

How Can Academia and the Safety Industry Support Each Other?

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Introduction

There are a variety of degrees and certificates available in the field of safety. However, there are only a few safety related degrees accredited by ABET, Inc., the industry recognized accrediting body for college and university programs in applied science, computing, engineering, and technology. ABET offers specialized accreditation, which applies to specific programs rather than to departments or universities. ABET is comprised of 30 member societies, including ASSE, and has four accreditation commissions, including the Applied Science Accreditation Commission (ASAC), Computing Accreditation Commission (CAC), Engineering Accreditation Commission (EAC), and the Technology Accreditation Commission (TAC). Programs classified under the area of Safety or under the area of Environmental, Health, and Safety are evaluated under the auspices of the ASAC. As of March of 2010, ABET identifies twelve programs at ten universities with ASAC/ABET accredited programs in Safety, and three programs with ASAC/ABET accredited programs in Environmental, Health, and Safety. Table 1 identifies the degree programs by level and specialty area.

	MS	BS	AAS
Safety	2	9	1
Environmental, Health, & Safety	0	3	0

Table 1. ASAC/ABET accredited degree programs by level and specialty.

The majority of the programs are undergraduate BS programs. However, by comparison there are 35 ASAC/ABET accredited MS industrial hygiene programs and 6 BS industrial hygiene programs. Overall, ABET accredits over 2,800 programs (www.abet.org). Of these, 1,853 are accredited by the EAC, and only 71 are accredited by the ASAC.

Degree programs in occupational safety and health related areas can be found all across the country. However, the geographic distribution of the ASAC/ABET accredited safety programs is striking. Table 2 lists the accredited programs by university and ASSE region.

University	ASSE Region	Program Accredited under Safety by ASAC/ABET
University of Central Missouri, MO	V	Occupational Safety and Health, BS
Fairmont State University, WV	VII	Occupational Safety, BS
University of Houston-Clear Lake, TX	III	Environmental Science – Safety, BS
Indiana University of Pennsylvania, PA	VIII	Safety Sciences, BS
Marshall University, WV	VII	Safety Technology Occupational Safety Option, BS Safety Technology, BS
Murray State University, KY	VII	Occupational Safety and Health, BS Occupational Safety and Health, MS
Oakland University, MI	VII	Occupational Safety and Health, BS
Pennsylvania State University, PA	VIII	Industrial Health and Safety, BS (University Park)
Rochester Institute of Technology, NY	VIII	Occupational Safety and Health Technology, AAS
West Virginia University, WV	VII	Safety Management MS
University	ASSE Region	Program Accredited under Environmental, Health, & Safety by ASAC/ABET
The University of Findlay, OH	VII	Environmental Safety and Occupational Health Management, BS
Millersville University of Pennsylvania, PA	VIII	Occupational Safety & Environmental Health, BS
The University of Oklahoma Health Sciences Center, OK	III	Industrial Hygiene and Environmental Health Sciences, BS

Table 2. List of ASAC/ABET accredited degrees by ASSE region and specialty.

ASSE regions III and V account for three of the ASAC/ABET accredited programs, while Region VIII has four programs and Region VII has eight programs. In total, eight states offer ASAC/ABET accredited safety programs. ASSE's directory of schools offering occupational safety and health related degrees includes 191 schools in 45 states. There are no accredited programs located in the Western half or South-eastern portions of the United States despite the presence of safety-related programs being offered in those areas.

These numbers lead to three important questions. First, why are there so few safety-related programs at U.S. colleges and universities? Second, why are so few of the existing programs obtaining ASAC/ABET accreditation? Lastly, how can industry and academia support each other more effectively?

Opportunities for Academia and Industry Collaborations

There are a number of ways that academia and industry can work together for mutual benefit. Common examples include internship and cooperative experiences for students. Companies gain needed assistance while providing students with substantial "real world" experiences. Companies often use internships as a testing ground when making permanent hiring decisions. Additionally, academia and industry must consider the overall need for safety programs in the U.S., the benefits of ABET accreditation, and opportunities for combined research initiatives.

Need for Safety-Related Programs

In consideration of the question about why there are so few safety-related programs at U.S. colleges and universities, different answers have emerged over time. Safety is a broad discipline. People often move into the field from related areas. A review of the application requirements for a Certified Safety Professional (CSP) listed at www.bscp.org shows that accredited degrees in a variety of fields including engineering, science, medicine, and business can be used in achieving the required points to be eligible for the certification. While this highlights the interdisciplinary nature of safety, it also calls into question whether working safety professionals have a common academic foundation in safety. For many, the CSP certification is needed to verify an individual does have a safety foundation. By promoting quality programs at universities, industry will get better prepared safety professionals with a solid background in the fundamentals of environmental, safety and health issues facing the work force today.

In the midst of economic cut-backs and financial stringency facing states today, education is taking some serious financial blows. As universities look for cost saving measures, reviews of academic programs are inevitable. Departments find themselves presenting arguments about program viability, industry need for graduates, and congruence with university mission. It is here that industry can have a significant impact. Safety programs are unique in universities and the importance of such programs is often questioned because there is a lack of understanding about what safety is and what safety graduates do. Many campuses have little concept about the profession, and a look at the organizational chart often explains why. On many campuses, the safety, health and environmental unit is either glaringly absent, or is tucked neatly under a Provost for Finance and Administration, an HR department, and even under the control of the university police department. Industry can help educate university administration about the need to maintain credible programs and about the value of the profession as a whole.

Another challenge facing the creation and/or maintenance of safety related programs is the lack of competitive salaries for faculty. Many graduating students quickly out-earn their former professors. Universities cannot compete with industry pay. Compounding the problem is that universities are requiring earned doctorates and don't offer additional pay incentives for certifications such as the CSP and CIH. This trend reverses industrial desires, where the CSP far outweighs a doctorate on the job. Through foundation gifts, industry can help support the activities of university programs by sponsoring student scholarships, supporting faculty research, and providing assistance to promote faculty travel to conferences and workshops. The more faculty are engaged in the business of safety, the more credible a program becomes. As a result of improved programs, graduates become more well-rounded and are better prepared to enter the workforce. The Board of Certified Safety Professionals (BCSP) makes contributions to the academic programs by providing scholarships to students through the ASSE Foundation and by providing the Graduate Safety Practitioner (GSP) designation for students who graduate from ASAC/ABET accredited programs. The GSP replaces the ASP for these students and allows them to enter the workforce with a distinction that sets them apart from other graduates.

Program enrollment is a definitive issue for many universities. High school students preparing to enter college life and seek out a career have often never heard about safety as an option. Common responses are "you can get a degree in that?" and "what does a safety professional do?" Universities and industry need to collaborate on ways to effectively promote the profession to the public, starting with today's young people who will be the next generation of potential safety professionals.

ABET Accreditation

Given that there are safety programs across 45 states, why are so few of them ASAC/ABET accredited? The value of accreditation is strongly supported by ASSE through both words and action. ASSE is the member society charged with defining the required outcomes for safety-related programs. ASSE has an Education Standards Committee that has the responsibility for overseeing this process. Additionally, the ASSE Foundation offers financial support to programs seeking ASAC/ABET accreditation, through the James A. Oppold Fund. This fund was established in honor of James Oppold, CSP, Ph.D., who was ASSE's ABET Board Representative. The fund provides up to \$3,500 towards accreditation fees for universities seeking initial accreditation for safety programs, and up to \$1,750 for programs seeking reaccreditation. The BCSP promotes accredited programs through the GSP designation. Given these factors and that universities generally are supportive of program specific accreditation, why are more programs not engaged in the accreditation process?

Accreditation has costs associated with it. There are yearly maintenance fees and additional expenses that are incurred during evaluation periods. However, accreditation is a great "arguing point" in times of financial crises on campus. It lends credibility to a program from outside experts. There is a significant investment of time and energy associated with organizing the self-study materials and preparing for a site visit. The accreditation process requires on-going internal assessments and requires commitment to ensuring program quality and improvement. Some departments may not view the requirements as "worth it". It is difficult to maintain accredited programs if faculty are not all on board. Most universities will find that while one person can write the required self-studies, it will not be enough unless all of the faculty are actively engaged in the process and make personal contributions. Industry can encourage programs to seek accreditation in a number of ways including by serving on program advisory

boards, collaborating with programs to hire interns (which is also a program accreditation requirement), and by providing financial assistance for accreditation expenses.

Departments that have accredited programs find that employers often come to campus based on that information alone. Companies have limits on time and travel for recruiting trips and will focus their efforts on universities that can offer quality ABET accredited programs. Additionally, those students who are informed about the safety profession often seek schools that can provide accredited programs. The long-term benefits of accreditation are substantial if departments are willing to put forth the initial outlay of time, energy and funding.

Research Centers

Industry can collaborate with and benefit from academia through research centers. These centers are typically funded by a combination of sources including government, universities, corporate memberships, and endowments. NIOSH has funded 17 Education and Research Centers (ERC) for Occupational Safety and Health. These centers provide a variety of continuing education opportunities to OH&S professionals. The Center for Occupational Health and Safety Engineering at the University of Michigan is an example of a NIOSH funded ERC. Some centers have a specific focus, such as the Missouri Safety Center at University of Central Missouri. It is funded by the state and has a focus on transportation safety. They do extensive training for law enforcement including field sobriety testing, police driving, accident reconstruction, and driving evaluation.

Some centers focus on research, including the Mary Kay O'Connor Process Safety Center. This center was established in 1995 in memory of Mary Kay O'Connor, an Operations Superintendent killed in an explosion on October 23, 1989 at the Phillips Petroleum Complex in Pasadena, TX. The center's mission is to promote safety as second nature in industry around the world with goals to prevent future accidents. The center develops safer processes, equipment, procedures, and management strategies to minimize losses within the processing industry. Research centers provide an excellent opportunity for students to become involved in solving real problems and having a positive impact on work place safety. Additionally, joint research ventures open the possibility for obtaining grants that can benefit both industry and academia financially and through the ability to expand research into practical applications that can be used to enhance safety and health on the job.

Implications

There are contributions to the professional to be made by academia beyond just graduating students. Often academic can offer a longer term, bigger picture perspective than individuals in industry. This can be in indentifying future directions for the profession as well as for organizations such as ASSE. Academics can be a useful perspective when serving on committees to develop standards and regulations, particularly when other individuals may have multiple agendas due to their employment by a stakeholder in the issue.

Universities are eager to conduct broad-based research and disseminate their results. Oftentimes, industrial based research may have a more limited scope or application and is meant to be site-specific. Companies may be reluctant to publically disseminate their findings and in some cases may be prohibited from doing so. Peer-reviewed published data can be critical in

development industry standards, new regulations, and generally improve the level of knowledge in the field.

Conclusion

Industry and academia have much to gain by working together. Industry can identify areas of need through both education and research. Academia can provide education and training to address industrial needs and conduct research to further the development of our field. This paper and the associated panel discussion is a small step in the process to encourage further conversations and collaboration between academia and industry. The stakes are too high for us to not work closer together to improve the health and safety of society.

Bibliography

ABET, Inc. (<http://www.abet.org>)

American Society of Safety Engineers (<http://www.asse.org>)

Board of Certified Safety Professionals (<http://www.bccsp.org>)