

## **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 is employed in workplaces. These professionals focus on developing programs and strategies to improve health/safety of the workers. 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 multifaceted, influencing every aspect of an establishment and helping a company through increased productivity, improving morale, and reducing 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 by a few percent in the upcoming decade. However, the growth of trained/educated IHs is not expected to follow this trend. Therefore, the goal of the graduate-level MSOH-IH program at the 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 attitude 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 Fall of 2016 semester, 15 students (10 female, 5 male) were enrolled in the program. During this period, 7 students (4 female, 3 male) have received NIOSH funding. During the Spring 2017 semester, 15 students (9 female, 6 male) were enrolled in the program and 7 students (4 female, 3 male) received NIOSH funding. During Summer 2017 semester, 9 students (7 female, 2 male) were enrolled in the program. During this period, 2 students (2 female) 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 was the Program Director from 2009 to June 30, 2017. 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 the Co-I for this project. She is board-certified industrial hygienist and has been on faculty as Assistant Professor of Occupational & Public Health since 2014. 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. She is the current MSOH Program Director which involves administering/managing the program plan as well as participation in the teaching and supervision of graduate students. Areas of expertise are industrial hygiene, environmental health, human health exposure and risk related to chemical and physical agents. 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. She has also been an Environmental and Occupational Health Consultant.

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

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Dr. Valigosly is board-certified in both industrial hygiene and safety. He has been on faculty as Assistant Professor of Occupational & Public Health since 2014. 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. 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.

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

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Dr. Milz 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). Prior to joining the faculty of the University of Toledo, Dr. Milz served as the Safety and Occupational Health Manager at the Naval Hospital in Great Lakes, IL and as a field industrial hygienist for the Great Lakes Naval Hospital. She also spent two years as an epidemiologist for the Commonwealth of Kentucky. She has been active for many years at both ACGIH® and AIHA. She serves on the board of directors of ACGIH.

**TPG Website**

MSOH program at the University of Toledo: <http://www.utoledo.edu/hhs/healtheducation/msoh/MSOH.html>

**SECTION II**

**Program Highlights:**

The significant results from the year 2 (2016-2017) 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. In 2016-17 there were 20 IH graduate students enrolled in the program [13 Female Students (65%); 7 Male Students (35%)]. Of these, 9 graduate-level IH students received NIOSH grant funding. The IH graduate students in the TPG funding are briefly characterized in two categories: graduated and in progress:

### Graduated

- 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 was a full-time student who graduated in the Fall semester of 2016 with both degrees. She is currently employed as a health and safety professional at a glass manufacturer.
- T. Rader, a male with BS in Environmental Health, has been in the program as a full-time student and graduated in the Spring 2017. He works at his family's firm as health, safety and environmental health professional.
- H. Tebbe, a female with BA in Psychology and minor in Biology, was admitted as dual degree in the master of IH and master of public health (MPH, major Epidemiology). She was a full-time student who graduated in the Spring semester of 2017 with both degrees. She is employed as a health and safety professional at a supplier of components to the recreational vehicle and residential housing industries.
- M. D. Weiler, a male with BS in General Sciences and minor in Chemistry, graduated in the Fall 2016. He was a full-time science teacher when joined the program as a part-time student in the program. He is currently employed as a full-time health, safety and environmental health professional at a nuclear power plant.

**Note:** 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.

### In progress

- M. Bess, a male with a BA in Business Administration, was admitted to the program in the Fall semester 2016. He is a part-time student and recently started working as a health and safety professional at an auto manufacturer.
- P. C. Coxe, a male with BS in Health Sciences and minor in Occupational Health and safety, was accepted to the program in the Fall 2015. While part-time in the program, he has been employed as a full-time health, safety and environmental health professional at a District Sewer Plant. He is currently working on his thesis.
- S. Dubin, a female with a BS in Health Science was accepted to the program in the Summer 2015. She was a full-time teacher in science and health when she joined the program as a part-time student. She is currently employed as a full-time health, safety and environmental health professional at a power management company.
- A. Joyner, a female with a BS in Biology, admitted to the program in the Fall 2016 as a part time student and became a full time student in the Spring 2017. She recently started working in health and safety at a printing company.
- M. J. Lange, a female with BS in Environmental Health and minor in Biology, was accepted to the program in the Fall 2016. During the completion of her BS, she joined the auto-parts production firm as an intern. She is currently a part-time student in the program while employed by the same firm as a full-time health, safety and environmental health professional.

### Research project

- **S. Dubin**, TPG funding recipient and current student was awarded a University of Toledo 2016-2017 Graduate Student Association Graduate Student Research Award: Characterizing Noise Levels in Nursing Homes.

The following select abstracts were presented during 2016-17:

- Ames AL, **Clendenen SN**, Valigosky M, Lorenz H, Milz S, Akbar-Khanzadeh F. Formaldehyde Exposure Levels in a Newly Constructed Embalming Suite. American Industrial Hygiene Conference and Exposition, Seattle, WA, June 4 - 7, 2017. [**S. Clendenen** is a graduate from the program and past TPG funding recipient]
- **Rader, T.**, Ames, A., Valigosky, M., Fink, B., Rega, P. 2017. Pilot Study: Utilization of simulated exercises to teach healthcare students the potential benefits of unmanned aerial vehicles to respond to environmental health issues associated with disasters. WADEM Congress on Disaster and Emergency Medicine, Toronto, Canada, April 25-28, 2017. [**T. Rader** is a graduate from the program and past TPG funding recipient]