



INNOVATIONS IN SAFETY MANAGEMENT

ADDRESSING CAREER
KNOWLEDGE NEEDS

Fred A. Manuele

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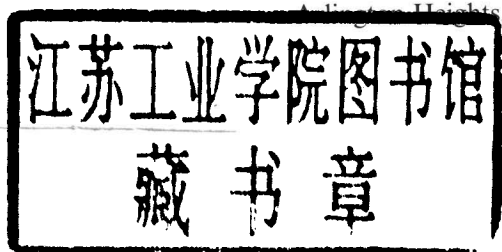
Innovations in Safety Management

Addressing Career Knowledge Needs

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Preface

The need for a book fulfilling career knowledge needs that has been addressed minimally by others arose from a survey made by this author of corporate and divisional safety directors. They were presented with the following scenario to obtain their perceptions of current and future knowledge needs:

You are planning a gathering of safety practitioners for educational purposes, and you want to have workshops on those topics for which you believe additional knowledge is required, considering current needs as well as looking ahead three to five years. What topics would you choose?

The results of this survey were both fascinating and surprising. When the data were summarized and a list produced of the seminars and workshops that interviewees thought were necessary, first priority was given to the need for a better understanding of the fundamentals of financial management. Safety professionals thus wanted to better understand the meanings and significance of the terms commonly used in business meetings, and executive decision making. How to establish one's value and communicate statistics in a language that management understands received second priority.

The first two chapters cover the basics of financial management and the communication of incident statistics in financial terms.

Chapter 3, on the theoretical ideal for optimum safety performance, was written in response to the request for further information on successful safety ventures.

Chapter 4 addresses a hierarchy of controls within tried and proven problem solving techniques to become The Safety Decision Hierarchy. This is entirely new work.

The safety practitioners interviewed knew that the author had participated in the creation of an Institute for Safety Through Design, and they presented a challenge of sorts. If knowledge about safety through design was important to the careers of safety practitioners, what subjects would be included in educational seminars? Thus, Chapters 5 and 6 were written to establish why safety practitioners need to know about hazard analysis and risk assessment, and to provide a primer on these subjects.

Chapter 7, on how to avoid bringing hazards into the workplace, is a logical extension of Chapters 5 and 6. It provides practical guidance to safety professionals.

Chapter 8 presents a method to extend a basic safety function—task analysis—to also address productivity, cost efficiency, and quality, and to further establish value. The origin of this chapter is the immensity of the data on ergonomics applications that have also resulted in productivity and cost improvement.

Since the use of risk-scoring systems is becoming prevalent, the subject was comprehensively researched and written about in Chapter 9. A new three-dimensional method is presented as an answer to emerging needs.

All the safety practitioners interviewed had an interest in behavioral safety and were interested in a seminar on current developments in that field. Chapter 10 speaks to that interest.

Chapter 11 provides a history of the safety through design movement, about which safety practitioners should have a fundamental knowledge.

Beyond a doubt, the practice of safety is in transition. This book addresses some of the new knowledge needs.

FRED A. MANUELE, CSP, PE

Acknowledgments

Critiques of the chapters in this book by colleagues were greatly beneficial, and these individuals deserve recognition. I express my thanks especially to Wayne Christensen, and to Thomas Cecich, Michael Douglas, Jim Howe, Edward Kornas, Gary Lovested, Bruce Main, Kristen McMurphy, Timothy McNamara, William Montante, John Polhemus, Thomas Selders, and Harry Taback.

Introduction

An abstract is provided for each chapter to serve as a ready reference on content for all to whom the book will be of value: safety practitioners, educators, and students.

1. A Short Course on Financial Management

Chapter 1 was written in response to the expressed need of safety practitioners for an understanding of the basics of business financial management, the language of finance, the budgeting process, the impact of adequate or inadequate cash flow, performance measures, the primary elements in a financial report, and how executive decisions are made. With this knowledge, safety practitioners feel they will be more effective in assisting their companies attain established goals.

2. Establishing Your Value: Communicating Incident Statistics in Financial Terms

Safety practitioners must realize that management relies on the statistical outcome of safety-related initiatives as a measure of performance, and that finance is the language of management.

Chapter 2 has three parts. Part One gives examples of financially related statistical analyses and presentations made by safety practitioners. Part Two is devoted to computing the financial implications of direct and indirect hazards-related incident costs. Part Three discusses other aspects of performance measures and their financial relationships.

3. The Theoretical Ideal for Optimum Safety Performance

Chapter 3 responds to the following question often posed by safety practitioners: How can we do it better and, at the same time, present a framework that should be considered by those who draft a safety management standard. A model is presented that emphasizes the importance of culture, which then creates a system of expected behavior that, in turn, translates into superior policies, standards, and procedures. This results in an inherently safer workplace.

4. The Safety Decision Hierarchy

Chapter 4 represents entirely new work. The literature contains fragments of information on what is called the hierarchy of controls. This chapter examines the decision making for risk elimination and control within the context of the principles of good problem-solving techniques. It is, in a sense, a dissertation on an orderly thought process for the elimination of safety problems. A model for the safety decision hierarchy is presented, and its origins and justification are discussed.

5. Why You Need to Know About Hazard Analysis and Risk Assessment

Safety standards and guidelines issued in recent years or in the process of development require or propose hazards analyses and risk assessments. This is a significant evolution. It has an important bearing on the knowledge needs of safety practitioners. Relevant standards and guidelines are reviewed in Chapter 5. Taken in their entirety, they are convincing predictors of the future and underscore the need for safety practitioners to know the fundamentals of hazard analysis and risk assessment.

6. A Primer on Hazard Analysis and Risk Assessment

Chapter 6 provides basic information on hazard analysis and risk assessment that will be sufficient, it is hoped, to serve the knowledge needs of safety practitioners. The following topics are explored: what a hazard analysis is, how a hazard analysis is extended into a risk assessment, the steps to be followed in conducting a hazard analysis and risk assessment, descriptions of the most commonly used techniques, and examples of two-dimensional risk decision matrices.

7. How to Avoid Bringing Hazards Into the Workplace

In Chapter 7, we discuss just how involved safety practitioners are in the design and equipment acquisition processes that serve to avoid bringing hazards into the workplace. The level of involvement varies from none to the near-theoretical

ideal. A composite is provided of the procedures in place at several companies to achieve hazard avoidance and control, and the procedures to be followed before new or modified equipment is released for operation. Also, a general checklist is included to serve as a reference from which a specifically tailored checklist can be developed for use in initial design reviews and for equipment acceptance. An appendix sets forth the near-ideal equipment design philosophy and practice in place at one major corporation.

8. Task Analysis: For Productivity, Cost Efficiency, Safety, and Quality

The idea for Chapter 8 arose during a review of data describing how successful ergonomic applications also impacted favorably on productivity, cost efficiency, and sometimes quality. A basic safety function, task analysis, is extended to include productivity and cost efficiency, or quality, and thereby also provides safety practitioners with an opportunity to further establish their value.

9. Risk-Scoring Systems

For many years, the typical practice has been to establish risk levels based on determinations of two factors: probability or event occurrence, and the severity of harm or damage that could result. Translating risk assessments into numerical risk scores is not necessary with such an approach. However, the world of risk assessment is in transition. Systems now in common use may be three or four-dimensional and require numerical risk scorings.

Chapter 9 reviews the origins of current transitions; the cautions to be considered in using three- and four-dimensional systems; three-dimensional, numerical risk-scoring systems in use; extended three-dimensional risk-scoring systems, which include a method to justify the risk amelioration costs in relation to the amount of risk reduction to be attained; and a four-dimensional risk-scoring system, now experiencing limited use, but for which broader use has been proposed.

A newly developed three-dimensional system is presented that can be applied for all risks of injury or damage that a safety practitioner is likely to encounter.

10. Current Developments in Behavioral Safety

In 1998, the American Society of Safety Engineers held a seminar on behavioral safety, and the presentations of several participants in that conference serve as the benchmark for Chapter 10. Since 1998, the content of the writings and speeches of these same speakers has been markedly different.

We review current acceptance of the following by some of the principle players: Behavioral safety is but one element in an overall safety initiative; for most hazard-related incidents there are multiple causal factors; application of the hierarchy of controls is the most effective means of reducing risk; and W. Edwards Deming got it right when he wrote that "performance does not

come from the individual ... but from the system." These developments are remarkable when examined in the context of earlier widespread beliefs in the field of behavioral safety.

11. The Safety-Through-Design Movement

Chapter 11 takes a global view of an emerging safety through design movement. The international harmonization of safety and quality standards is discussed, driven as it continues to be by European influences.

The following are presented: the adoption of safety through design principles by American companies; the benefits to be obtained through the application of safety through design principles; the actual safety through design model; emphasis on how applying safety through design methods avoids high cost or retrofitting; and many examples of how the principles may be applied in the real-world practice of safety.

Appendix

Reference is made in Chapter 9 on risk scoring systems to the early work of William T. Fine. His seminal paper entitled, "Mathematical Evaluations for Controlling Hazards," is a valuable resource. It is, however, not easily obtained, and so for this reason, the appendix here contains a slightly condensed version of it.

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1

A Short Course on Financial Management

INTRODUCTION

Why does this book contain a chapter on the basics of financial management, and what is its purpose? The idea for it originated in a study initiated by the author to identify emerging knowledge needs in the practice of safety.

A part of the study included interviews with senior-level safety professionals to obtain their comments on the subjects they considered significant in maintaining professional performance and for career enhancement. The following scenario was presented to 17 divisional and corporate safety practitioners, and 2 university professors:

You are planning a gathering of safety practitioners for educational purposes, and you want to have workshops on those topics for which you believe additional knowledge is required, considering current needs as well as looking ahead three to five years. What topics would you choose?

The results of the ensuing survey were both fascinating and surprising. When the data were summarized and a list was produced of the seminars and workshops that interviewees thought were necessary, the need for a better understanding of the basics of financial management was given first priority.

The safety directors interviewed had management positions. They had become aware that they could be more effective in assisting their companies attain established goals if they had a better understanding of the basics of financial management. They said that they would be more comfortable in their jobs and in business meetings if they had knowledge of basics such as:

- The language of finance and financial management principles
- How corporate budgets are prepared and managed
- The impact of adequate or inadequate cash flows
- The performance measures applied to managers
- The primary elements in a financial report
- How executives make decisions when resources are limited and they have to evaluate multiple expenditure requests

With this knowledge, safety directors say they can more effectively draft their hazard prevention and control proposals, emphasizing their favorable financial impact on overall operations, including applicable aspects of productivity and cost efficiency, as well as risk reduction.

Comments made by safety directors prompted the research for this chapter. Its purpose is to address their expressed needs.

AN EMERGING AWARENESS

As the following examples indicate, other management personnel feel that they would better perform their jobs if they had general knowledge of widespread business practices and the principles of financial management. A publication that addresses the subject is the "1998 White Paper, Loss Control 2000" issued by the American Society of Safety Engineers (ASSE). The White Paper was produced as the result of a panel discussion hosted by the Risk Management/Insurance Division to discuss the future of the loss control profession. It gives the results of those discussions, some of which relate to changes in the business environment that impact on loss control services. The following are a few of the subjects discussed in advising loss control personnel:

- Learn more about business management and operations
- Understand finance and accounting principles
- Cost/benefit and your worth to your employer

Further, consider this scenario: A president of a major division in a large and well-known company sensed a need to increase the business acumen of the management staff. Through a teleconferencing session, to which the senior safety personnel were invited, every line of the company's financial report was reviewed to assure that entries were understood and how the operations of each internal entity impacted on results.

Michael Muckian, in *The Complete Idiot's Guide to Finance and Accounting*, supports the idea that the operations of each internal entity impact on results. Consider these excerpts:

- It doesn't matter what your professional responsibilities are, your management responsibilities contribute directly to your company's profitability.
- Understanding how the company's finances work is simply good management practice.
- You'll be better able to manage your department if you understand the financial implications of your actions.
- A basic knowledge of accounting practices and principles is worth the effort that it takes to learn them (4).

BEING PARTICIPANTS IN ACHIEVING MANAGEMENT GOALS

In several interviews, concerns were expressed about the significant changes that have occurred in the business community, the greater expectations management has of safety practitioners, and their need to be perceived as providing value.

In *On The Practice Of Safety* (p. 1), the author set forth in the first chapter, "Transitions Affecting the Practice of Safety", what he perceived to be the paramount requirements of those having responsibility for operations, those with whom safety practitioners must interact in meeting their goals. Reference was made to two highly respected writers, Peter F. Drucker and W. Edwards Deming. Both of these individuals have had a major influence on the author's understanding of management concepts and practices.

Drucker, in *Post-Capitalist Society*, wrote this:

Economic performance is the first responsibility of a business. (Without economic performance) a business cannot discharge any other responsibilities, cannot be a good employer, a good citizen, a good neighbor (101).

Drucker makes essentially the same point as W. Edwards Deming did in his often cited "Condensation of the 14 Points of Management" in *Out of the Crisis*. Deming is world renowned with respect to quality management. He proposed that an entity should establish:

Constancy of purpose toward improvement of product and service, with the aim to become competitive and to stay in business, and to provide jobs (23).

As safety practitioners, we must understand and function within the directives given to management to achieve economic goals, to be competitive, to stay in business, and to provide jobs. Demands imposed by a highly competitive economy for more effective management performance are not going to diminish. They compel safety practitioners to be perceived as problem solvers whose counsel is sought because of their successes as participants in achieving management goals.