 6703) and assists with the Advanced OEM Topics course. Dr. Biggs is actively engaged in several research projects and heads the development of resident education in functional capacity evaluations.

Donald Blowski, Ph.D., CPE

Dr. Blowski is Professor in the Department of Mechanical Engineering at the University of Utah where he teaches and directs research in the areas of ergonomics, safety, occupational biomechanics, and rehabilitation engineering. He is Director of the Ergonomics and Safety Program as well as the Occupational

Injury Prevention Research Training (OIPRT) Program at The Rocky Mountain Center for Occupational and Environmental Health. The OIPRT program is the target program for this proposal's OIP emphasis. Don is a registered Professional Engineer and Certified Professional Ergonomist with 10 years of industrial experience. For the past 20 years he has served as an ergonomic and safety trainer and consultant to industry, OSHA, and the legal community throughout the United States. Dr. Bloswick's research interests include biomechanics and ergonomics of the spine and upper extremity.

Hannah Edwards, M.D., MPH

Dr. Edwards is an Assistant Professor in the Occupational Medicine program. She is Director of the University's OccMed Clinic. She is responsible for teaching Clinical and Behavioral Aspects of Preventive Medicine (FPMD 6504, 3 credits) and Advanced Topics in Occupational and Environmental Health I and II (FPMD 6702, 4 credits total). Dr. Edwards is also leading efforts to transition the MSOH/MOH courses to distance-based formats that is funded in part through a University of Utah educational grant.

Matthew Hughes, M.D., MPH

Dr. Hughes is an Adjunct Assistant Professor and former Center Deputy Director of the Rocky Mountain Center for Occupational and Environmental Health (RMCOEH). Dr. Hughes has extensive medical director experience as an executive program director in industry. He has led major programs to improve employee health and safety, international public health, product stewardship and health related human resources programming. He co-teaches the Occupational Safety and Health Administration course (FPMD 6760, 3 credits), and lectures in Occupational Injuries and Diseases (FPMD 6703, 3 credits), Clinical Prevention (FPMD 6504, 3 credits), and Advanced OEM Topics courses.

Rod Larson, Ph.D., MS, CIH

Dr. Larson is Associate Professor and Director of the Industrial Hygiene Program. Dr. Larson has extensive prior, real world experience as a lead Industrial Hygienist for Exxon. Dr. Larson teaches the Occupational and Environmental Toxicology and Physiology course (FPMD 6752, 3 credits) with assist from Dr. Eric Wood, MD, MPH; and the Quantitative Risk Assessment course (FPMD 6730, 3 credits). Dr. Larson has had experience with multiple accreditation site visits.

Andrew Merryweather, Ph.D.

Dr. Merryweather is an Assistant Research Professor in the department of Mechanical Engineering where he teaches and directs research in the areas of ergonomics, occupational biomechanics, and 3D motion analysis. Dr. Merryweather is a registered member of the American Society of Safety Engineers and the American Society of Biomechanics. He has worked as a safety and ergonomic consultant to private industry and is involved with research investigating musculoskeletal injuries in the workplace, assistive technologies for

persons with disabilities and a host of projects in the topics of computer simulation modeling and 3D movement analysis.

Maureen Murtaugh, Ph.D.

Dr. Murtaugh is a nutrition epidemiologist and associate professor in the Division of Clinical Epidemiology, Department of Internal Medicine. Dr. Murtaugh holds an adjunct appointment in the Division of Nutrition, College of Health. Dr. Murtaugh earned her Ph.D. in Nutritional Sciences from the University of Connecticut. She joined the faculty and staff at Rush-Presbyterian-St. Luke's Medical Center and Rush University where clinical practice, research and teaching. In 1999 she decided to retool her career with a post-doctoral fellowship in Epidemiology at the University of Minnesota working with investigators in Cardiovascular Disease Epidemiology and Prevention. She conducts research on the role of nutrition in development of chronic disease. She is currently principal investigator of a study to establish norms of bone health for Navajo people and is a co-investigator in studies of health status of commercial truck drivers and protein status of patients with end-stage kidney disease. She leads the RMCOEH's Statistical and Economic Evaluation Unit.

Leon Pahler, Ph.D., MPH, CAIH

Dr. Pahler is a Research Assistant Professor in the Industrial Hygiene Program. He has a Ph.D. in Organic and Heterocyclic Chemistry and a Master's degree in Public Health with an emphasis in industrial hygiene. Dr. Pahler is the Director of the Hazardous Substance Academic Training (HSAT) Program at the Rocky Mountain Center for Occupational and Environmental Health (RMCOEH). His prior experience includes eighteen years as a Senior Environmental Specialist with UNOCAL, a major petroleum company at the Parachute Creek Shale Oil Facility in Colorado, and three years with the Oklahoma State University as a faculty/post doctorate where he taught chemistry and conducted research. Dr. Pahler developed, implemented, and teaches the Hazardous Substance Management course (FPMD 6756, 3 credits) in the fall semester and the Advanced Industrial Hygiene course (FPMD 6751, 3 credits) in the spring semester. Dr. Pahler's research is primarily in the industrial hygiene area with an emphasis in occupational and environmental applications.

Darrah Sleeth, Ph.D., MPH

Dr. Sleeth is an Assistant Professor in the Industrial Hygiene program. She has a Ph.D. in Industrial Health and an MPH in Industrial Hygiene and Hazardous Substances. She is active on the Aerosol Technology Committee of the American Industrial Hygiene Association (AIHA) and with international standards organizations in the development and improvement of sampling strategies for workplace air quality. She is responsible for teaching the Fundamentals of Industrial Hygiene (FPMD 6750, 2 credits), Noise & Other Physical Agents (FPMD 6754, 2 credits) and co-teaches Occupational Health & Safety Solutions (FPMD 6715, 3 credits) with Dr. Wood and Dr. Merryweather.

Matthew S. Thiese, Ph.D., MSPH

Dr. Thiese is an Assistant Professor at the Rocky Mountain Center for Occupational and Environmental Health in the Department of Family and Preventive Medicine at the University of Utah, where he currently directs the Introduction to Occupational Epidemiology course and directs research in the areas of musculoskeletal disorders and commercial truck driver health and safety. Dr. Thiese has extensive experience conducting occupational epidemiological studies in the areas of musculoskeletal disorders and commercial trucking and has been a committee member on many Master and Doctoral committees.

James VanDerslice, Ph.D.

Dr. VanDerslice is Assistant Professor in the Department of Family and Preventive Medicine. He teaches the Environmental Public Health course (FPMD 6700, 3 credits) which is the core environmental health course in the Public Health Programs. He also teaches the Data Analysis using SAS course (FPMD 7101, 3 credits). Dr. VanDerslice's has extensive environmental health experiences that include a state department of health.

Eric Wood, M.D., MPH

Dr. Wood is an Assistant Professor and Director of the Occupational Medicine Program. He is Board Certified in both Preventive Medicine (Occupational Medicine) and Family Medicine. He also trained as an industrial hygienist and worked as a professional industrial hygienist in government and industry. He is co-course director of Introduction to Occupational and Environmental Toxicology and Physiology (FPMD 6752, 3 credits) with Dr. Larson. He teaches Occupational Health and Safety Solutions (FPMD 6715, 3 credits) with Drs. Merryweather and Sleeth. He also teaches the Occupational and Environmental Health Clinic course (FPMD 6758, 1 credit). Dr. Wood has had experience with multiple accreditation site visits.

Supporting Faculty

Jeff Burton, MS, PE, CIH

Mr. Burton is a part-time instructor for the Industrial Hygiene Program. He is a past president of the American Industrial Hygiene Association. He is also internationally recognized for his expertise in ventilation design and evaluation, having written a number of books on the subject. He teaches the ventilation course (FPMD 6753).

Frank D. DeRosso, MSPH, CIH

Mr. DeRosso is an Adjunct Instructor and co-teaches the Advanced Industrial Hygiene course (FPMD 6751). Mr. DeRosso has twenty years of professional IH experience including a strong background in safety and environmental compliance. He is board certified in the comprehensive practice of IH.

Dean R. Lillquist, Ph.D., MSPH, CIH

Dr. Lillquist is a Visiting Lecturer for the Fundamentals of Industrial Hygiene course (FPMD 6750) and Introduction to Industrial Toxicology course (FPMD 6752). He is the past IH Program Director for the Rocky Mountain Center, and is now the Director of the (federal) OSHA Technical Center that is located in Salt Lake City, Utah.

Royce Moser, Jr., M.D., MPH

Dr. Moser is Professor and former Center Director for the RMCOEH. Dr. Moser has world-wide expertise in terrorism and disaster response. He also has administrative acumen derived from years of experience and his textbook serves as the primary instructional source for his course. He co-teaches the Occupational Safety and Health Administration course (FPMD 6760, 3 credits).

James Nelson, Ph.D., CIH

Dr. Nelson was a part-time RMCOEH faculty member in previous years, starting when the IH Program was first established. Now as an adjunct, he teaches the chemistry portion of the Advanced Industrial Hygiene course (FPMD 6751). Dr. Nelson is the Past-President of DataChem Laboratory, which is one of the largest occupational and environmental hygiene laboratories in the world. He is certified in chemical aspects by ABIH and has served as Chairman of the AIHA Laboratory Accreditation Committee.

Appendix D: Advisory Boards, Committees and Recent Meeting Minutes

Rocky Mountain Center for Occupational and Environmental Health Advisory Board Roster

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du

Rocky Mountain Center for Occupational and Environmental Health Advisory Board Meeting

May 20, 2011

Attending:

Board Members

| | |
|-------------------------------------|---|
| Dennis Lloyd, JD | Chair, Senior V.P. Gen. Counsel, Workers Comp. Fund |
| Don Marano, CIH, PE | Vice Chair, President, IHI Environmental |
| David Allcott, APRN, ANP-BC, COHN-S | ATK, President Utah OHNA |
| Craig Allen, MPH, CSP, ARM | Director of Safety, Security, & Env. Health, IHC |
| Thomas Bingham | President, Utah Manufacturers Association |
| Dave Creer | President, Utah Trucking Association |
| Rob Gardner, ARM | Liberty Mutual Insurance Group |
| Kim Heimsath, CSP, REM | Director, Questar Gas |
| Roger Jensen, JD, PhD | Professor, Montana Tech of University of Montana |
| Jim Judd | AFL-CIO President |
| Dean Lillquist, PhD, CIH | Director, OSHA Technical Center |
| Sen. Karen Mayne | Utah State Senator |
| C. David Richards, MD, FACS | President/Chairman, Richards Memorial Foundation |
| J. Michael Taylor, CIH | Global Manager, Safety, Health & Env., LDS Church |

Participants:

| | |
|----------------------------|---|
| Kurt Hegmann, MD, MPH | Director, RMCOEH |
| Matthew Hughes, MD, MPH | Deputy Director, RMCOEH |
| Royce Moser, Jr. | Professor, RMCOEH |
| Don Bloswick, PhD, PE, CPE | Program Director, Ergonomics & Safety |
| Connie Crandall, MA, MBA | Program Director, Continuing Education |
| Hannah Edwards, MD, MPH | Assistant Professor, OM |
| Rod Larson, PhD, CIH | Program Director, Industrial Hygiene |
| Andrew Merryweather, PhD | Research Assistant Professor |
| Maureen Murtaugh, PhD | Associate Professor, RMCOEH |
| Matthew Thiese, PhD | Assistant Professor, RMCOEH |
| Eric Wood, MD, MPH | Program Director, Occupational Medicine |
| Deanne Clegg | Administrative Assistant |
| Toni Chambers | Executive Secretary |

Visitors:

| | |
|---------------------------|---|
| Taylor Scalley | University of Utah Development Department |
| Steven Packham, PhD, DABT | State of Utah, Dept. of Environmental Quality |
| Raymond Godfrey, PhD | OIPRT Student |
| Donald Mehr, MD | OM Resident |

I. Welcome and Introductions.

Official introductions and welcome were made. Steven Packham was attending for Amanda Smith, who could not attend the meeting.

II. Open & Public Meetings Act (Reminder)

III. Minutes Approval (Handout)

Tom Bingham moved to approve the minutes from November 19, 2010. It was seconded by Craig Allen. The minutes were unanimously approved.

IV. Announcements

A. RMCOEH received 143+ textbooks donated by Mary Ann Johns, widow of Dr. Richard Johns. Estimated value approx. \$2,000.00. This is much appreciated.

B. NORA Conference

C. Moser Scholarships Announcement

Raymond Godfrey, PhD and Donald Mehr, MD were presented as the recipients of the Royce Moser, Jr. and Lois H. Moser Endowed Scholarship in Occupational Health.

D. WCF Scholarships Announcement

Those who received this Scholarship were acknowledged. Mr. Lloyd presented Dr. Hegmann with the check for these scholarships.

E. Dr. Jessica Hanford's Scholarship (Handout)

V. RMCOEH Workplace Safety Award (Handouts)

Vote

The ballot for this Excellence In Workplace Safety and Health award was in the packet of handouts. The Board reviewed the candidates and cast ballots.

Royce Moser, Jr.

RMCOEH Center Director 1986-2003. Occupational Medicine Residency Program Director (several times). Former Commander of the U.S. School of Aerospace Medicine. Primary author of Effective Management of Health and Safety Programs textbook used internationally.

OSHA Salt Lake Technical Center

US Dept of Labor's OSHA Salt Lake Technical Center has performed national analytical analyses for the US since 1974. It responds locally and nationally to needs (e.g., Exxon Valdez, World Trade Center, Deepwater Horizon). It has led in the development of new analytical methods.

VI. RMCOEH Advisory Board (Handouts)

Elections

A. Chair

Dennis Lloyd transferred the gavel to Kurt Hegmann for the purpose of elections. Jim Judd nominated Dennis Lloyd to be re-elected as chair of the RMCOEH Advisory Board. The motion was seconded by several. The vote was unanimous in the affirmative.

B. Vice-Chair

Tom Bingham nominated Don Marano to be re-elected as vice-chair of the RMCOEH Advisory Board. Craig Allen second the motion, and the vote was unanimous.

The Advisory Board Executive Committee will retain its current membership.

VII. Funding Issues

Discussion

A. NIOSH & ERC's (Handouts)

Dr. Hegmann has been told by one Congressional head of staff that in his opinion, it will be necessary to find other funding. Any and all support is encouraged and appreciated. It was discussed to put together a 1-page bullet point as to why this program is important.

Dr. Hegmann will draft a support letter for the Board to sign. It was suggest it include stressing the work involved from newborns to seniors.

Rob Gardner will attend a Liberty Mutual National Meeting in June (20-23) and suggested to solicit the President's support, and take a letter to him from Dr. Hegmann, requesting specific support.

B. Grant applications

The Center continues to write grants. We do not know the final outcome of the Health Promotion Grant. There are 2 K01-Awards ("career development") that have been submitted.

C. Budget (Handout)

Dr. Hegmann reviewed the budget with the Board. The distinctions between the Eddie Mayne funding and SB 159 were discussed. Sen. Mayne felt the Eddie Mayne Funding should always be there, they have

always protected it for us, and the Senate knows how important it is. It is thought to be a fairly routine renewal with the Senate.

It was suggested we develop the budgetary pie chart through the years to show funding diversity with the talking points being sent to the Board.

D. Development

Taylor Scalley

1. Scholarships

Mr. Scalley detailed Dr. Hanford's new scholarship bequest of \$2000. The Dr. Johns scholarship has \$15,000 in the account with \$50,000 in pledges. Annual solicitations go out with Planned Giving. He is discussing requests of support.

2. SB159

It was suggested to have an endorsement letter sent to the self-insurers. One was sent to Liberty Mutual and seemed to help. It is a new premium tax year and self-insurers need to be reminded with a thank you for donating last year and a reminder for this year. Rob Gardner and Craig Allen are on the fund raising committee and will see that the "Thank you's" go out, with personal contact and re-soliciting these companies.

Dr. Hughes inquired if there was an updated list of Self-Insurers. Scott Kelly, Risk Manager of IHC has that. Craig Allen will request the list, with help from Ms. Clegg in getting him the thank you letters.

3. Other

VIII. On-Campus Occupational Safety & Health

Dr. Hughes

Still searching for solutions and working to have an on Campus Occupational Health Program and Clinic. An ideal solution for the overall program would be to build a building with dedicated space that is central and high visibility. Other discussions about Environmental and Safety and Interns with the capstone occupational safety and health projects.

IX. Space Planning

Discussion

The windtunnel is here, but with no home. It will need a large room with 220 power source. It was noted that there are several empty or partially empty warehouses in SLC. A sub-committee was suggested, with a conference call to talk about the prospects. Kim Heimsath, Taylor Scalley, Dave Creer and Dr. Hughes will be on this committee. It was also mentioned that a University alumni may have space to place the windtunnel.

- X. Annual Report to the President SB234 (2007) (Handout) **Info/Discussion**
Mandated by Bill 234. This report is updated with current figures. The text has not been substantially altered because the interim President may have not seen the prior report.
- XI. Annual Report to the Legislature SB159 (2005) (Handout) **Info/Discussion**
This report has been updated with the 2010 figures and is due July 1. It was suggested we point out things that result because of the grant and training opportunities. The Executive Committee had a suggestion to be sure to include the abuse of prescriptions drugs, and Dr. Wood’s trucking study.
- XII. 2011 Legislation **Senators Mayne & Bramble**
- A. SB11 Worker Classification Coordinated Enforcement
This is considered landmark legislation. The problem is nationwide regarding owner/employee positions.
 - B. SB35 Construction Licenses Related Amendments
Senator Bramble, was more involved with this bill. Mr. Lloyd discussed this bill.
 - C. HB15 Controlled Substance Database – Licensing Amendments
Comments were made regarding the data base and keeping it viable.
 - D. SB248 Control Substance Database Amendments
This bill specifically addresses access to the database. An example was given as to how it helped a Doctor in seeing and knowing what prescriptions the patient had been given and provoked questioning that uncovered an overdose.
- XIII. NIOSH Site Visit preparations for 2012-2013(!)
- A. Graduates survey (Handout) **Dr. Murtaugh**
In this presentation Dr. Murtaugh reviewed the results of the Graduate survey conducted this year. The data were felt to be highly helpful and should be used for NIOSH support. Tom Bingham noted the graduates’ high rate of preparedness for their jobs was impressive.
- XIV. Brief RMCOEH Research Project Results of Interest **Information**

(Handouts)

A. Dr. Eric Wood

Dr. Wood presented preliminary results of the study on preventing work injuries and chronic illnesses in 649 Truck Drivers. The poor health status was remarkable.

B. Dr. Matt Thiese

Dr. Thiese presented preliminary results of physical activity with use of an accelerometer showing low exercise increases risk of low back pain.

XV. Center Director Report

Information

A. Congressman Matheson's visit (Handout)

The Center was very fortunate to have had this visit. He appeared to thoroughly enjoy the visit.

B. Dr. Larson awarded Tenure (Handout)

C. Accolades (Handout)

Dr. Hegmann touched on some highlights of the Accolades.

D. Newsletter (Handout)

Hot off the press, just received the prints on Thursday.

E. Number of Students

The Center has at least 461 graduates with 18 graduating in the new MSOH/MOH program in the first 3 years.

F. PhD in Occupational and Environmental Health

The Center continues to move forward with the PhD. There is a need for high-level consultants. It is hopeful we may achieve approval for the 2012 academic year.

G. Occupational Health Nursing Update

This is on hold for the time being due to the NIOSH funding issues.

XVI. RMCOEH Advisory Board Executive Committee Report

- Executive Committee Membership (Craig Allen, CSP, ARM; Dennis Lloyd, J.D.; Don Marano, CIH, PE; Senator Karen Mayne; C. David Richards, MD; and Kurt Hegmann, MD, MPH)

The Committee is helpful for input, needs and recommendations. A brief report was given.

The vote was tabulated and Royce Moser, Jr. was chosen by the RMCOEH Advisory Board to receive the Award of Excellence In Workplace Safety and Health Award.

Date for Next Meeting: _____, 2011

Ms. Chambers will send out an e-mail for a vote on next meeting:

October 21

October 28

November 11

November 18

IH and HSAT Advisory Committee Members:

Michael J. Taylor, MSPH, CIH; – Committee Chair
Director
Environmental Health and Safety
LDS Church
SLC, UT

Dean Lillquist, Ph.D., MSPH;
Director
OSHA Tech Center
U.S. Dept. of Labor
Sandy, UT

Frank DeRosso, MSPH, CIH
Sr. Scientist
Rocky Mountain Environmental Consulting
SLC, UT

Craig Allen, MSPH, CSP
Director
Environmental Health Services
Intermountain Healthcare
Murray, UT

Jeff Burton, MS, PE, CIH
Jeff Burton Consulting

Jeff Throckmorton, CIH, CE
Environmental Health and Safety
University of Utah

Tori Burns Utah, MSPH, CIH
Questar Gas
SLC, UT

David Roskelley is planned to be added at our next meeting to replace Mark Dumas, who was removed per his request when Salt Lake Community College dropped their 2 year program.

**Rocky Mountain Center for Occupational and Environmental Health
IH/HSAT Advisory Committee Meeting Minutes
June 01, 2010**

IH and HSAT Advisory Committee Members Present:

Michael J. Taylor, MSPH, CIH; Dir. EHS, LDS – Committee Chair

Dean Lillquist, Ph.D., MSPH; Director, OSHA Tech Center

Frank DeRosso, MSPH, CIH; Sr Scientist, RMEC

Craig Allen, MSPH, CSP; Dir, Env Health Services, IHC

Jeff Burton, MS, PE, CIH; Jeff Burton Consulting

Jeff Throkmorton, CIH, CE; University of Utah Env Health & Safety

Tori Burns Utah, MSPH, CIH; Questar Gas.

Rod Larson, Director, Industrial Hygiene Program

Leon Pahler, Director, HSAT Program

Darrah Sleeth, Assistant Professor, Industrial Hygiene

Kurt Hegmann, MD, RMCOEH Department Director

1. **New Faculty Member:** Dr. Darrah Sleeth was introduced to the committee members. The relocation of Darrah's wind tunnel from U of Michigan to U of Utah is being planned.
2. **Graduating Students:** Six IH/HSAT students will graduate this spring and none plan to participate in the graduation ceremonies. The graduating students are: Jamie Freestone, Jim McDonald, Brian Sterzer, Jason Storrs, Taylor Perkins, and Andrew Migel.
3. **Student Recruitment:** At this time we have seven applicants for the IH/HSAT program with two from the Utah State University; one from the Brigham Young University, Provo; two from the Brigham Young University, Idaho, two from Weber State, and one from the University of Utah. The total number of new students won't be known until later this summer.
4. **Preparation for ABET ASAC accreditation program review and site visit in Fall, 2010:** Dr. Darrah Sleeth has been preparing the materials and information for the ABET visit this fall. Dr. Rod Larson indicated the cost for the ABET visit and accreditation will be about \$9,000.00.

The IH/HSAT program descriptions, course curriculum, and RMCOEH vision, mission and goal statements were reviewed, see attachments. After review of the course curriculum a discussion ensued about the relation of the curriculum classes to public health. Dr. Dean Lillquist asked if critical public health concepts are being presented and what are the needed basic public health courses. Two desired courses were identified as an ethics class, which is now required by the ABIH for CIH and other certification, and possibly an IH chemistry class. Dr. Larson

indicated presentations on ethics are now required by NIOSH for ERC programs and that there are special sessions on ethics held at the center a couple times a year. It was also stated that there has been enhancement of the chemistry in the Advanced IH course, but Dr. Larson agreed there would be benefit in having a specific course on IH chemistry, it is just that it would require dropping another required course from the curriculum to do so.

5. IH/HSAT Program Summary and Accomplishments:

- Relocation of the aerosol wind tunnel that Dr. Sleeth uses for research is contingent upon a place to erect it and is currently being discussed.
- Three IH students submitted research summary posters at the recent AIHce Denver, Colorado meeting in hopes of being selected as winning candidates, alas no winner's just participants.
- One student, Jamie Freestone, presented a summary of research results for the hexavalent chromium study at a podium presentation at the Denver, Colorado AIHce meeting.
- Six graduating MSOH students submitted their research papers to journals for publication.

6. IH/HSAT Research Projects

- Brush Wellman Beryllium project to determine the solubility of beryllium in various ores (in the final stages of completion).
- Roadside aerosol monitoring using 1) a Grimm 1.109 and 2) a DustTrak instrument accompanied by standard filter cassette sampling and analysis of respirable aerosols in relation to worker exposure to these roadside aerosols is planned to begin this fall, 2010.
- Evaluation of employee exposures to chemical and aerosols contaminants during nail salon procedures funded by a "Pilot and Small Projects Research Grant by the RMCOEH is proposed for NIOSH Pilot Project funding.
- Titanium oxide surface coating on various materials investigation to determine biocide activity in controlling molds, fungi, bacteria, and other biologically active has been proposed.
- Two potential National Children Study projects including 1) evaluation of air velocities over the top of a dosimeter in relation to chemical dosimeter response and 2) evaluation of passive chemical dosimeters at elevation have been proposed.

7. Development of a Ph.D. Program and Distance Learning

- A Ph. D. program in Occupational and Environmental Health was discussed. It would be proposed as similar to the MSOH program with the requirement of more credit hours (55 hours) and more upper level classes (e.g., 7000 level) like upper division statistics, advanced epidemiology, and select specialty classes related to IH (e.g. Advanced Chemistry of Industrial Hygienists), as well as a dissertation.

- The status of the Distance Learning/degree & certificate program is currently on hold for the IH Program. The Occupational epidemiology, biostatistics, and a class taught by Hannah Edwards are on line.
8. Graduating IH/HSAT Student Survey consisting of a one-on-one exit survey is not currently in effect but the RMCOEH does periodically distribute survey forms to all its graduate students to comment on and rate the programs they were in and the courses they took. Such survey is being scheduled by the RMCOEH for later this year.
 9. RMOCEH Comprehensive Examination: The exit examination for IH/HAST graduate students is comprised of two parts 1) the core class materials like statistics and epidemiology and 2) questions specifically for student who were in either the IH or HSAT classes.

The IH/HSAT Committee Meeting Minutes of December 11, 2009 were accepted and approved by the committee.

Ergonomics/Safety and Occupational Injury Prevention Program
Advisory Committee

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Ergonomics & Safety Program & Occupational Injury Prevention Program Advisory Committee Meeting

*November 11, 2010
11:30am – 2:00pm
ME Conference Room, 2109 MEB*

Attendance

Committee Members:

| | |
|-------------------------|--|
| Brett Besser | Ergonomist, OSHA Salt Lake Technical Center |
| Ben Gerlach | Manager, Church of Jesus Christ of Latter-Day Saints |
| Brian McQuivey | Director, Stage Engineering, ATK Thiokol |
| Robert Parenti | President, Utah Safety Council |
| Charles Pugh | V.P Safety, Workers Compensation Fund |
| Marty Shaub | Director, Environmental Health & Safety |
| Earl “Chip” Van Wagoner | President, Quest Medical Group, Inc. |

Participants:

| | |
|---------------------|---|
| Don Bloswick | Program Director, E&S Program, OIP Program |
| Kurt Hegmann | Program Director, OIP-OIE, |
| Andrew Merryweather | Research Assistant Professor, Program Director, OIP- OSE |
| Stacy Bamberg | Assistant Professor |

- I. Welcome and Introductions
- II. Presentation (Don Bloswick)
 - Review of Program History
 - Overview of Academic Programs/Research Areas and Plans
- III. Lab Tour
 - Advisory Committee Members were given a tour of the lab
 - Students gave short presentations on their research projects
 - Brief introduction to the Program Web Site

- IV. Presentation (Don Blowski)
NIOSH Expectations and Program Mission
Marty Shaub requested information relating to programs against which the
RMCOEH programs can be benchmarked (see action item below).

V. Action Items:

Membership Committee Directory Update – E&S/OIP Administration
Compile list of Benchmark Institutions – E&S/OIP Administration
Ergo & Safety Website Review – Advisory Committee Members
Selection of Chair – Advisory Committee Members

Date for Next Meeting: April/May 2011 (approx), Exact Date To Be Determined

OM Residency Advisory Committee Members

Mark Anderson, MD

WorkCare Industrial Clinic

Letitia Archuleta MD, MPH

WorkCare Industrial Clinic

Martin Caravati, MD, MPH

Director, Utah Poison Control

Douglas Fuller MD, MPH(Chair)

Occupational Health Clinic,
Hill Air Force Base

Christopher Kleinsmith, MD, MPH

Occupational Health Clinic,
Hill Air Force Base

Howard Leaman, MD

Intermountain Sleep Center

Michael Magill, MD

Chair Dept. Family & Preventive
Medicine,, University of Utah

Miner, Joseph MD, MSPH

Executive Director
Utah County Health Dept.

Sonia Van Hala , MD

Director of Family Medicine
Residency Program, U. of Utah

Osman Sanyer, MD

Faculty, Family Medicine Residency
Program

Paul Teynor, MD, MPH

Intermountain MPO Services
Intermountain Sleep Disorders Center

RMCOEH OM Program Faculty

The following are ex-officio members:

***Jeremy Biggs, MD, MPH**

***Hannah Edwards, MD, MPH**

* **Royce Moser, Jr., MD, MPH**

***Eric Wood, MD, MPH**

***Kurt Hegmann, MD, MPH**

***Matthew Hughes, MD, MPH**

**OCCUPATIONAL MEDICINE RESIDENCY
RESIDENCY ADVISORY COMMITTEE MEETING MINUTES**

June 9, 2011

In Attendance:

Residency Advisory Committee Members:

Douglas Fuller, MD, MPH, (Chair, Residency Advisory Committee) Letitia Archuleta, MD, MPH,
Martin Caravati, MD, MPH, Joseph Miner, MD, MSPH,

Chris Kleinsmith, MD, MPH and Osman Sanyer, MD (remote participation through electronic communication).

Others in Attendance: *Eric Wood, MD, MPH (Director, Occupational Medicine Residency Program), *Jeremy Biggs, MD, MSPH, *Hannah, Edwards, MD, MPH, Kurt Hegmann, MD, MPH, Royce Moser, Jr, MD, MPH *Melissa Cheng, MD, MHS, MOH

Chief Resident: Melissa Cheng, MD, MOH, MS,

Members unable to attend: Mark Anderson, MD, *Matt Hughes, MD, MPH, Christopher Kleinsmith, MD, MPH, Howard Leaman, MD, Michael Magill, Sonja Van Hala, MD, Paul Teynor, MD, MPH

***Ex-officio member**

Approval of Minutes:

Dr. Fuller called the meeting to order. The minutes from the December 11, 2011 meeting were approved as submitted without changes.

Chief Resident Report:

Melissa Cheng, MD, MOH presented the Chief Resident Report. She reported that she received written comments and/or feedback from all of the residents. The residents continue to report a high degree of satisfaction with the program in terms of both the academic education and the practicum training. The training status of current residents was reviewed. Career plans of the graduating residents were noted.

Dr. Cheng provided a brief synopsis of written and verbal comments from the residents:

- The PGY-2 residents continue to report high satisfaction “glowing reviews” with the MOH curriculum and Practicum Rotations. Notable comments included the following:
 - One resident rotated at NIOSH (Anchorage, AK) and reported excellent experience with occupational health research from a federal perspective and an anticipated publication that is in final review.
 - One resident rotated at OSHA (Washington, DC) and reported excellent federal

regulatory experience. It was noted that this rotation was performed during the recent fiscal policy crisis, and the resident had an unprecedented opportunity to participate with OSHA related congressional hearings.

- One resident commented on the high number of procedural cases observed during a rotation with Labor Commission Medical Director Dr. Colledge in his clinical practice. One RAC member commented about impairment ratings performed in Dr. Colledge's practice, and it was noted that these are performed at a very high level and with remarkable efficiency.
- Residents continue to report strong learning experiences in clinical rotations at the University of Utah and the VAMC with noteworthy positive comments for Occupational Dermatology (Dr. Powell) and Sports Medicine (Dr. Petron); population rotations at sites including Utah DOH, Utah DFQ, and Utah Labor Commission; and industrial rotations at sites including Hill Field, Utah WCF.

Residency Director Report:

Eric Wood, MD, MPH presented the Residency Director Report.

- Dr. Wood presented the following informational announcements:
 - Kelli Graziano, MD, MOH and Eryn Stansfield, MD, MOH were scheduled to graduate from the program on June 30, 2011.
 - Dr. Fuller announced that HAFB is in process of hiring both Drs. Graziano and Stansfield for OM clinical positions. Dr. Fuller also noted that RMCOEH alumni Steven Angerbauer, MD, MPH, JD, MBA was resigning his position at HAFB to become Medical Director at the DOE Hanford site in Richland Washington.
 - The MOH program graduated OM residents Rahila Andrews, MD, MOH, Donald Mehr, MD, MOH, and Alexander Morgan, MD, MOH; and RAM Residents Laura Brodhag, MD, MOH, and Patricia Pankey, MD, MOH.
 - Incoming PCY-2 residents include: OM Residents Margaret Griffith MD, MPH (started March 15, 2011), Kevin Chamberlain, DO and Sheler Sadati, MD; and RAM Residents- Sanjay Gogate, D.O., Henry Klein, MD
 - One resident was granted a temporary Leave of Absence: Ali Dowling, MD, MPH (05/05/11-09/15/11).
 - The family of former RMCOEH Residency Program Director Richard Johns, MD, MPH donated books and memorabilia with an estimated value of approximately \$2,000.00 to the RMCOEH in his memory.
 - Nearly all of the residents participated as presenters of original scientific works in the NORA New/Young Investigators Conference, Salt Lake City, April 14-15, 2011 (handouts were provided of the presentation titles).
 - Dr. Graziano presented a poster at the American Occupational Health Conference in Washington, DC, March 26-29, 2011 (handouts were provided of the presentation titles).
 - The Moser Scholarship was awarded to Donald Mehr, MD, MOH
 - The WCF Scholarships were awarded to: Rahila Andrews, MD, MOH Melissa Cheng, MD, MOH, Donald Mehr, MD, MOH and Alex Morgan, MD, MOH
 - RMCOEH alumni Dr. Jessica Hanford endowed a new scholarship for OM residents (handout provided to describe details).

- RMCOEI learned that the NIOSH ERC Site visit scheduled for 2012 (5-year cycle) was extended to 2013 in recognition of the high-ranking score of the previous review.
 - A new PhD in Occupational and Environmental Health to be sponsored by RMCOEI has been advanced through the University. Dr. Hegmann noted that this program was designed for graduate students with Masters degrees in allied occupational health fields, but that OM residents may also consider this training. He anticipated that the program was on track to matriculate students in August 2012.
 - Dr. Moser announced his retirement effective fall 2011. He will maintain a role as emeritus professor, and anticipates continued contributions in teaching as available. He will mentor the two new RAM candidates through summer 2011.
 - Dr. Miner announced that Luke Mease, MD, MPH, a resident who rotated with him at the Utah County Health Department in 2009 had accepted a position at Dugway proving ground, and would likely be interested in teaching residents.
- Adjunct faculty from Intermountain Medical Center (IMC) approached the OM Residency program to request sponsorship of a proposed Undersea and Hyperbaric Medicine (UHB) Fellowship. Lynn Weaver, MD an internationally recognized expert in UHB, and William Tettlebach, MD have met with Dr. Wood over multiple sessions to assist with development of the program to meet ACGME and ABPM requirements. ACGME and ABPM recognize this fellowship training as a sub-specialty of Occupational Medicine, and require co-sponsorship to accredit programs. The program would potentially benefit the OM Residency program through opportunities for training of residents UHB, and as one RAC member pointed out, in offering advanced training as fellows for OM graduates. Complementary didactic programs would benefit both programs. The program would be located at IMC with additional facilities at LDS Hospital and Utah Valley Regional Medical Center. One RAC member noted the benefit of treating diving related injuries from the dive center in Heber (altitude related diving disorders). Dr. Moser noted the long history of UHB in OM and his early affiliation with the first training program at Wright Patterson AF Base. The RAC members voiced support for development of this fellowship with sponsorship through the OM Residency program.
 - The OM Residency program has been in active discussion with RMCOEI alumni Christopher Dea, MD, MPH of Caterpillar Inc. in Peoria, Illinois to develop a rotation for RMCOEI OM residents. Drs. Wood and Dea met to discuss development of the rotation. This rotation would provide an unprecedented learning experience for residents at the world leading equipment manufacturer. The University of Utah GME requires approval for all newly proposed out of state rotations.
 - RAC members strongly supported development of the Caterpillar Inc. rotation and held a unanimous vote of approval with a full quorum (Drs. Sanyer and Kleinsmith both voted in support of this measure by electronic means). RAC members noted benefits from high caliber corporate training experiences, and the need to maintain multiple sites in order to respond to site availability due to changing corporate economic circumstances. Dr. Moser noted that previously, Dow Chemical had provided full financial support for training of residents, and these opportunities were important to develop.

- Dr. Wood provided an update on recent ACGME RRC Program Requirement changes effective July 1, 2011. The RRC met on June 1, 2011 to address remaining questions for implementation of the new guidelines. ACGME staff report that a new set of FAQs will be published on the ACGME web site in the near future to provide details and clarification.
- Dr. Wood opened a discussion on the new American Board of Preventive Medicine Complementary Pathway to Board Certification in order to solicit feedback from RAC members for consideration of an approach by RMCOEI to this training pathway. Considerations of funding positions, candidate eligibility, and requirements to fulfill requirements were discussed. To date, no candidates have approached the program for admission, and no funding mechanism is in place. Faculty discussed the expectation that candidates would need to complete course work required by ACGME (similar to current residents) prior to graduation. It was noted that the online curriculum in development might facilitate this need. The RAC chair proposed that the program pursue development of this training option with concurrence of RAC membership.

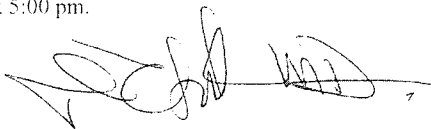
RAC Chair Report:

Douglas Fuller, MD, MPH presented the RAC Chair's report. Dr. Fuller reported on resident evaluations that he received prior to the meeting. Overall, the residents continue to report, "raving reviews" including satisfaction with faculty, academic education, and practicum experiences. The MOH curriculum was reported as highly regarded especially with respect to ergonomics and toxicology. There were no weaknesses noted throughout. Faculty ratings were scored highly with comments that included "great teachers," and "very involved."

Dr. Fuller concluded his report and then raised a discussion regarding potential changes in delivery of healthcare with implementation of the Affordable Care Act. He noted potential impacts on the practice of occupational medicine, especially with respect to reports of an estimated increase number of uninsured of upwards of 300 million. He posited that this gap of coverage has potential to impact employers and occupational medicine practice with workers seeking care for medical conditions unrelated to workplace exposures due to lack of other insurance coverage.

The date of December 8, 2011 was proposed for the next RAC meeting.

The meeting was adjourned at 5:00 pm.



Douglas C. Fuller M.D., MPH
Chair, Residency Advisory Committee



16 August, 2011

Michael Magill, MD
Chair
Dept of Family & Preventive Medicine
375 Chipeta Way, Suite A
SLC, UT 84108

Dear Dr. Magill:

This letter is to express my strong support for the proposed transdisciplinary Ph.D. degree in Occupational and Environmental Health (OEH) through the School of Medicine at the University of Utah. This program will help to meet the need for trained non-engineering researchers and upper-level professionals in this area.

The University of Utah's College of Engineering (Dept. of Mechanical Engineering) is the home for the Occupational Injury Prevention Research Training (OIPRT) Program. That program is part of the Rocky Mountain Center for Occupational and Environmental Health (RMCOEH). The OIPRT Program is composed of two sub-parts, one in engineering and one in DFPM. This proposed PhD program would markedly strengthen the program in DFPM as well as strengthen the component in the Department of Mechanical Engineering.


This Ph.D. program will also complement the engineering based program we have in ergonomics, occupational biomechanics, and safety in the Department of Mechanical Engineering. Students who pursue the Ph.D. in OEH will have access to several courses and research projects that exist in the Department of Mechanical Engineering.

The interaction between engineering students and students in the proposed Ph.D. program in OEH will make the graduates of both programs stronger and better able to identify and solve environmental, safety, and health problems in industry and contribute to governmental efforts to address these issues.

We look forward to implementation of this program and further collaborations between our two departments.

Sincerely,

Tim Ameel, Ph.D.
Professor and Chair
Department of Mechanical Engineering
ameel@mech.utah.edu



DEPARTMENT OF MECHANICAL ENGINEERING

50 S Central Campus Dr Rm 2110 (MEB) * Salt Lake City, Utah 84112

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August 29, 2011

Michael Magill, MD
Chair
Dept. of Family & Preventive Medicine
University of Utah
391 Chipeta Way, Suite A
SLC, UT 84108

Re: Ph.D. in Occupational and Environmental Health

Dear Dr. Magill:

The Department of Economics in the College of Social and Behavioral Sciences is in strong support of your department's proposal for an interdisciplinary PhD in Occupational and Environmental Health.

The Department of Economics has long been involved in research related to occupational safety, workplace injury, and broader environmental health issues, with a particular focus on the construction industry. We have developed scholarly information on the economic costs of injuries. We have been involved in studies to improve workplace safety and health. We have been involved in several research projects with the Rocky Mountain Center for Occupational and Environmental over the years that have resulted in meaningful, high-impact research findings.

There are numerous benefits from this proposed PhD program. It will allow development of improved faculty and research staff capabilities in areas of workplace safety and health. These are competencies that are in great demand at the University of Utah and in the State of Utah. There are no comparable programs in the Intermountain West.

We look forward to the starting of this new PhD program that is sorely needed at the University of Utah. We hope and expect that its creation will lead to increased interdisciplinary collaborative research and teaching activities with our department.

Sincerely,

A handwritten signature in black ink, appearing to read 'T. N. Maloney'.

Thomas N. Maloney
Professor and Chair
Department of Economics

Department of Economics
260 S. Central Campus Drive, ORH 342
Salt Lake City, Utah 84112
801-581-7481
Fax 801-581-8649



UNIVERSITY OF UTAH
SCHOOL OF MEDICINE

August 22, 2011

Michael Magill, MD
Professor and Chair
Department of Family and Preventive Medicine
University of Utah
391 Chipeta Way, Suite A
Salt Lake City, Utah 84108

Re: Proposed Doctor of Philosophy in Occupational and Environmental Health

Dear Dr. Magill:

On behalf of the Division of Public Health in the Department of Family and Preventive Medicine, I am pleased to support the approval of the proposed doctoral program in Occupational and Environmental Health. The Division of Public Health houses the Doctor of Philosophy in Public Health, Master of Public Health and Master of Science in Public Health programs as well as the Master of Statistics: Biostatistics Track. I believe expansion of the collaboration between the graduate educational efforts of the Division of Public Health and the Division of Occupational and Environmental Health within the Department of Family and Preventive Medicine will prove to be mutually beneficial.

Faculty members within the Division of Public Health are currently supporting the educational efforts of the Master of Occupational Health (MOH) and the Master of Science in Occupational Health (MSOH) program, including teaching courses that meet the requirements of these degrees and serving on student graduate committees. Courses being offered by the Division of Occupational and Environmental Health are also available to public health students. Approval of the Ph.D. in Occupational and Environmental Health will provide opportunities for expanding these collaborations.

In addition, having additional doctoral students within Family and Preventive Medicine can positively impact the already expanding research program in our department. Both the Divisions of Public Health and Occupational and Environmental Health have active research programs that benefit from graduate student involvement as well as provide opportunities for these students to enhance their education. Enhancing the opportunities for graduate students from these two divisions to interact will also enhance the educational experience provided by the Department of Family and Preventive Medicine and can be facilitated by increasing similar interactions among faculty members.

In summary, faculty members within the Division of Public Health see the proposed Ph.D. in Occupational and Environmental Health Program as an opportunity to enhance the scholarship mission of Department of Family and Preventive Medicine.

Respectfully,

Stephen C. Alder, Ph.D.
Chief, Division of Public Health

Division of Public Health
375 Chipeta Way, Suite A
Salt Lake City, Utah 84108
Phone: 801-587-3315
Fax: 801-587-3353



October 6, 2011

Kurt Hegmann, MD, MPH, Professor and Director,
Rocky Mountain Center for Occupational and Environmental Health
391 Chipeta Way, Suite C
Salt Lake City, UT 84108

Dear Dr. Hegmann:

We appreciate the opportunity to express strong support for the proposed PhD in Occupational and Environmental Health (OEII). In particular, we encourage the development of interprofessional education and research programs, like this one, which create and build on the formation and enhancement of cross-campus synergies.

The Spencer S. Eccles Health Sciences Library is fully committed to supporting this type of healthcare professional education focusing on the development of the skills and expertise required to assure highly effective integrated interprofessional healthcare teams. Toward that end, Eccles Library has recently established an Interprofessional Education Librarian position to support and foster the development of interprofessional efforts among all the health sciences programs.

Since PhD students exist within the current occupational and environmental health disciplines and, in particular, in the existing public health PhD program, Eccles Library expects to continue to be able to provide the information resources required. Of particular importance for this and other interprofessional programs is access to a wide variety of electronic information resources. Our University libraries and the Utah Academic Library Consortium (UALC) work together to stretch resource funding in order to obtain access to a full range of electronic journals and databases. Eccles Library, in particular, provides access, training, and assistance on searching PubMed; the TOXNET suite of databases on toxicology, hazardous chemicals, environmental health, and toxic releases; CINAHL: The Cumulative Index to Nursing and Allied Health Literature; and a wide range of other resources relevant to occupational and environmental health. Current OEII faculty and students are high-powered users of these resources and of the interlibrary loan service through which access is provided to the collections of a nationwide network of health science libraries, including the National Library of Medicine.

In summary, there are significant benefits to be gained from the proposed PhD in Occupational and Environmental Health. Spencer S. Eccles Health Sciences Library fully supports it.

Sincerely,

A handwritten signature in cursive script that reads 'Jean P. Shipman'.

Jean P. Shipman, MSLS, AHIP, FMLA
Director

September 27, 2011

Michael Magill, MD
Chair
Department of Family & Preventive Medicine
School of Medicine
University of Utah

Re: Proposed PhD in Occupational and Environmental Health

Dear Dr. Magill:

This letter is in support of your department's proposed PhD program in Occupational and Environmental Health.

The University of Utah Libraries appreciate your request to comment on our ability to support doctoral students in your department's Public Health Program, as well as in the Department of Mechanical Engineering, the two departments primarily involved in this new program. The Libraries are committed to supporting the university and its faculty as they develop programs needed by our students. We have spoken with the Program Director, Dr. Hegmann, and based on this information, we are confident that we have adequate resources for this proposed program.

As the curriculum will comprise largely of existing courses, current collections should be sufficient. A collection of this size and depth satisfies most undergraduate and graduate needs. While some resources may be at the Eccles Health Sciences Library or the Quinney Law Library, the three libraries have now a combined catalog, which makes it much easier to discover material at all campus libraries with a single search.

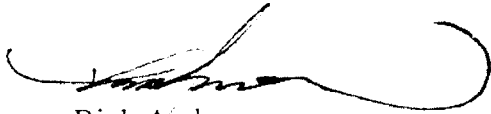
We encourage faculty to work with subject librarians to build up specific sub-disciplines where our collection needs supplementing. Despite budget constraints, we are usually able to order any books necessary to directly support classes. We can also modify our journal subscriptions to reflect current teaching and research. As the scholarly communication landscape evolves, new options may exist beyond traditional print book purchases and conventional subscriptions. We would like to work with faculty to evaluate the most workable alternatives.

Student difficulties in locating materials often stem not from collection weaknesses, but from the complexities of using a large research library. We offer class presentations and

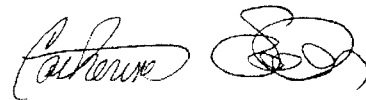
one-to-one consultations with library specialists who will help students find the most relevant works and suggest the most appropriate search strategies.

We wish you the best as you start a new doctoral program at the University of Utah and we look forward to working with the faculty and students in this new program.

Yours truly,



Rick Anderson
Associate Dean
Scholarly Resources and Collections



Catherine Soehner
Associate Dean
Research and Learning Services

