

Outcomes-Based Accreditation

Advancing the OSH Profession

By James D. Ramsay, Elbert Sorrell and Wayne E. Hartz

The OSH profession is wonderfully dynamic and complex. It consists of a mix of line and staff positions; incorporates practitioners from a wide variety of backgrounds; has dozens of professional credentials (e.g., CSP, CIH, OHST, ARM, CPE); is compliant to reams of state and federal mandates; exists in hundreds of industries; and involves a range of disparate work sites from nanotechnology and manufacturing to healthcare, construction and energy generation.

Characterizing where the safety profession begins and ends (i.e., its professional boundaries) is difficult and arguably cannot be done using job descriptions or titles. This article attempts to build a case for outcomes-based, program-level accreditation (a term used here synonymously with specialized accreditation) in academic OSH programs to begin to achieve a firm basis for advancing the profession. In this way, it extends and concentrates on the arguments made by Ferguson and Ramsay (2010).

To frame the operating boundaries of any discipline, the authors propose that it is most logical to use student learning outcomes (SLOs) of baccalaureate-level education rather than other, more arbi-

trary criteria such as job descriptions or titles. Hence, the knowledge, skills and abilities/behaviors (KSAs) that students are expected to be able to demonstrate upon graduation become the basis for professional definition. As such, and once vetted as credible and comprehensive indicators of the profession, KSAs become the basis of outcomes-based accreditation.

Accreditation is often cited as a quality control measure in higher education. However, the general term *accreditation* is broad and includes many types and levels of application. Thus, accreditation suggests different things to different people. Ramsay (2013) reports that accreditation may engender:

thoughts of elitism, undue barriers to entry and exclusion to some, excess expense and effort to others, and still to others, may indicate a measure of sanctification, somewhat like the

IN BRIEF

- This article argues for the development of minimum requirements to accredit academic programs in the OSH field.
- As a sovereign profession, OSH should have professional boundaries characterized by a standardized set of educational outcomes that represent the knowledge, skills or abilities/behaviors required by practitioners.
- Without a commonly accepted set of educational outcomes, the discipline is at risk of dilution.
- This article focuses on why program-level accreditation is critical to securing a specific body of knowledge and the ongoing maturation of the OSH profession.

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The professional boundaries within which the OSH discipline is practiced must be clearly defined. This is necessitated by globalization, sustainability requirements, emerging technology and increased complexity with the corresponding need to identify, define and solve problems at the boundaries of other disciplines.

“USDA approved beef” stamp of approval for high-quality programs. (p. 20)

This article does not present accreditation as a perfect or even a stand-alone method to accomplish occupational closure. Rather, baccalaureate program accreditation is focused on demonstrating evidence that students meet minimum performance outcomes, and evidence of the processes an institution uses to continuously improve. Hence, a systematic and performance-based structure, such as outcomes-based accreditation, can assure students, faculty, programs, constituents and institutions of a more efficient transfer of KSAs required by their chosen profession. As Ramsay (2013) states:

This efficiency has its roots in free market economics. It can be argued that accreditation allows for more efficient information exchanges between the suppliers of education (academic programs, faculty) and the consumers of education (the private and public sector entities that hire graduates) and students (those who acquire education). In addition, accreditation enables market efficiency in at least two ways.

First, programs can be more efficient because accreditation lessens the likelihood of a program developing courses or concentrations not of interest to education’s consumers. Second, consumers can act more efficiently since they absorb graduates who progress through a continuous improvement process is substantiated by a third party. Third, academic providers adhering to the process of outcomes-based education can more completely engage in continuous quality improvement by virtue of the assessment and reporting requirements inherent in accreditation which in turn keep the faculty appropriately credentialed, and the outcomes current and relevant. (p. 20)

This is to say, existing accreditation standards in disciplines such as medicine, law and nursing require programs to achieve stated outcomes that are central to the practice and/or body of knowledge of that discipline. For example, the Liaison Committee on Medical Education (LCME, 2014) publishes standards for medical school accreditation that address areas such as medical ethics, critical thinking and interprofessional collaborative skills.

Framing the Profession

The OSH Act of 1970 gave the federal government the authority to set and enforce safety and health standards at the workplace. For OSHA to carry out its mission, well-trained individuals were needed to function as compliance and training officers, and industry was charged to comply with the newly issued safety standards, and to provide appropriate staff and resources. Consequently, safety as an occupation was born and several institutions of higher education subsequently began to develop curricula designed to prepare/train a new workforce who would strive to ensure compliance to state and federal mandates.

In addition, the act created NIOSH, which was mandated to support standards development through research, as well as to provide grants to institutions to educate scholars and train practitioners. However, these federal programs were not intended to prepare graduates with a body of knowledge structured around the KSAs required to manage or lead organizations to improve employee health or build better safety systems. The main function of these federal programs was merely to support engineers, managers and other professionals within their organizations to maintain compliance with the law. Historically, this focus was known as the three Es: educate, engineer and enforce (Blair & Geller, 2000; Petersen, 2003).

Beginning in the mid to late 1970s, OSH began to grow as a discipline. As standards were added (e.g., control of hazardous energy, bloodborne pathogens, HazCom), skills and knowledge specific to OSH practitioners started to become at least partly integrated into business and environmental operation. However, as several recent studies observe, the safety discipline contribution to strategic management continues to fall short of business leader expectations (ASSE, 2008; Manuele, 2008; Petersen, 2003).

Today, OSH professionals are increasingly expected not only to maintain compliance, but also to manage enterprise risks and to protect human

health and a wide array of corporate assets. Consequently, OSH has become a complex and dynamic discipline integrated with human health concerns and environmental stewardship. In short, employers expect OSH practitioners to have certain minimum competencies, either through academic degrees or from specialized board certifications such as the CSP offered by BCSP, or an alternative such as the CIH offered by the Accreditation Board of Industrial Hygiene.

Interestingly, professional certifications that are derived from the literature and from best practices are consistent with the characteristics of a profession as defined by Ferguson and Ramsay (2010). For example, Ferguson and Ramsay define a profession as meeting four criteria: 1) qualifications that are determined by an accrediting organization and defined educational learning outcomes; 2) means and processes "that can discern the qualified from the unqualified" practitioner; 3) germane associations that can credential members and ensure that education programs are meeting quality and content criteria expected in the workplace; and 4) an enforced code of ethical conduct.

Other research supports these definitions and characteristics:

- Wergin and Curry (1983) state that "professions encompass occupational groups that 1) share specialized skills requiring extensive and scholarly training, 2) restrict access with rigorous entrance and exit requirements and 3) because of their importance to society, claim high social prestige" (p. xiii).

- Sullivan (2005) reports that:

professions stand out for the central importance of education to the identity of their members. Formal and specialized education is the required portal to professional membership. Moreover, continuing education, officially credentialed and monitored, is typically required of professionals in many fields to maintain their licensure to practice. (p. 25)

Somewhat less articulate yet consistent with the Ferguson and Ramsay (2010) concept, Merriam-Webster's defines *profession* as "a calling requiring specialized knowledge and often long and intensive academic preparation." In addition to a specialized body of knowledge, established professions such as medicine, law and nursing tend to be based on the KSAs of each individual that collectively contribute to the practice.

Therefore, the authors surmise that it is not enough to frame a profession by credentials or job titles only. Rather, the ability to express a dedicated body of knowledge specific to the discipline is required. In turn, it follows that SLOs comprising program-level accreditation tend also to be derived from this specific body of knowledge. If one extends this logic to all educational programs in a discipline, program accreditation clearly becomes an effective vehicle for disseminating and acquiring an appropriate and vetted set of KSAs.

However, merely having a set of SLOs and a vehicle for integrating these into higher education

programs is not enough for an occupation to make the transformation to a profession. Take the current case of OSH education. While program-level accreditation currently exists for OSH programs, it has not been widely adopted. In fact, only 11 of the estimated 350 academic programs (or approximately 3%) are ABET accredited. As a result, most OSH practitioners entering the workforce have presumably not been exposed to nor have mastered the KSAs that industry requires/prefers or that are derived from best practices and the literature. In turn, this can add undue risk to workers and the workplace since practitioners may not have the requisite knowledge or skill to anticipate, recognize, mitigate or control risks faced by workers.

In addition, a discipline characterized by a workforce with a nonstandard set of KSAs that may or may not be directly tied to the literature or to best practices presents an additional risk to that profession. In other words, in such cases, the profession did not define itself, it was defined by either employer groups, or other outside agencies and organizations. A poignant example of this comes from the medical field prior to the Flexnor Report from 1910.

For evidence of how employers are reshaping the OSH landscape, see NIOSH's 2011 National Assessment of the Occupational Safety and Health Workforce (McAdams, Kerwin, Olivo, et al., 2011). While the study is not perfect (all research has limitations), it includes a focused employer survey and noteworthy results. For example, one finding reports a distinction between occupational safety as "work to minimize the frequency and severity of accidents, incidents and events that harm workers, property or the environment" (p. 3), and "occupational injury prevention as based on research, risk assessment and influencing organizational process" (p. 4). Consequently, the authors submit that OSH professionals who are authentically dedicated to protecting people, property and the environment must depend on ASSE's body of knowledge, research, risk assessment, best practices and analysis/correction of organizational systems to fulfill the profession's charge.

One can view any discipline as having a life cycle. The onset of any new or emergent discipline is characterized by multiple, competing professional definitions and inarticulate professional boundaries, threats from diploma mills and unscrupulous/inadequately credentialed providers. In contrast, mature or established disciplines demonstrate firm, consistent professional boundaries and specific bodies of knowledge attributable to their professional practice and which drive an educational infrastructure and consequently widespread adoption of program accreditation.

In the sense of a life cycle, medicine, law, nursing, teaching, nursing or engineering could each be considered mature or established professions, while OSH might be considered to be in its teens. For example, the core body of nursing knowledge has evolved over time, the occupation has established professional credentials and boundaries, including program-level accreditation, and nursing

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is now considered to be a sovereign (i.e., distinct, intact and self-contained) profession.

Specifically, in addition to having a professional code of ethics, nursing has developed a set of standards of professional practice that are further categorized into standards of practice and standards of professional performance. "The standards of nursing practice describe a competent level of nursing care, as demonstrated by the critical thinking model known as the nursing process, which includes the components of assessment, diagnosis, outcomes identification, planning, implementation and evaluation" (ANA, 2010, p. 21).

In addition, American Nurses Association (ANA, 2010) states that "standards of professional performance describe a competent level of behavior in the professional role, including activities related to quality of practice, education, professional practice evaluation, collegiality, collaboration, ethics, research, resource utilization and leadership" (p. 22). Like medicine and law, nursing uses program-level accreditation of competency areas to disseminate, adjudicate and regulate professional practice.

It seems logical to claim that the OSH profession has reached a point in its development when it should be able to define what it is and is not according to a body of knowledge that describes professional competence and behavior. Like nurses, OSH professionals have specialized education and training, a code of ethics, established practice guidelines, and a body of ongoing research that shapes and governs the practice. In addition, safety professionals work autonomously within their scope of practice. They formulate and execute their own plans to manage risks in the workplace, apply professional judgment and use critical-thinking skills to solve problems.

Increasingly, the field is motivated to mature beyond a purely compliance-based discipline toward a risk-based discipline, artistically applying principles of physical and social science to protect people, property and the environment. Thus, the professional boundaries within which the discipline is practiced must be clearly defined. This is necessitated by globalization, sustainability requirements, emerging technology and increased complexity with the corresponding need to identify, define and solve problems at the boundaries of other disciplines.

This must be accomplished mindful of the profession's primary concern for protecting worker safety and health, as well as corporate financial health. Safety professionals use their specialized knowledge, experience and skill to initiate strategic life- and property-protecting measures, improve and promote the health and well-being of workers, their communities and globally, and formulate plans and strategies to minimize corporate losses. Like many other established disciplines, OSH can mature and thereby better define, regulate and sanctify itself when a defined set of SLOs are based in research and best practices and are widely adopted in academia via program-level accreditation.

To better understand the degree to which out-

comes-based education and outcomes-based accreditation may play a crucial role in the professional definition of any discipline, let's first review a brief description of what *outcomes-based education* refers to, then proceed to the formal argument of the relevant and positive attributes that program-level accreditation offers a profession. The following discussion suggests why it is logical and prudent to build program-level accreditation structures and processes into OSH programs in order to advance the profession.

The Relationship Between Outcomes-Based Education & Outcomes-Based Accreditation

Over the past 15 years, academic accreditation has moved away from a rigid process orientation (i.e., a required list of courses) toward a set of outcomes that represent KSAs practitioners must possess to function effectively. This transition is characterized by the movement to outcomes in medicine (LCME, 2014), law (ABA, 2013), nursing (CCNE, 2009) and engineering (ABET, 2006). Traditional curricula and their associated accreditation systems were more subject-based; however, outcomes represent the "quality of practice, education, professional practice evaluation, collegiality, collaboration, ethics, research, resource utilization and leadership" (ANA, 2010, p. 22) inherent in a profession.

Outcomes-based education is well established as being an effective means to validate student learning, and it has been applied by the Institution of Occupational Safety and Health (IOSH). IOSH has 39,000 individual members spanning 85 countries; it emphasizes the demonstration and application of knowledge. The group published "Higher-Level Qualification Accreditation," which not only describes its accreditation processes but also its learning objectives for undergraduate and graduate-level programs (IOSH, 2011).

Outcomes-based education is also known as standards-based education, since it essentially integrates a specific and measurable set of KSAs of a professional practice into the curriculum of a degree program. By centering the educational program on KSAs and focusing the accreditation process on SLOs, academic programs are incentivized to work closely with their professional constituents and to concentrate on teaching/evaluating their students on outcomes that matter to the profession. Consequently, the underlying premise of programs accredited in this way is to achieve a high level of reliability, validity, degree integrity and quality (Harden, Crosby & Davis, 1999). This relationship fosters academicians' ability to know what they should be teaching students, and improves students' ability to know that they are receiving high-quality, relevant education.

For example, while developing a core competency model for a graduate degree program in public health, Calhoun, Ramiah, Weist, et al. (2008), found that educators across diverse disciplines agree that competency- or outcomes-based education can improve individual performance, enhance communication and coordination across courses,

Student Learning Outcomes

Student learning outcomes (SLOs) establish minimum program goals and building blocks of a curriculum that is designed to ensure that emerging OSH professionals meet a base or minimum set of employer expectations or, from the employer's perspective, that their expected competencies of an entry-level OSH candidate should be met. For example, a student-prepared portfolio providing evidence of his/her knowledge, skills and abilities/behaviors would demonstrate to an employer that student's prospective value as a new hire. Evidence of meeting or exceeding program learning outcomes demonstrates thinking and doing at the conclusion of a professional preparation program and serves to meet minimum entrance requirements to the profession (AACN, 2008; Hartz, 2014).

Core competencies	Student learning outcomes
Technical skills	1) Students who complete a B.S. in OSH will be able to: a) Explain how to use accepted research and scientific methods to evaluate physical, biological, chemical and radiological health hazards (e.g., principles of epidemiology, toxicology, procedurally based environmental sampling and/or other applicable testing or measurement); provide technically correct and easily understood results interpretation. b) Explain and present results from (1a) in the context of applicable state and federal regulations and best comparable practices.
Risk assessment and management	2) Students who complete a B.S. in OSH will be able to: a) Identify, collect, compile, prioritize and analyze data associated with OSH risks. b) Evaluate and implement appropriate control measures to mitigate risk to acceptable level.
Interpersonal skills: Team role	3) Students who complete a B.S. in OSH will be able to demonstrate their ability to: a) Participate in group/team projects that will identify, describe and explain OSH risks, analysis and appropriate control measures. b) Explain their experience and/or how they would respond to cultural, language or racial differences.
Evidence of scientific process, critical thinking, problem solving	4) Students who complete a B.S. in OSH will be able to: a) Define/describe/identify the problem. b) Collect relevant facts/data. c) Systematically analyze facts/data using research-based methods. d) Interpret data in the context of research and best practices. e) Explain how to seek and incorporate stakeholder involvement. f) Develop short- and long-term recommendations with corresponding metrics to evaluate effectiveness. g) Explain recommendations to stakeholders. h) Explain how stakeholder questions and concerns would be addressed. i) Explain different types of evidence revealing effectiveness.
Business acumen, economic analysis, project and budget management	5) Students who complete a B.S. in OSH will be able to: a) Explain how the integration of an occupational health and safety management system (OHSMS) such as ANSI Z10 or ISO 18001 will add value to the business process. b) Prepare a risk assessment plan with budget and timeline (such as Gantt chart) to conduct a survey of a particular job task. 6) Students who complete a B.S. in OSH will be able to a) Demonstrate the cost effectiveness of risk management in financial terms such as return on investment.
Internship and communication of experience in context of degree earned	7) Students who complete a B.S. in OSH will be able to concisely summarize and communicate key aspects of internship experience, including: a) technical skills applied such as air monitoring; b) risk management processes; c) development and assessment of written safety programs or training; d) explanation of learnings and opportunities.
Sample written reports with examples of OSH issues and recommendations	8) Students who complete a B.S. in OSH will be able to: a) Prepare technical reports that are accurate, referenced correctly and organized with correct grammatical structure.
Ethics: Evidence of professionalism and ethics	9) Students who complete a B.S. in OSH will be able to: a) Apply professional ethics by illustrating appropriate responses in contrived scenarios of ethical dilemmas. b) Explain the value of continuing education and professional credentialing.
Evidence to develop training and present it	10) Students who complete a B.S. in OSH will be able to: a) Integrate adult learning principles into training strategies for effective knowledge transfer. b) Demonstrate the efficacy of OSH training via post-training evaluations.

and provide an impetus for curriculum development. Given the dynamic, complex and interdisciplinary nature of the OSH field, both academic safety and health curricula and employers would be well served by a robust and consistent dependence on a commonly understood and thoroughly integrated set of SLOs in academic programs.

Program-level accreditation concerns the external review and adjudication of an academic degree program for the purposes of establishing quality control, truth in advertising, and appropriateness of academic scope, content, faculty credentials and the degree to which continuous quality improvement processes are integrated into a program's delivery and, therefore, into the intellectual capital of succeeding generations of practitioners.

Program vs. Institutional Accreditation

The U.S. educational system has historically embraced accreditation as a quality control device. However, accreditation occurs at several levels. Program-level accreditation is the focus of this article. Other types include accreditation of entire institutions or of professional certifications. However, not all accrediting authorities are considered legitimate. Therefore, like diploma mills, the Council on Higher Education Accreditation (CHEA) warns of "accreditation mills"—entities that unscrupulously certify or bestow meaningless credentials onto another institution or credential purely for monetary gain.

An organization that desires to accredit other organizations, programs or certifications is legitimated in doing so only once it is recognized as an accrediting authority. Granting accrediting authority is an involved and complex undertaking that is beyond the scope of this article.

However, two organizations recognize other organizations to perform accreditation, the U.S. Department of Education and CHEA. Notice that neither body accredits institutions or academic programs directly; rather, they recognize organizations that in turn accredit educational institutions and academic programs. CHEA incorporates regional accrediting bodies, such as the North Central Association of Colleges and Schools, that accredit institutions of higher education.

Whereas institutional accreditation is focused narrowly on the educational institution, program-level accreditation is focused strictly on a degree-granting program, usually housed within a regionally accredited institution.

Organizations that conduct program-level accreditation include Association of Technology, Management and Applied Engineering and ABET. To conduct and legitimately adjudicate accreditation of academic programs, these organizations enhance the reliability and credibility of the program accreditation process by becoming recognized by either the U.S. Department of Education or CHEA. The accreditation that such organizations bestow on successful programs is referred to as recognized program-level accreditation, program-level accreditation or simply accreditation. The following discussion refers entirely to program-level accredi-

tation of college/university degree programs in safety, health and environmental protection.

According to CHEA, "Accreditation is a process of external quality review used by higher education to scrutinize colleges, universities and educational programs for quality assurance and quality improvement." According to the U.S. Department of Education:

The goal of accreditation is to ensure that education provided by institutions of higher education meets acceptable levels of quality. Accrediting agencies, which are private educational associations of regional or national scope, develop evaluation criteria and conduct peer evaluations to assess whether or not those criteria are met.

In this way, accreditation at both the institutional level and program level extend professionalism, ensure quality and are major elements in higher education's fight against diploma mills (CHEA).

Another difference between program-level and institution-level accreditation involves the origins of the education standards (i.e., SLOs) used in accreditation. The accrediting authority typically defines the accreditation standards at the institutional level. As such, these standards are typically more concerned with elements such as fiscal health, general faculty credentials, organizational policies and human resource capabilities, graduation assessment, registrar effectiveness and admissions policies.

In contrast, program-level accreditation typically uses standards derived by consensus between academics, practitioners and policymakers. In this way, it is important to point out that the standards used to judge program quality and credibility are much less important to the institutional accreditation process and, consequently, institutional accreditation is usually not able to offer meaningful content contributions to an academic program.

Significantly, program accreditation makes a difference in graduate performance. Volkwein, Lattuca, Harper, et al. (2007), conducted a pre- and postanalysis of ABET's 1996-2000 changes to B.S. in engineering requirements, which moved from course and prescribed requirements to assessment of summative and formative outcomes analysis, and found improved graduate performance based on employer feedback.

The next section presents several characteristics of program-level accreditation and suggests why accreditation is central to mature professions.

The Benefits of Program-Level Accreditation

For a profession to become mature, it must create, then maintain sovereignty and identity. To accomplish professional maturity, academic programs must partner with practitioners to identify, vet and set SLOs that are by consensus representative of the discipline and the literature, and that are the embodiment of the KSAs inherent in all practicing professionals. While a handful of mechanisms may help accomplish this task, program-level accreditation is perhaps the most widely adopted. When program-level accreditation is based on SLOs, it

forms the basis for integrating representative KSAs into academic degree programs.

As such, for a profession, accreditation identifies a baseline level of quality assurance that programs are reliably and validly conveying the appropriate KSAs to its students. Reliability occurs when accreditation outcomes are integrated across all programs and enforced by the hiring preferences of the public and private sectors. That is, when organizations clearly state that they either require or strongly prefer to hire candidates from accredited programs, it seems logical that university programs will seek and gain accreditation status. This has been demonstrably the case in dietetics, engineering, law and medicine to name a few professions. It is important to note that licensure and required certifications also drive the motivation to become accredited in these disciplines. In addition, program-level accreditation is an embedded requirement for licensure and certifications in these professions.

Validity occurs when outcomes are reliable and when the discipline works with the government, policymakers, employers and academics to identify and vet outcomes characteristic to the practice of that discipline. This is especially true in disciplines that are complex and rapidly changing (i.e., dynamic) and in which best practices may change often.

Let's consider several advantages that program-level accreditation conveys to a discipline and, by extension, how accreditation can help to mature a discipline into a profession.

• **Benefit 1:** Degree or diploma mills are problematic to a profession's legitimacy. CHEA defines *diploma mills* as "dubious providers of educational offerings or operations that offer certificates and degrees that may be considered bogus." Program-level accreditation greatly enhances degree integrity and reduces diploma mills. If any program can be an OSH program and any graduate can call him/herself an OSH professional, the field's credibility is diminished and the practice harmed. In the modern age of distance education, truth in advertising and legitimacy are difficult to ascertain.

• **Benefit 2:** Program-level accreditation, which focuses on a process of continuous improvement based on a constructive process of formative and summative assessment, allows educational and programmatic flexibility with inherent accountability. Accountability arises from integrating accreditation outcomes into the curriculum. Flexibility arises because the number of accreditation outcomes typically represents a small percentage of the total number of program outcomes. Therefore, programs that integrate accreditation outcomes have ample room to create unique niches in the market by institutionalizing characteristics, experiences, skills and other outcomes specific to them and their constituents' needs.

Flexibility requires constant interaction between programs and the practitioner community in a spirit of continuous improvement. Accreditation works to ensure that the education marketplace functions efficiently by providing a more complete information exchange between consumers (e.g., employ-

ers, grant-giving agencies), suppliers of education (e.g., faculty, programs, universities) and purchasers of education (students). Accreditation accomplishes this by requiring programs to have and to use industry-advisory boards.

• **Benefit 3:** Institutional accreditation fosters program-level accreditation. It is critical to the success of program-level accreditation. Institutional accreditation refers to that given to the entire educational enterprise by an external accrediting agency. However, institutional accreditation alone is insufficient to guarantee program quality because its standards operate necessarily at another level and it largely is not concerned with individual program SLOs. Thus, institutional accreditation is inherently insensitive to the characteristics of most interest to a profession, that is, the KSAs needed to define and guide professional practice. However, institutional accreditation fosters an environment of continuous quality improvement that can be tightly integrated with program-level accreditation.

• **Benefit 4:** Program-level accreditation motivates continuous quality improvement in a program's curriculum. A cross-sectional approach to SLOs is ineffective given the pace of change in the scientific literature and at the work site. Therefore, a quality control approach that is continuous (or longitudinal) is a central tenet of program accreditation. Program-level accreditation requires and enhances continuous quality improvement by both the institution and the program by integrating research into practice, and best practices into accreditation standards and outcomes. As such, it amplifies the relationship and bases of communication between academia and practitioners.

As a discipline evolves or begins to identify new characteristics, threats or similar, a healthy and robust program accreditation system would reflect such changes in its SLOs. Without a tie to program accreditation, a given program has less incentive to stay current with significant changes in how a discipline is practiced or even connected to the practitioner community.

Some may think that accreditation could be too constraining, puts programs or disciplines into a box, and stifles creativity or limits faculty expression. Accreditation neither harms nor restricts nor endangers any of the established professions that currently embrace it. Programs typically have more than enough room in the curriculum to integrate outcomes of interest to the faculty or constituents that are not accreditation outcomes.

Furthermore, professions that have embraced program-level accreditation (e.g., medicine, law, dietetics, nursing, engineering) have not reported declines in education quality or practice limitations attributable to accreditation. Indeed, they each depend on it. For example, the outcomes taught in a discipline's academic programs also function to define the discipline. Hence, and by extension, program accreditation becomes a hallmark of an established profession and enables that discipline to form occupational closure (Ferguson & Ramsay, 2010); this allows a discipline to protect itself from

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Practitioners today have tremendous opportunities to shape the future knowing what emergent challenges OSH professionals will face.

unqualified individuals, dubious providers and diploma mills.

• **Benefit 5:** Program-level accreditation supports transferability and articulation of academic credit to other institutions. This is an increasingly important characteristic given the growth in OSH programs at the associate, undergraduate and graduate levels over the past 5 years.

• **Benefit 6:** Accreditation functions to support degree integrity both within an institution and outside of it. From the inside, accreditation requires organizations to function honestly and competently, and to have all necessary management controls in place to ensure that the organization behaves accountably and efficiently, and effectively provides its entire array of services. Thus, accreditation helps an institution develop greater public confidence in maintaining the highest standards of education. It also provides a basis on which colleges and universities can assure the public that these institutions voluntarily comply with a common set of requirements and standards.

Views on Degree Integrity

Lending their support to the benefits of accreditation, and casting the position of ASSE, the world's oldest professional safety organization, past ASSE presidents have consistently called on the community of scholars and practitioners to consider how to ensure the profession's future relevance. Over the past 5 years, ASSE leaders have consistently asserted that education adds value to the discipline and have clearly recognized that students are a profession's future. These leaders have also issued strategic calls to ensure continued movement toward the professionalization (pursuance of becoming a profession) of the discipline. Consider these excerpts:

2013-14 ASSE President Kathy A. Seabrook, CSP, CFIOSH, EurOSHM: ASSE offers many resources that you can use to advance your education, gain new skills and knowledge, and access expertise across a more than 35,000-member network. All of these will help you deliver greater value professionally and advance your OSH career. (www.asse.org/professionalsafety/pres-archive/1310.php)

2012-13 ASSE President Richard A. Pollock, CSP: In 1995, our profession focused little on accreditation and credentialing. Today, unqualified practitioners are a key concern, and we must act to protect our profession. . . . (www.asse.org/professionalsafety/pres-archive/1301.php)

2011-12 ASSE President Terrie S. Norris, CSP, ARM: We are standing on the brink of our next century of protecting people, property and the environment. . . . We are committed to advancing the profession through innovation, thought leadership, and objective, unbiased, science-based approaches to OSH practices. . . . We believe students and new professionals provide a pipeline to the future. (www.asse.org/professionalsafety/pres-archive/1107.php)

2010-11 ASSE President Darryl C. Hill, Ph.D., CSP: Students are our future. . . . By engaging students during their school years, ASSE provides a framework to help them expand their knowledge, develop competencies and get a start on becoming valuable corporate contributors. (www.asse.org/professionalsafety/pres-archive/1012.php)

2009-10 ASSE President C. Christopher Patton, CSP: Today's student members are tomorrow's professional members. We have an obligation to help them succeed and develop into highly skilled safety practitioners. (www.asse.org/professionalsafety/pres-archive/0909.php)

Through their vision and actions, these leaders are challenging the membership to look to the future to ensure that actions today prepare aspiring professionals to be essential contributors to employers' success. Somewhat paradoxically, as an association committed to protecting people, property and the environment, ASSE could suffer if it does not help ensure that students are truly prepared for such a mission.

How does the OSH discipline compare today along the dimensions of a profession? When compared to other baccalaureate programs preparing professionals such as dietitians, nurses, teachers, engineers, athletic trainers and physical therapists, a road map to the maturation of the discipline begins to emerge. Table 1 reveals the gap between our use of the term *professional* and their corresponding preparation.

Conclusions

An abundance of literature discusses the fundamental characteristics of accepted professions. Ferguson and Ramsay (2010) argue that the OSH field is a sovereign (albeit emergent) profession because it possesses several identified characteristics of a profession. However, anecdotal debates continue about whether OSH is a profession in the same manner as is medicine, law, nursing, engineering or theology, and accreditation is not widely adopted in higher education. Still, convincing evidence exists that OSH continues to emerge as profession and is consequently experiencing issues common to such a transformation. For example, Dower, O'Neil and Hough (2001), posit that emerging professions experience challenges related to government and private-sector recognition, and education and training.

Collectively, OSH practitioners should consider what actions will best serve the profession and the public in 20 years. Practitioners today have tremendous opportunities to shape the future knowing what emergent challenges OSH professionals will face. Several recommendations are offered to advance the profession and to achieve occupational closure:

1) OSH practitioners should contact colleges and universities in their geographic area to learn about and get engaged in their programs. Specifically, ask about joining the program's industry advisory committee, or teach as an adjunct. Explore why a

program is or is not accredited and ask how to help the institution engage in the accreditation process.

2) OSH academics can attend professional conferences and make their voices be heard. They can focus their scholarship on the larger problems of practitioners adding to the body of knowledge and explore solutions to workplace hazards beyond compliance, such as how to best measure and manage occupational stress, how to efficiently change adult behavior and how to demonstrate the OSH function economically. Academics can work more closely with practitioners to better understand why and what practitioners do that will generate a deeper appreciation of how to create science-based best practices.

3) Practitioners can explore how to support an internship, or serve as a guest speaker or as a mentor.

4) Employers should use "The ASSE Guide to Hiring the Right Occupational Safety and Health Professional" (ASSE, 2014).

5) ASSE and the OSH community should serious-

ly consider pursuing licensure as a means to incentivize academia to more widely adopt program-level accreditation. For the field to continue to emerge as a profession, it will likely require recognition from either state or federal government in the form of licensure. Licensure can protect a profession from unqualified persons acting disingenuously as members of that profession. This involves many complexities and will require development of common understandings as the profession continues to emerge. Although licensure was not discussed in detail in this article, it should be more deeply explored in subsequent research on occupational closure.

6) ASSE must construct and endorse a road map toward professionalization. Such a road map would have the following characteristics:

a) It would describe how the process of occupational closure would affect existing safety practitioners. For example, the authors view closure as a long-term process or a forward-leaning trajectory. That is, no one should be omitted or ostracized;

Table 1

Comparison of the OSH Profession on Dimensions Required for a Profession

		Dimensions required to be a professional (i.e., member of a sovereign profession)			
		Requires successful completion of specific core learning outcomes within a baccalaureate degree	Certifying agency requires applicants to meet educational and experiential requirements and pass x number of board exams	Pertinent program accreditation requires institution be regionally accredited	Internship or field practicum required by accreditation body
Comparator professions requiring a Baccalaureate of Science for entry into their profession of choice	Dietician <i>Registered dietician nutritionist (RDN)</i>	Yes	Yes, ASCEND	Yes	Yes, B.S. required, then additional 1-year internship
	Bachelor of Science Nurse (BSN)	Yes	Yes, CCNE	Yes	Yes, practicum rotations
	Teacher <i>Certified teacher</i>	Yes, state by state. Most states require successful passing of one to national exams to be a state-certified teacher.	Yes, state board of education offices certify teacher candidates and their respective college or university educator preparation program(s)	Yes	Each state defines, most require, practicums in area of teaching interest
	Engineer <i>Professional Engineer (P.E.)</i>	Yes	Yes, state licensure offices set requirements	Yes	Yes
	Athletic trainer <i>Certified athletic trainer</i>	Yes	Yes, CAATE. M.S. requirement being considered	Yes	Yes, practicum rotations
	Physical therapist	Yes	Yes, requires a doctorate of physical therapy (DPT)	Yes	Yes, practicum rotations
	OSH specialist	No	No	No	No

•Registered dietician nutritionist (RDN), Accreditation Council for Education in Nutrition and Dietetics (ASCEND) www.eatright.org/BecomeanRDorDTR/content.aspx?id=8094

•Teacher: www.teach.org or www.bls.gov/ooh/education-training-and-library/high-school-teachers.htm

•B.S. nursing: www.aacn.nche.edu/ccne-accreditation

•Engineer: www.nspe.org/resources/licensure/resources/licensure-faqs#licensure%20requirements

•Athletic trainer: Commission on Accreditation of Athletic Training Education (CAATE) www.caate.net

•Physical therapist: www.bls.gov/ooh/healthcare/physical-therapists.htm#tab-4

•OSH specialist: www.bls.gov/ooh/healthcare/occupational-health-and-safety-specialists.htm#tab-2

rather, they should be encouraged to pursue professional development (i.e., degrees from accredited programs, professional certification). However, to make continued and affirmative progress toward becoming a profession, structures and tools such as licensure, accreditation and certification must be more formally integrated and applied to future generations. Medicine did not become a sovereign discipline overnight. It takes a generation and a collective commitment by the federal government, private sector and higher education.

b) It would build on the work of this article, ASSE's Framing the Profession Task Force and ANSI Z590.2-2003 (R2012), Criteria for Establishing the Scope and Functions of the Professional Safety Position. While certification and licensure are characteristics of established professional identity (Ferguson & Ramsay, 2010), as an occupation matures, a more successful approach to professionalization includes not only these, but perhaps most importantly, widespread and uniform program-level accreditation. Unlike the new discipline in homeland security (Ramsay, 2013), OSH has a vetted set of SLOs that are based on research and are representative of professional practices, and the discipline works through a recognized accreditor (ABET). However, accreditation remains voluntary and most known OSH programs are not ABET accredited. Further, conventional wisdom and experience clearly indicate that neither the federal government nor many in the private sector uniformly require OSH job candidates to have degrees from accredited academic degree programs.

To advance the profession, accreditation must be widely required by employers and subsequently adopted by most if not all academic degree-granting programs. While the notions of professional licensure and/or mandatory certification remain controversial, each is merely a tool that mature disciplines have used to uniformly require program-level accreditation. Working together, these tools will ultimately enable occupational closure. **PS**

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