



The Evolution of OSH Curricula

Four Decades of Advancing the Safety Profession

By John W. Wells Jr.

IN BRIEF

- Today's OSH professionals face greater challenges than their predecessors. As the global marketplace evolves, workplace demands continue to challenge their abilities and skills.
- Over the past century, OSH has shifted from a reactive effort to reduce incidents to a proactive focus on developing safe working conditions.
- OSH professionals are becoming strategic business partners, demonstrating their ability to affect the bottom line. Future success will demand a higher level of professional commitment.

The OSH profession continues to evolve. Today's OSH professionals are specialists who have the ability to recognize, evaluate and implement risk control measures to protect people, planet and profit. As it relates to safety, risk is situational or circumstantial, and OSH professionals focus on forecasting potential losses in the areas of personal injury or property damage. It is OSH professionals' task to manage, reduce and remove potential risk by applying best practices and current technologies, simultaneously supporting top management in the implementation of effective safety systems.

According to BCSP (2011), the contemporary OSH professional must have a solid understanding of engineering, business, industrial health, laws and regulations, human behavior, education, training techniques, and computer and Internet technologies. Such a foundation allows OSH professionals to use qualitative and quantitative analysis of simple and complex products, systems, operations and activities to identify potential or existing hazards.

The likelihood of occurrence, possible severity, risk (a combination of probability and severity) and

associated costs form the OSH profession's parameters. OSH professionals are tasked with identifying a broad spectrum of hazards, implementing the best available solutions based on their knowledge of the safety sciences. Supplementing the sciences is a solid foundation in mathematics, business management, training and engineering principles. Safety professionals are found throughout all industries, in every aspect of daily life. Sherrard (2007) alludes to the fact that OSH is an integral part of almost every system used today.

The emerging role of the OSH professional continues to transform from the traditional model to that of a change agent affecting all levels of an organization. Safety is now seen as a business function that affects the corporation as a whole (Groover & Spigener, 2008b; 2008c). Safety as a science is expected to be an integral part of the actions and behaviors of all employees. The drive to discover new methodologies that create broader employee engagement has prompted organizations to explore new resources for the OSH professional. Through innovation, management systems continue to present a multitude of challenges to the OSH professional.

Traditional Safety Curricula Shaping Professionals

Programs of study in OSH have a relatively short history in higher education compared to other professions. Prior to OSHA's creation in 1972, few institutions offered degrees in occupational safety or safety engineering. Consequently, those responsible for safety compliance lacked formal education and were typically assigned safety responsibilities based on experience.

Soule (1993) recognized the lack of consistent guidelines for occupational safety curricula across the U.S. In addressing the inconsistencies, Soule

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attempted to measure the perceived strengths and weaknesses of the existing safety curricula. Surprisingly, environmental issues were deemed the weakest in the curricula, followed by management skills, computer applications, workers' compensation and risk management. Soule ultimately described the safety professional in 1993 as a well-rounded multidisciplinary generalist.

Throughout the 1980s, ASSE and BCSP separately recommended basic core curricula as more universities began to offer safety degrees (Charehsazan, 1994). Both organizations eventually realized their common goal and jointly began proposing core curricula.

In response, Charehsazan (1994) constructed an instrument based on 29 professional competency areas for OSH professionals. Charehsazan asked safety professionals and academic leaders to rate the relevance of those competencies as they applied to the safety profession. The competencies encompassed the majority of the core curricula found in engineering-related degrees at the time of the study. This research evaluated the perceived minimum curricula required for safety students. The study population consisted of 72 universities offering safety-based curricula as recognized by ASSE in 1984 and NIOSH in 1987.

Those surveyed rated the following competencies as most relevant for inclusion in OSH programs:

- introduction to safety (94.6%);
- safety and health (89.5%);
- chemistry (86.5%);
- rhetoric/composition (84.2%);
- industrial hygiene (84.2%);
- incident investigation (84.2%).

Charehsazan's (1994) and Soule's (1993) research revealed a lack of formal OSH curricula. These researchers determined that programs at that time were based on personal preference, interpretation and the perceptions of higher education professionals. Charehsazan's (1994) research helped justify the need for curricula that supported the premise that the safety profession was evolving into a highly specialized field, advocating that future safety professionals be educated through higher education programs of study rather than on-the-job training alone.

Using that research as a foundation, Blair (1997) continued to follow the evolution of the safety profession and academic curricula used in degree programs. He recognized that the modern safety professional was transitioning from a technical generalist to a program manager responsible for multiple staff and facilities.

By the late 1990s, safety professionals had established themselves as the technical experts, but were now being recognized as a value-added member of the organization transitioning into the upper levels of management. Although company safety programs were growing as a result of loss control efforts, increased regulatory compliance and increased litigation continued to shape the profession.

To identify evolving critical competencies necessary for inclusion in safety curricula, Blair (1997)

created a survey instrument based on the 1991 ASSE curricula standards for baccalaureate degrees in safety and the management competencies framework developed by Quinn, Faerman, Thompson, et al. (1996). He randomly selected 450 CSPs from BCSP's 9,000-member pool and 137 colleges recognized by ASSE as offering safety-related degree programs.

This research determined that management competencies had the highest perceived impact on safety program effectiveness versus the technical aspects of hazard reduction through engineering practices. Blair's (1997) research also supported the need for an increased emphasis on management curricula as opposed to the historical recommendation of engineering-based curricula by ASSE and Accreditation Board for Engineering and Technology (ABET).

Curricula Change

At its most basic visual representation, the safety profession continues to support the human-machine-environment principles that have been explored for decades. As a result, current curricula and the traditional safety paradigm continue to emphasize the prevention of occupational incidents. However, a new paradigm that encompasses ethical decisions and prevention through design (PTD), combined with the evolution of occupational safety and health management systems (OSHMS), is emerging to meet the demands of an ever-changing global community.

Over the past 4 decades, OSH has advanced rapidly compared to other professions. Initially, the profession focused on regulatory compliance and meeting the minimum requirements of standards. In the 21st century, safety professionals are being challenged to continually evolve by creating new methodologies and systems, and affecting perceptions, while serving as transformational leaders influencing company cultures and managing complex safety systems (Groover & Spigener, 2008a). As technology evolves, OSH professionals must similarly evolve to stay abreast of those changes, maintaining their relevance as technical experts and highly credentialed program managers.

Looking to the future, higher-education leaders must ensure that students are presented the latest curricula necessary to prepare them for the dynamic OSH profession. However, educators and safety professionals recognize that preparing industry for members of the Millennial generation and beyond presents additional challenges. Universities are in the midst of a technological renovation. Many have invested millions of dollars over the past decade to update their learning systems to incorporate the latest technology (Clayton-Pedersen & O'Neill, 2005). The creation of new learning systems coupled with the latest technology has kept universities motivated to meet future demands (Lippincott, 2005).

In 2012, ASSE (2012) listed 194 U.S. campuses with safety and health degree programs. Of those, only 10 programs were accredited by ABET for having an associate of applied science, bachelor of science or master of science degree. Of those, only one

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university had an accredited program at both the undergraduate and graduate level (ABET, 2012).

A Look Ahead

The increased focus on OSHMS continues to precipitate changes throughout higher education. As the demand for well-rounded safety professionals increases, the number of universities offering degree programs that incorporate concepts such as PTD must continue to grow.

In response to the changing global market, the safety profession has seen a transformation in management style and principles. Organizations are focusing on cultural changes in employees' work ethic to accept equal shares in the process while partnering with management to reduce safety liabilities. Companies are demonstrating their commitment to enhancing employee safety by investing in systems that help OSH professionals and management transform culture (Groover & Spigener, 2008b). As the role of safety professionals continues to expand to fill global demands (Laws, 2007), higher education with its new learning systems will determine how well safety professionals of the future will meet the needs of the global market.

Higher education must construct curricula that will prepare future safety professionals to successfully navigate the global waters ahead. In response to the growing popularity of OSHMS, institutions have begun to address topics such as PTD, ANSI/ASSE Z10, National Mining Association's CORE-Safety and OHSAS 18001. Such programs continue to gain traction in safety curricula while new models are continually being presented to industry.

Traditionally, OSH professionals have managed a multitude of programs independently from other disciplines without the ability to create a singular system that is recognized by management and serves as the vehicle in which to achieve the corporation's goals. Through system creation and recognition, authors on this subject believe traditional safety programs are afforded the ability to excel as singular systems due to an underlying interdependency among all management programs (Haight, Yorio, Rost, et al., 2014). Managers are quick to discover that the dissection of such systems back into their individual programs does not change the safety profession's core objectives. PTD has in fact been a focus of safety professionals for decades based on their knowledge that occupational safety is not the sole endeavor of one individual, but rather a shared system of issue resolution through mitigation or elimination that begins at the design phase or through effective systems management.

Emphasis must be placed on the incorporation of safety management curricula because the traditional safety role has evolved to the levels of manager, coordinator, director and vice president within most corporate structures. Ultimately, higher education will be tasked with incorporating PTD and OSHMS into curricula, and with engaging other management and engineering disciplines to help them understand their role as it relates to occupational safety and health. **PS**

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