

## **SECTION I**

### **TPG Summary:**

Combined rules, regulations, guidelines and recommendations as well as trained personnel have gradually reduced work related fatalities, injuries and illnesses. In spite of all the positive efforts, still every year in the United States approximately 4.6 thousands fatal work injuries and nearly 3.0 million nonfatal workplace injuries and illnesses are being reported (Source: U.S. Bureau of Labor Statistics). In Ohio the numbers have been approximately 190 and 16 thousands, respectfully (Source: Ohio - Bureau of Labor Statistics). At present we have an ample set of health and safety guidelines, but it seems that we need to train more experts, such as industrial hygienist, to accelerate this slow moving trend. An industrial hygienist (IH), an occupational health and safety discipline, is a highly trained, usually certified professional, who works in workplaces to determine and control exposure to variety of health hazards/isks and to reduce work related fatalities, injuries and illnesses. These professionals focus on developing programs and strategies to improve health/safety of the workers and members of society. IHs are also needed to work in a wide variety of production and service industries to ensure that employers are adhering to both existing (and new regulations). The IH's involvement in any work environment is a multifaceted, which influences every aspect of an establishment and helps a company through increased productivity, improved morale, and reduce the cost of liability and workers' compensation. Training/education and experience will have the biggest influence on an IH's performance. IH careers, especially with master degrees, can lead to upper management positions, which help the IH have stronger influence over the employees' health, safety and well-being. The demand for IH is projected to grow few percent in the upcoming decade. However, the growth of trained/educated IHs is expected not to follow this trend. Therefore, the graduate-level MSOH-IH program at University of Toledo is to provide training and education to students and members of the public for the purpose of increasing their knowledge, comprehension, skills and attitudes essential to the advancement of industrial hygiene. NIOSH training project grant (TPG) has been an essential financial support for training and educating IHs through the Master of Science in Occupational Health Degree - Industrial Hygiene Program (MSOH-IH). The program has been a NIOSH TPG recipient for four cycles covering a total of 15 years; this report is for the last cycle, which includes the 2016-2017 funding period. During the fall of 2016 semester, 18 students (11 female, 7 male) have been enrolled in the program. During this period, 7 students (3 female, 4 male) have received NIOSH funding. The graduate-level Industrial Hygiene Program in Toledo, located far north of Ohio is one of the two such programs in the State of Ohio; the other being in the University of Cincinnati located far south of Ohio.

### **Program's Regional Impact:**

The program educates full-time and part-time graduate students mainly from Northwest Ohio as well as from other parts of Ohio and Michigan. In turn, graduates are employed as health and safety specialists in the region. The program also accepts students from outside the region and several alumni are employed in other locations throughout the USA. Applicants are accepted to the MSOH-IH program with no regards to their gender or ethnicity.

### **Key Personnel:**

**Farhang Akbar-Khanzadeh, Ph.D., CIH, CSP, FAIHA**

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Dr. Akbar is Principal Investigator for this project. He is board certified both as industrial hygienist and safety professional. Dr. Akbar is a Professor of Occupational & Public Health and the Director of Master of Science in Occupational Health degree Industrial Hygiene Program. He has been the Program Director since 2009. He has served as editorial Board members in two related national/international scientific journals and grant reviewer for NIOSH. Dr. Akbar continues to administer/manage the program plan as well as participate in the teaching and supervision of graduate students. This includes whole areas of occupational health and safety, where Dr. Akbar helps oversee delivery of the didactic curriculum, interactions with the local industries, as well as practicum experiences and field experiences (research/walkthrough). He has published more than 50 peer-reviewed scientific journals, he has also presented and published the abstracts of numerous research papers.

**April Ames, Ph.D., CIH**

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Dr. Ames is board-certified industrial hygienist and has been on faculty as Assistant Professor of Occupational & Public Health since 2013. She is actively engaged in teaching basic IH courses and conducting research by the participation of IH students. She has published many peer-reviewed papers and presented numerous papers. Previously, she has been an instructor in IH program and also Senior Research Project Manager at the Department of Geography & Planning in the University of Toledo. Dr. Ames has also been an Environmental and Occupational Health Consultant in her company Delta Environmental, Inc. (Perrysburg, OH).

**Michael Veligosly, Ph.D., CIH, CSP**

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Dr. Valigosky is board-certified in both industrial hygiene and safety. He has been on faculty as Assistant Professor of Occupational & Public Health since 2015. He is actively engaged in teaching basic IH courses and conducting research by the participation of IH students. He has over twenty-five years of extensive environmental, occupational safety and health practice, teaching, research and service. Major areas of expertise include industrial hygiene, healthcare-hospital safety (Joint Commission/CMS), work with biological agent safety and security, hazardous materials management, exposure prevention, emergency preparedness, and all aspects of environmental health and safety management. He has been the Director of Environmental Health and Radiation Safety, accountable for directing, developing, implementing, and managing environment of care, safety, health, radiation and environmental programs in a 300-bed hospital, outpatient clinics, and 600-lab University research facility. He has also been a Senior Consultant on Safety and Industrial Hygiene. He has performed part-time work in EHS for a nationwide safety and health-consulting firm. Additionally, he performed consulting work for privately owned Northwest Ohio Company he started.

**Sheryl Milz, Ph.D., CIH, FAIHA**

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Dr. Milz, formerly the Department of Public Health and Preventive Medicine is board-certified industrial hygienist and is a faculty as Associate Professor of Occupational & Public Health. She is actively engaged in teaching basic IH courses and conducting research by the participation of IH students. She is currently the Co-director of Master of Public Health (MPH).

**SECTION II**

**Program Highlights:**

The significant results from the year 1 (July 2015- June 2016) of TPG are outlined below:

The NIOSH TPG has enabled us to recruit qualified students and sustain the usual number of IH graduate students in the program. During this period, 24 IH graduate students were in the program [Female Students 13 (54%), Male Students 11(46%)]. Of these, 5 graduate-level IH students are receiving NIOSH grant funding. The IH graduate students in the TPG funding are briefly characterized here:

- S. Clendenen, a female with BS in Environmental Sciences, was admitted as dual degree in the master of IH and master of public health (MPH, major Epidemiology). She has been a full-time student who will be graduated in the Fall semester of 2016 with both degrees.
- H.L. Cholette, a female with BS in Geology, was admitted as dual degree in the master of IH and master of public health (MPH, major administration). She is a full-time student who will be graduated in the Fall semester of 2016 with both degrees.

H. Tebbe, a female with BA in Psychology and minor in Biology, also was admitted as dual degree in the master of IH and master of public health (MPH, major Epidemiology). She is a full-time student who will be graduated in the Fall semester of 2016 with both degrees.

**Note 1:** It has been shown that those graduates with dual degree (e.g., IH and MPH) are usually more favorable for employment and they perform well in the workplace with multifaceted activities.

T. Rader, a male with BS in Environmental Health, has been in the program as a full-time student and will be graduated in the Fall 2016. He is intended to join his family's production firm as health, safety and environmental health professional.

M. D. Weiler, a male with BS in General Sciences and minor in Chemistry, will be graduated in the Fall 2016. He was a full-time science teacher when joined the program as a part-time student. He is planning to spend his internship in an electric generation company and work as a Co-op at the same company with a strong possibility to be employed as a full-time health, safety and environmental health professional at a the same plant.

**Note 2.** The Master of Science in Occupational Health Degree – Industrial Hygiene Program has been transferred to a newly created School of Population Health at the College of Health and Human Services.

Following Abstract was presented in an IH national/international conference (IH graduate students are highlighted):

- Akbar-Khanzadeh F, **Chambers M**, Ames A, Milz S, Valigosky M. Historical Levels of Benzene, Hydrogen Sulfide and Noise to Demonstrate Exposure Trends in a Petroleum Refinery. American Industrial Hygiene Conference and Exposition. May 21-26, 2016, Baltimore, Maryland. PO113
- Akbar-Khanzadeh F, **Kinn M**, Milz, S, Ames A, Valigosky M. IOM Inhalable and Respirable Sampling Compared to Conventional Total and Resirable Sampling for Assessing Welders Exposure to Manganese. American Industrial Hygiene Conference and Exposition, May 21-26, 2016, Baltimore, Maryland. PO127
- Ames A, **Barber C**, Valigosky M, Milz S, Akbar-Khanzadeh F. Environmental noise evaluation after implementation of controls near a higher education research facility. American Industrial Hygiene Conference and Exposition, May 21-26, 2016, Baltimore, Maryland.

Each thesis or scholarly projects (research projects) of the IH students in the program has had significant trainee involvement, exposure assessment and intervention. Following is an example of successful research to practice project: Benjamin Laubender (previous NIOSH TPG funding recipient): Hazard perception and hexavalent chromium – Exposure assessment in a workplace. The survey and exposure assessment was followed by intervention and hazard control.