TODAY'S SAFETY PROFESSIONAL: Manager

It has been 30 years since passage of the OSH Act—and, arguably, the birth of the formal safety profession. While professional organizations such as ASSE existed before the Act was passed, its promulgation established a formal, nationally recognized priority to prevent workplace injuries and illnesses.

As this millennium opens, it is time for safety professionals to look back and review the profession's paradigm—defined as a "model, theory, perception or frame of reference" (Covey 23).

THE QUESTION: ARE SAFETY PROFESSIONALS MANAGERS OR ENGINEERS?

One key area in which safety practitioners must reach agreement—or at least develop a better understanding of—is what the primary focus of safety professionals should be. This issue strikes at the heart of the safety discipline itself. Are safety professionals primarily managers or primarily engineers?

To address the engineering and management roles in the profession, ASSE created a management division/practice specialty within its membership (Blair 20). In 1980, National Institute of Occupational Safety and Health sponsored a symposium, "A Dialogue Between Two Communities" to further address the dual functions of practitioners.

Today, the American Society of Safety *Engineers* (emphasis added) is a leading professional society for safety practitioners. Accreditation Board for *Engineering* and Technology (ABET) is the organization that accredits academic safety programs. In addition, the Board of Certified Safety Professionals (BCSP) will "waive the Safety Fundamentals Examination" for select professional designations—a list that includes a "professional *engineer* (P.E.) [designation] from the engineering registration board for any U.S. state or territory" (BCSP 5).

Someone with no safety knowledge could look at these facts and logically conclude that safety practitioners are, in fact, engineers. Is this the case, however? In the author's opinion, the profession should assess the current research to determine whether safety practitioners are engineers, managers or both. To that end, this article reviews what current research indicates about this debate.

THE RESEARCH

Ferry performed some early research on this topic in 1973; the results are reported in "A Paradigm For Designing A Safety Curriculum In American Higher Education." He used the Delphi technique to survey 100 members of the National Safety Management Society (NSMS), an organization in which membership is open to anyone with management responsibilities related to loss control, personnel procurement, property, engineering, finance or any other assignment with a functional responsibility to control accident losses.

Although selecting NSMS members rather than members of a group such as ASSE could result in responses more favorable to the management discipline, Ferry believed this process would produce a more heterogeneous group that would better represent the safety profession as a whole.

> The membership of the National Safety Management Society is believed to be representative of the safety profession; however, the title of the organization suggests an emphasis on management that might not be acceptable to those who would place emphasis in another area (90).

Ferry's work indicates that the manager vs. engineer debate has been with the profession for close to 30 years. His research of safety curricula found that the "first efforts toward a four-year curriculum were heavily engineer-oriented." According to Ferry, a 1963 study by Tarrants reported "no reason to mention management" (31).

Participants in Ferry's survey received a questionnaire asking them to "list competencies for present and future college safety curriculums" (49). They identified 189 subjects, which were then rated based on five degrees of importance—from extreme to none—over the next two rounds (49).

In the final round, respondents were asked to place the subject in graduate or undergraduate curriculums. At the same time, a similar questionnaire was sent to 30 doctoral students at the University of Southern California's Schools of Education. This group was also asked to "place subjects in levels of associate, bachelor's or advanced curriculum" (49-50).

Based on the results, Ferry divided the 189 subject areas into academic levels (associate's, bachelor's, master's degree); he also ranked them by degree of importance based on each academic level. Still, Ferry stated that the study was based on what practitioners "felt would be necessary to do the job 10 years from now" (88).

One key finding was that safety professionals would increasingly "use communication skills and sophisticated managerial techniques" (87-89). Although Ferry found that safety professionals felt communication skills and managerial techniques would be key skills in the future, he also

This question has been the topic of debate since the advent of the formal safety profession. Does current research offer a clear-cut answer?

Engineer?

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indicated that the managerial emphasis of the group would produce results others might not accept (90). Based on these findings, he called for further research. "The gap between what is needed and what we think is needed is so great that it suggests we must research our own research needs in the field" (91).

In 1985, Dillon conducted a study entitled "Corporate Safety Manager Performance Expectations." He sought to "determine those performance expectations that appear to be essential for individuals who occupy the position of corporate safety manager" (4). Dillon's goal was to help practitioners define who they are and what they do (5).

Dillon also used the Delphi technique. He sent 105 questionnaires to "jurors" who were asked to rank a list of performance objectives; this list had been developed based on a review of the literature (27, 28). Using a one-way analysis of variance (ANOVA), several findings about performance expectations were uncovered (37).

According to respondents, the highest-rated performance objective was "seeking active support for safety function affairs from higher-level management of his/her enterprise." The next-highest-rated area was serving as a "consultant to management for the development of policies and regulations," followed by "developing safety-related policies for the organization" (62). Based on lack of feedback regarding technical skills, Dillon's research appears to favor the safety practitioner as manager, although a review of his questions shows them to be more management-oriented.

Research in this area continued in 1993, when Soule authored "Perceptions of an Occupational Safety Curriculum by Graduates, Their Employers and Their Faculty." This study was performed "to investigate the extent to which graduates of an occupational safety degree program, as well as their employers and faculty, believe their curriculum prepared them for responsibilities associated with their current position" (iv). Specifically, this study attempted to determine the strengths and weaknesses of the safety science curriculum at Indiana University of Pennsylvania (IUP) (4).

To gather data, Soule developed three separate questionnaires—one for graduates, one for employers and one for faculty; he noted that each group would be uniquely influenced by its particular position or status (39). Developed after a pilot study, the questionnaires contained 103 responses plus open-ended questions (45). A total of 246 of 602 graduates responded. Of these, 222 indicated that they had given a copy of the survey to their employers (as requested); 108 employers responded. All six faculty members responded (50-51).

Graduates were then divided into subgroups. One group had received a degree in safety management (prior to 1983), while the other received the currently offered degree in safety sciences. These subgroups were then further divided into manager and non-manager subgroups (45). Soule used the chi-square to check for homogeneity among groups (46).

Although Soule found that IUP was successful in many areas, "the most significant weaknesses perceived by all three respondent groups included 1) environmental management, 2) management skills, 3) computer applications, 4) workers' compensation (WC) information and 5) risk management/insurance areas" (71). He recommended that the curriculum be expanded to better encompass "computer applications and management skills" (84).

His study also demonstrated a desire for training, not only in the sciences, but in areas such as behavioral science, environmental management, insurance, interpersonal skills, risk management, salesmanship, train-the-trainer and WC. According to Soule, one of the "most common and most emphatic [comment] from supervisors" was for "graduates to possess and be able to use effective management skills." He concluded that supervisors desired safety graduates to be "more than just a technician" (86).

It should be noted that Soule expressed some frustration in the research results. In response to research which demonstrated that technical skills are valuable, the IUP program had been changed in the early 1980s to be more technical in nature. Still, since a finite amount of time is available in a baccalaureate program, it is difficult to teach everything—both management and technical skills—that employers desire in a new graduate. Consequently, he concluded, administrators might have to choose an either-or approach when deciding whether to train future safety professionals as managers or engineers (93-94).

Soule's research is valuable in two respects: 1) It shows the two unique sets of skills (technical and managerial) that safety practitioners need. 2) It begins to highlight the problem universities face in trying to meet a multitude of objectives in a four-year safety program. Those trained in technical skills as compared to those trained in managerial or communication skills (through a traditional liberal arts program) are assumed to graduate with

uniquely different skills and abilities. While desirable for all safety practitioners to have both, one must consider human limitations and wonder whether this goal is realistic. Soule's observation that managers want safety practitioners to be more than just technicians is important, however. A person could be highly proficient in safety and technical skills, yet remain ineffective if s/he cannot communicate.

In 1994, Ferguson's dissertation provided "An Examination of the Major Content Topics Included in Baccalaureate Safety Curricula." Based on the belief that practicing safety professionals are best-qualified to design safety curriculum, he surveyed 200 CSPs randomly selected from approximately 8,000 CSPs listed in the *1993-1994 Board of Certified Safety Professionals Directory.* To obtain this designation, an individual must meet certain educational and experience requirements, and pass two national exams. Ferguson believed the *BCSP Directory* provided a "more-qualified list of safety professionals who were in a better position to evaluate safety curricula than lists of professionals from other national safety organizations" (34).

The study had four objectives:

1) Determine the importance of the major content topics (for inclusion in an undergraduate program in safety) from a safety professional's perspective.

2) Identify what portion of a safety professional's job activities are devoted to the major content topics.

3) Develop a priority-based list of content topics based on both perceived importance and use in current job activities.

4) Identify new knowledge and competencies important for a safety professional five years from now (38).

Ferguson received 125 responses to his questionnaire. Several findings are noteworthy. First, 34 of the 35 content areas in which future safety professionals could be trained were identified as "either somewhat important or very important"; the one "not important" area was calculus, which is a requirement for ABET safety program certification (76). The survey also revealed that practicing safety professionals felt the five preparatory courses (calculus, business law, physics, statistics, life sciences) required for CSP certification were "not important for proficiency in the safety field" (77).

Respondents also indicated that they "did not use" one professional topic (systems safety) or that it was a minor part of their job requirements. "Rarely used" courses included construction safety, toxicology, industrial ventilation and product safety, which are also required for ABET certification (78). Ferguson noted that certain safety professionals used some of these skills regularly, but this was largely based on the responsibilities of their position (for example, as a toxicologist).

Through these results, Ferguson demonstrated that, despite significant agreement with what colleges and universities are teaching, sharp disagreement exists between CSPs and certification bodies. An even greater concern was not what *is* being taught, but what *is not* being taught, even in ABET-accredited safety programs.

He also asked respondents to suggest topics that colleges and universities might consider teaching. Topping the list were quality management, international safety practices, financial aspects of safety, CSP examination preparation and salesmanship (76). The responses indicated that four areas—hazardous materials, risk management, ethics and workers' compensation—which ranked in the top 20 of all responses made up "a major portion" of respondents' job activities, although none of these "so important to practitioners" topics were required by ABET (78).

When one reviews Ferguson's results, and compares them with those of Ferry, Dillon and Soule, it appears that practitioners see the need for greater emphasis on soft skills and management skills, and less emphasis on math, science and engineering skills. This does not mean the research is rejecting these "technical" skills; rather, it suggests that a lesser degree of emphasis on these disciplines is warranted. Although Ferry's results may be considered outdated (since they are now more than 25 years old) and Soule's too narrow in focus (since they cover only one academic program), combined with those of Dillon and Ferguson, this research should not be ignored.

In 1997, Blair conducted a study on the "Occupational Safety Management Competencies as Perceived By CSPs and Safety Educators." The two major purposes of this study:

1) Develop a list of management competencies for safety professionals.

2) Determine the importance of management competencies needed by safety professionals (7).

Blair performed a random sample of 450 CSPs selected from the *1995-96 BCSP Directory* and educators from colleges and universities identified through the 1996-97 ASSE publication, "Safety and Related Degree Programs" (73). A pilot study was performed with three safety educators and three CSPs (79).

Following this study, 587 surveys were mailed; 245 were returned—a 41.7-percent response rate. A total of 46 states were represented (84-85). More than two-thirds of respondents had more than 15 years' experience, and 54.3 had at least a master's degree (although inclusion of faculty members potentially skewed the educational level of the overall group) (88).

The results showed a sharp difference in how practitioners and educators view the safety role. Blair concluded that universities should "emphasize the communication aspect of safety," as many in the field, although technically competent, cannot "effectively communicate with others" (130). He also concluded that safety curricula often focus too heavily on the technical aspects of safety at the expense of managerial and communication skills.

> Safety professionals entering their first career position in safety have the technical knowledge to implement safety programs but often lack the non-technical skills to interact with people and management to make programs effective and successful (1).

Blair also warned that:

> Safety professionals may be able to overcome a lack of management commitment and support by presenting a convincing cost/benefit analysis to the organization management. The safety professional [who] cannot do so may not add value to the organization, and eventually lose his/her position as a result (132).

Two key points of this research should be noted. 1) Like the other researchers, Blair did not reject the technical aspects of safety; rather, he found that managerial and communication skills are equally important. 2) Like Ferguson, Blair based his research and conclusions on input from CSPs. Certainly, CSPs are a key constituency within the safety profession. Blair and Ferguson's studies raise real questions about the current emphasis on technical skills.

THE CURRENT SITUATION

Education and certification are two hallmarks of a profession. Based on educa-

tion and certification criteria, the safety profession emphasizes technical and engineering skills. According to the ABET website, to be accredited, an academic safety program must require courses in calculus and statistics (two areas that did not rate highly in the research). Science requirements include two courses with laboratories for physics, two courses with laboratories for chemistry, including organic, and one course with laboratory for human physiology, human anatomy or general biology (www.abet.org/rac/RAC_99-00_Criteria.htm).

In the area of certification, the Fundamentals Exam for the CSP is technically oriented. It covers basic and applied sciences (25 percent); program management and evaluation (18 percent); fire prevention and protection (14 percent); equipment and facilities (19 percent); environmental aspects (14 percent); and system safety and product safety (10 percent). Basic and applied sciences include such broad topics as math, physics, chemistry, biological sciences, behavioral sciences, ergonomics, engineering and technology, and epidemiology. By looking at these requirements, one could easily conclude that safety practitioners are, in fact, engineers.

CONCLUSION

Are safety practitioners managers or engineers? Certainly the boards that accredit safety programs and certify safety professionals are weighted toward the technical skills of an engineer. In fairness, it is difficult (if not impossible) to measure communication skills or management abilities using a computer-generated multiple-choice test. Still, one must wonder how many practitioners are professionally certified, yet lack the communication and managerial skills needed to be effective. And isn't effectiveness the true hallmark of a professional? One must also wonder how many effective safety managers will have difficulty becoming certified—or will never be certified—because they lack the academic preparation emphasized in current certification exams.

The research does not completely reject the technical skills that are being taught, nor does it reject the technical skills required to pass certification exams. The practitioners whose experience formed the research results were clear that a safety practitioner with excellent technical skills, yet lacking communication and managerial skills, could be no more effective than someone with excellent communication and managerial skills but none of the technical knowledge required of safety professionals.

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In the author's opinion, greater emphasis should be placed on managerial skills in professional education. In addition, certifying boards should reexamine the importance of managerial, business and communication skills to determine whether current certification criteria is excessively weighted toward quantitative preparation.

The ideal safety professional has a balance of technical and managerial skills. To be effective, a safety professional must be both engineer and manager. When this equation falls out of balance, it creates a rift between the "safety engineering" school of thought and the "safety management" school of thought. This rift can only prevent safety from being seen as a true profession—and it threatens to further divide the two camps whose collective energy should be focused on protecting employers and employees who count on them. ■

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