

On the Future of the SAFETY PROFESSION

By Fred A. Manuele

IN ADDRESSING THE FUTURE OF THE SAFETY PROFESSION, I would like, first, to review what I believe to be a needed understanding of who we safety professionals are and of the generic base of our existence. Then, I will discuss what I perceive to be evolving in our profession, and the attendant needs.

Since I have been in too many situations in which senior management personnel did not understand the role of the safety professional, I have been very pleased with two recent developments that define our function.

Particularly since it has been nearly impossible to find a sound and explainable definition of safety in our literature, I believe that the National Safety Council took a significant step forward by including in its *1989 Annual Report* a definition of safety with which thinking safety professionals can be comfortable.

Safety was defined as “the control of recognized hazards to attain an acceptable level of risk.”

Why do I consider this definition to be important? As a very beginning, a profession ought to be able to describe its practice in logical and understandable terms.

An additional action of significance was taken at the February 1990 BCSP meeting when a definition of safety practice was written:

Safety practice is the identification, evaluation and control of

hazards to prevent or mitigate harm or damage to people, property, or the environment. That practice is based on knowledge and skill as respects applied engineering, applied sciences, management, and legal/regulatory and professional affairs.

If we are to move the state of the safety profession forward, we ought to have clearly established definitions of the terms “risk” and “hazards,” as used in the statements of the National Safety Council and BCSP. Having definitions of those terms would help in establishing the generic base of what we as safety professionals do.

Definition of Risk

Arriving at a definition of “risk,” in relation to my professional endeavors, was not easily accomplished. Risk is a term used in far too many contexts, with far too many meanings. Nevertheless, if I am to use the term, I ought to be able to define it. Let me explore with you how I arrived at the definition of risk that I will use.

While researching for a paper on risk assessment, I sought a definition of the term “risk” which would give plausibility and understanding to the goals and methodology of risk assessment. I eventually decided on and became comfortable with the definition by William W. Lowrance in his text *Of Acceptable Risk: Science and the Determination of Safety*:

Risk is a measure of the probability and severity of adverse effects. (Lowrance, 1976)

Lowrance’s definition gave me, as a consultant in hazards management, a measure of probability and a de-

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The safety profession continues to evolve as its practitioners adapt to the changing world of work and business, apply advancements in science and technology, and respond to world events. Yet, regardless of the era, safety professionals consistently demonstrate strong dedication to making the world a safer, healthier place.

This article from the 1990 *Professional Safety* archives explores the relationship of hazards management to the concept of risk control, describes developments in defining the role of the safety professional, and offers perspective on what was evolving in the field of hazards management as well as the accompanying needs.

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termination of the severity of adverse results. It promotes a thought process which asks: Can it happen, how often can it happen, and what will be the results if it does happen? It was also close to the definition of risk in a text by Rowe titled *An Anatomy of Risk*. Rowe's definition, which provided an added comfort factor, was:

Risk is the potential for realization of unwanted, negative consequences of an event. (Rowe, 1988)

An actuary was asked to review my paper. In his opinion, I had chosen what he referred to as an "expected value concept" rather than a "variance concept." I recall him saying that if there was no possibility of variance, no element of uncertainty, there was no risk. Also, he was emphatic that the two concepts were not compatible.

As he spoke of uncertainty, I developed a better appreciation of the possible sources—actuarial and macro-insurance—of the term "uncertainty" as used in the many definitions of risk contained in risk management literature. This exercise gave emphasis to the variety of uses of the term risk and the importance of having a definition relating to my work, expressed in a language that conveyed a relationship to my purposes. I have difficulty using definitions of risk which emphasize "uncertainty" in attempting to establish a generic base for my work.

My actuary friend included this comment in his critique:

You decided to choose Lowrance's definition of risk which is an expected value concept. I think it should be mentioned that the term "risk" will be used by other professional groups (i.e., actuaries) in a different context. It is not critical that everyone choose the same definition, but it is critical that when two groups communicate, they must recognize that the word "risk" may not be unambiguous.

Indeed, in trying to seek a better understanding of hazards management, as we conduct the practice, we must also appreciate the many uses of the term risk at an executive level, such as those pertaining to the speculative nature of an enterprise, for which we can expect a limited involvement. Risk is a term that executives hear and use in many contexts.

For our professional purposes, we have to arrive at a definition of risk that clearly conveys an image of a particular field of endeavor. I stayed with Lowrance's definition and worked with the expected value concept.

Lowrance defines the nature of risk with which all of us are engaged whose purpose is to prevent or mitigate adverse results. Lowrance's definition would require risk identification and risk evaluation. To emphasize, through repetition, it prompts a thought process which asks—can it happen, how often can it happen, and what will the results be if it does happen. Application of the definition

requires a measure of probability and a determination of severity of adverse results. I believe we could become comfortable with Lowrance's definition of risk.

It follows that we should ask, from whence does risk derive? Risk must have a source, which presents the potential for adverse results. And that source is hazards.

Hazards Management

Hazards are defined as the potential for harm or damage to people, property or the environment. Hazards include the characteristics of things, and the actions or inactions of people. (These statements were included in the definition of safety practice written at a BCSP meeting.)

Hazards are the generic base for all of us engaged in the prevention or mitigation of adverse results. All risks with which we are concerned derive from hazards. There are no exceptions, whether the function is called safety, loss control, risk control, environmental affairs, industrial hygiene, fire protection, product safety, loss prevention, safety engineering, occupational health, hazards management, etcetera. There are no exceptions. All risks with which we are concerned derive from hazards.

As an indication of the emergence of the term "hazard" as being generic to what safety professionals do, allow me to quote from an article titled "Toward a More Universal Model of Loss Incident Causation" by Robert E. McClay.

Safety science can be defined (for purposes of this article) as the principles and processes for hazard identification, evaluation and control together with the principles and processes for assessing the risk posed by those hazards.

Everything included within the scope above has a common ultimate objective, that being to prevent death, injury and damage resulting from unacceptable, uncontrolled hazards. (McClay, 1989)

Thus, I'm engaged in the practice of hazards management, a most fluid and ever-changing field of endeavor.

It is important that we know of the transitions that could have an impact on the safety profession, and on us as individual safety professionals. I would like to explore with you some of the transitions that I believe either will or ought to take place.

•To begin with, I expect that there will be particular efforts to examine some of the premises we have held dear and whether we are spending our time on the right things. There never will be enough time to do everything we want to do.

We should be evaluating our time expenditures and reorienting our activities to achieve the greatest good in relation to actual needs and opportunities, the result being that more time is devoted to major event potential and prevention.

We must pay more attention to what is known as Pareto's law as represented by the Employers of Wausau (n.d.) study titled *Pareto's Law and the "Vital Few."* Pareto's observation, from analyses of monetary patterns, was that the significant items in a group will normally constitute a relatively small portion of the total. Those in financial fields often refer to the 80-20 rule, with 20% of the statistical body representing 80% of the total impact.

That is the concept displayed in Employers of Wausau's "The Vital Few" exhibit. It indicates that 86% of total workers' compensation injuries represent only 6% of the total cost; 14% of total injuries represent 94% of total costs; and 2% of total injuries (a part of the 14%) represent 70% of total costs.

My understanding is that the Employers of Wausau study out of which these conclusions were drawn included several hundred thousand cases. In actual comparisons, the experiences of individual companies may not fit precisely the suggested distribution. But, in every case the principle of the 80-20 rule applies, if the body of data is sufficiently large.

Obviously, the 14% of total injuries representing 94% of the total costs include the most severe injuries. This leads to a recognition that the priorities of employees as to the prevention of occupational injuries and illnesses are the same as those of management. From both the employee's viewpoint and the employer's viewpoint, the most severe, and most costly, injuries are those that should be given priority consideration. This promotes some interesting thinking about how we spend our time.

For generations, many of us have offered as truth Heinrich's Foundation of a Major Injury—the 1-29-300 premise, which stated that:

. . . in a unit group of 330 similar accidents occurring to the same person, 300 will result in no injury, 29 will produce minor injuries, and 1 will cause a serious injury. (Heinrich et al., 1980, p. 61)

Bird and Loftus propose a different ratio:

. . . 1 disabling injury for every 100 minor injuries and 500 property damage accidents. (Bird & Loftus, 1976).

Usage of these bases gives support to the principle that if we take care of frequency we also take care of severity. And that is not always sound—if the severity potential is not represented in the frequency. Applying the Heinrich or Bird and Loftus concepts can result in our spending far too much misdirected time on minutiae.

There is not, in any place that I can locate, a body of research that supports the validity of either the Heinrich or the Bird and Loftus postulations.

In actual practice, it seems that the types and causes of the most severe injuries—the 2% that result in 70% of the costs—are not necessarily represented in the data pertaining to the remaining 98%. Dan Petersen, a prominent author of safety texts, suggests that the causes of severity tend to

be different than the causes of non-serious injuries (Petersen, 1982).

Only a few have proposed that the identification and evaluation of severity potential deserve their own place in a hazards management program. This means undertaking a study specifically to identify hazards that present exposure to significant danger or harm and giving priority consideration to them.

Whatever the field of hazards management—commercial vehicle safety, product liability prevention, the environment, fire protection, occupational safety and health—the 80-20 rule applies. In every field of hazards management, we may be spending far too much time on the less significant.

- Carrying this idea forward, I believe we can expect a greater emphasis on catastrophic risk assessment in every aspect of hazards management. Slowly, a broader awareness is developing at a board of directors and at a senior executive level that their responsibility for governance and stewardship requires that all significant risks, that catastrophic risks, have been assessed and that appropriate hazards management programs are in place.

- Of all of the subjects that I will mention, none has greater importance than the major emphasis necessary on our achieving an understanding of accident causation, which will have a bearing on our concepts of accident investigation and what we actually propose as hazards management measures. We have not done a good job of researching accident causation, which means that we may be doing a shallow job of accident investigation. We have accepted some inappropriate practices and shabby work for far too long.

There are some aspects of a safety program that give particularly strong messages to employees about what level of safety is actually acceptable to management. Accident investigation is one of them. Employees perceive very well what actually gets done after an accident occurs and are quite accurate in their interpretation of the reality of prevention measures taken in relation to what might be said by management about safety program intentions.

Also, it doesn't take much analysis to show that accident investigations are usually all too shallow and incomplete. Of greater concern, from a professional viewpoint, is that we may be proposing inappropriate or ineffective corrective actions because of superficial analyses.

I plead with hazards management professionals to evaluate and improve their accident causation knowledge and their accident investigation techniques. This is a subject about which I have previously written (Manuele, 1982). As to readings, I suggest Benner (1982) on "Five Accident Perceptions," Johnson (1980) on "MORT Safety Assurance Systems," and McClay's (1989) "Toward a More Universal Model of Loss Incident Causation."

- You can expect that ergonomics, the study of the relationship between a worker and the work

environment, will become a part of every occupational safety consultant's capability. Ergonomics will promote a greater emphasis on the significance of design and engineering of the workplace as respects accident causation. This transition is well along. It will affect how hazards management professionals perceive themselves and what they propose as to corrective action for the accidents that do occur. It is my understanding that OSHA expects to have ergonomics guidelines for industry in general issued by mid-August 1990. They will have a significant impact on how safety professionals spend their time.

•In many organizations, the safety, occupational health, environmental affairs and fire protection functions have come together under a single management. In some companies, this resulted from downsizing. In others, the awareness developed that it was inappropriate to separate occupational safety from occupational health, that the basic science of occupational health overlapped considerably with the basic science of the environmentalist, and that an effective communication and coordination with fire protection personnel was advantageous. The concept of a unified management of the entire hazards management function can be soundly supported.

•At the National Safety Congress held in October 1989 in Chicago, there was a program titled "Risk: Is Anything Acceptable?" Speakers offered their views on the concept of acceptable risk. Particularly with regard to how risks are assessed and how decisions on risks are made for governmental standards, public debates on the concept of acceptable risk are necessary. The National Safety Council has undertaken to conduct a broad-ranged symposium on understanding risk with a 1991 target date. Safety professionals should pay attention.

•My recent observations lead me to believe that fire protection engineers will become more involved in the management aspects of hazards management and safety professionals will become more involved in the design and engineering aspects of hazards management. It has been the practice that fire protection engineers most often propose solutions that are engineering or "fix-the-equipment" oriented and that too many safety professionals believe that safety programs can be based almost entirely on management systems and behavior modification.

It was a pleasure, recently, to be a participant in a discussion with fire protection engineers who took themselves to task for not examining the management system deficiencies out of which fire protection equipment failures arose. Safety professionals are being influenced, significantly, by ergonomics which requires an examination of just what kind of a workplace was designed.

•In too many places, workers' compensation costs have dramatically increased and senior managements are inquiring more frequently about the quality of hazards management programs. Within these overall increasing costs, stress-related workers'

compensation claims will become more significant. Assuredly, many organizations will be undertaking measures to improve safety program effectiveness. Also, there are beginning efforts to modify work environments to reduce stress claims.

In these processes, it should be understood that management obtains that accident experience which it establishes as acceptable—acceptable being the organization's perception of what management does; also it is impossible for there to be superior accident records if executive personnel do not display, by their actions, that they intend to have them.

•Surely, you will understand that greater attention will be given in many more places to crisis management and to disaster recovery plans. A beginning activity would be a risk assessment to determine the nature of possible emergencies to which a crisis management response or the initiation of a disaster recovery plan might be needed. As the work proceeds, a particular caution is appropriate: It will be much easier to develop a crisis management or a disaster recovery plan than it will be to keep one current and ready for the rare occasion when it is needed.

Safety practice evolves and different needs arise, all of which present interesting opportunities and challenges. Our place as safety professionals is to anticipate changing needs and to be in the forefront of the new developments necessary. **PSJ**

References

- Benner, L., Jr. (1982, Feb.). Five accident perceptions. *Professional Safety*, 27(2).
- Bird, F.E., Jr. & Loftus, R.G. (1976). *Loss control management*. Institute Press.
- Employers of Wausau. (n.d.). *Pareto's law and the vital few*.
- Heinrich, H.W., Petersen, D. & Roos, N. (1980). *Industrial accident prevention: A safety management approach*. McGraw-Hill.
- Johnson, W.G. (1980). *MORT safety assurance systems*. Marcel Dekker Inc.
- Lowrance, W.W. (1976). *Of acceptable risk: Science and the determination of safety*. William Kaufman Inc.
- Manuele, F.A. (1982, Oct.). Accident investigation and analysis: An evaluative review. *Professional Safety*, 27(10), 53-57.
- Manuele, F.A. (1987). A view of the future: Emerging trends in ergonomics. *Viewpoint*.
- McClay, R.E. (1989, Jan., Feb.). Toward a more universal model of loss incident causation. *Professional Safety*, 34(1,2).
- Petersen, D. (1982, Nov.). Professionalism: A fourth step. *Professional Safety*, 27(11).
- Rowe, W.D. (1988). *An anatomy of risk*. John Wiley & Sons.

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