

Montana Tech  
NIOSH Training Project Grant  
Annual Report: July 1, 2015 – June 30, 2016  
Julie F. Hart – TPG Program Director

## **Section I**

### **TPG Summary:**

Montana Tech conducts three NIOSH—sponsored training programs under a single grant. An undergraduate program leads to a B.S. degree in Occupational Safety and Health (OSH). There are two graduate programs leading to an M.S. degree in Industrial Hygiene (IH). One IH program is conducted on campus and the other is offered through distance delivery (online). The three programs are housed in the Safety, Health and Industrial Hygiene (SHIH) Department. Seven faculty members in the department are substantially involved in teaching and research in safety, health, and industrial hygiene.

The undergraduate OSH curriculum provides a comprehensive education to develop graduates with capability for serving as exceptional safety and health professionals as well as contributing to society in general. It is accredited by the Applied Science Accreditation Commission of ABET (ASAC/ABET). The first two years of the program focus on foundation disciplines including general chemistry, college physics, calculus, organic chemistry, statistics and English composition. Humanities and social sciences are distributed throughout the four year curriculum. With the exception of one freshman introductory class, OSH courses are in the second through fourth years of the program. Of the 128 total hours in the curriculum, at least 48 credits are OSH courses.

The two ASEC/ABET accredited graduate programs aim to develop exceptional IH professionals. The curriculums provide a full range of IH courses and supporting electives. The on-campus program requires 37 credit hours consisting of 28 lecture courses, two hours of graduate seminar, six hours of thesis research and a one-hour technical writing seminar. A thesis or publishable paper is required and defended at an oral examination. The distance delivery program also requires 37 credit hours consisting of 34 lecture courses and a capstone written and oral comprehensive exam. Students in the distance delivery program may sit for the exam during the last semester of coursework. One of the courses in the distance delivery program, Sampling and Evaluation of Health Hazards, requires a one week residency in the summer.

The NIOSH grant provides funds for valuable program enhancement, primarily through scholarships for on campus students. Additional enhancements include student travel, faculty development, and partial summer salary for program enrichment by program managers. NIOSH support unquestionably enhances program quality and recognition.

### **Relevance to Public Health:**

The mission of the SHIH Department is to serve students by supplying knowledge and research opportunities that provide high quality, accessible, science and technology curricula with program educational objectives focused on preparing students for successful safety and health careers. While the focus of our programs is on the worker, many activities and responsibilities of a safety or IH professional extend beyond the constraints of the workplace to enhance the lives of workers, families, communities and the environment.

## **Key Personnel:**

### **Julie F. Hart, PhD, CIH**

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Dr. Hart has served as Professor and Chair in the Department of Safety Health and Industrial Hygiene since 2013 and is the Principal Investigator for this project. She has a master's degree in Industrial Hygiene and a Ph.D. in Toxicology. She is a certified Industrial Hygienist through the American Board of Industrial Hygiene. Dr. Hart continues to manage the program plan as well as teach and conduct research with undergraduate and graduate students. Dr. Hart's teaching responsibilities include Advanced Industrial Toxicology, Industrial Ventilation, and Small Particle Technology. Dr. Hart's primary research interests include characterizing worker and public health exposures to aerosols.

### **Theresa Stack, CPE, CSP**

**[tstack@mtech.edu](mailto:tstack@mtech.edu)**

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Theresa Stack is an Assistant Professor, the ABET Departmental Coordinator and the B.S. OSH Program Manager. Theresa has a master's degree in Occupational and Environmental Health from the University of Washington. She is also a Certified Safety Professional and a Certified Professional Ergonomist. Theresa instructs a number of undergraduate safety and health courses as well as graduate level courses in epidemiology, sampling and ergonomics. Mrs Stack's research interests include ergonomics, vibration and leadership roles in safety and health.

### **Daniel Autenrieth, PhD, CSP**

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Dr. Autenrieth joined the Montana Tech SHIH faculty in 2015 as an Assistant Professor and he has served as the On-Campus Industrial Hygiene Program Manager since July 1, 2016. Dr. Autenrieth has a master's degree in Environmental Health and a Ph.D. in Environmental Health Specializing in Industrial Hygiene from Colorado State University. He is a Certified Safety Professional through the Board of Certified Safety Professionals and he plans to pursue American Board of Industrial Hygiene certification in the coming year. Dr. Autenrieth's research interests include occupational and environmental noise and vibration exposures; ergonomic applications of surface electromyography; occupational health and safety management systems; and occupational health and safety training. He teaches Noise, Industrial Hygiene II – Physical Hazards, Industrial Hygiene Management, Industrial Toxicology, and Statistical Analysis.

## **TPG Website:**

A web link for Montana Tech's Safety, Health and Industrial Hygiene Department Programs is provided in the following link: <http://www.mtech.edu/academics/mines/shih/>.

## **Section II**

### **Program Highlights:**

Efforts were made in Year 3 of this cycle to support regional professional societies, maintain the high quality of our faculty, prepare students for professional careers, and engage in research. Summaries of these efforts conducted to sustain the strength of our three NIOSH supported trainee programs are provided below.

#### *Supporting regional professional societies*

Twelve students and two faculty members attended the Northwest Occupational Health Conference in Bremerton, WA. Two graduate students and one undergraduate student received local section AIHA scholarships at this event.

Six students and two faculty members attended the annual professional development conference co-sponsored by the Big Sky Chapter of ASSE. Professor Stack presented her work titled “Standing up on the Job” in addition to a presentation on evaluation techniques using RULA and REBA.

Two undergraduate OSH students participated on a four-member Montana Tech team along with Environmental Engineering and Petroleum Engineering students at the Society of Petroleum Engineer’s International Competition on Health, Safety, Security, Environment and Social Responsibility. The Montana Tech team placed first at this competition in Norway April 12, 2016.

Faculty members had leadership roles in regional societies: Dr Hart served as Montana Local Education Officer for the Pacific Northwest Section of the AIHA. Dr. Jensen served the Big Sky Chapter of ASSE as an officer, and acted as faculty advisor for the Montana Tech Student Section of ASSE. Dr. Jensen also served on the Advisory Board of the Rocky Mountain Center for Occupational and Environmental Health at the University of Utah.

#### *Sustaining a high quality faculty*

The Safety, Health and Industrial Hygiene Department completed a national search for a replacement tenure-track faculty position for our department during the spring of 2016. A successful search resulted in Lorri Birkenbuel, CIH, CSP, joining the faculty for this fall semester. Assistant Professor Birkenbuel is currently teaching courses in both our undergraduate and graduate programs. In addition to this appointment, a search is currently being conducted for one additional faculty member.

#### *Preparing students for OSH and IH careers*

During the fall semester of the 2015-16 academic year, Montana Tech had 102 undergraduates register as Occupational Safety and Health (OSH) majors. Of those, 22 were NIOSH supported trainees. Of the 22 awarded a B.S. in OSH, 13 took OSH positions in private industry, five entered graduate school in industrial hygiene, two are working for the Montana State Department of Labor in OSH positions, one is seeking employment in the OSH field, and one is not seeking employment. Montana Tech had 14 graduate students register as full-time or part-time status in the campus M.S. Industrial Hygiene (IH) degree program. Five were NIOSH supported trainees.

All of the eight students awarded their M.S. are working as IHs in private industry. Montana Tech had 81 M.S. IH distance learning students taking one or more online courses. Of the 29 awarded an M.S. in Industrial Hygiene Distance Learning/Professional Track, 20 are working in IH positions in private industry, six are working for the federal government in IH positions, two are working in a hospital OSH capacity, and one is seeking employment in the IH field.

#### *Engaging in Research*

Theresa Stack published the following textbook: Stack, T., Ostrom, L., Occupational Ergonomics: A Practical Approach, New Jersey, Wiley (2016). ISBN-13:98-11118814251, ISBN-10:1118814215.

Professors Autenrieth and Stack were successful in securing Montana Tech faculty seed and faculty development grants, respectively. Dr. Autenrieth is studying an intervention to improve hearing protector use in the SW Montana logging industry, while Ms. Stack is evaluating the concept of “standing up on the job for improved health’.

Dr. Autenrieth published the following papers during Year 3 of this cycle:

Autenrieth, D, Brazile, W, Sandfort, D, Douphrate, D, Roman-Muniz, IN, and Reynolds, S. (2016). The associations between occupational health and safety management system programming level and prior injury and illness rates in the U.S. dairy industry. *Safety Science*, 84:4, 108-116

Autenrieth, D, Brazile, W, Gilkey, D, Reynolds, S, Joy, C, and Sandfort D. (2015). Client Perceptions of OHSMS Assistance Provided by OSHA On-Site Consultation: Results of a Survey of Colorado Small Business Consultation Clients. *Journal of Occupational and Environmental Hygiene*, 12:11, 804-17

#### *Additional Accolades*

Montana Tech was ranked among the 20 best value occupational safety degree programs by College Values online in November, 2015. Points were awarded based on four categories; tuition, 20-year average net return on investment, number of students receiving financial aid, and number of minors, concentrations, and areas of emphasis offered by the school.