

# The Educator



AMERICAN SOCIETY OF SAFETY ENGINEERS

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**This Issue**

*Special Issue*

**Safety Professionals Handbook Debuts**

1

**An Interview with Joel Haight**

1

**The Safety Professionals Handbook: Table of Contents**

3

**Hazcom & Right to Know: An Inside Look at Section 2**

4

**Getting the "E" in SH&E**

5

**Fire Protection & Prevention: A Single Point of Reference for Practitioners**

6

**Ergonomics: Focusing on Active Injury Prevention**

7

## Safety Professionals Handbook Debuts

By K.L. Waller

After 8 years in the making, ASSE has released its most expansive publishing endeavor with *The Safety Professionals Handbook*. According to James D. Smith, past Vice President of ASSE's Council on Practices and Standards, the handbook provides practical and professional insight on important topics that safety professionals must address each day. Smith believes the first edition, a two-volume text, will be an excellent reference for veteran safety profes-

sionals and new professionals entering the field. The handbook will also offer guidance to seasoned professionals practicing in new areas or benchmarking against what they do today.

The book's two-volume format divides topic areas into two broad categories. This approach keeps similar topics together so readers may purchase only one volume if they choose, with technical fundamental science-related topics in

one volume and applied managerial topics in the other.

Rick Pollock, ASSE's Vice President, Council on Professional Development (CoPD), says the handbook would be the starting point for any SH&E professional in dealing with problems or issues. "The safety handbook would serve as a guideline on how to solve

*continued on page 2*



## The Safety Professionals Handbook: An Interview with Joel Haight

*In this interview, Joel Haight, Ph.D., P.E., editor-in-chief of The Safety Professionals Handbook shares an insider's perspective on how the book came together and what it will mean to the SH&E profession.*

**ASSE:** This book is nearly 8 years in the making (from the initial concept through to publication). Tell readers about the development process. How were the topic areas identified and refined? How were authors and reviewers identified and selected?

**JH:** The handbook concept was developed and put

into motion by a committee established by the Council on Professional Development. This committee developed a proposed table of contents and established the book's format. This included 12 topic areas and a consistent organizational breakdown within each topic area to include a chapter on regulatory issues, applied science and engineering principles, cost analysis and



*continued on page 8*

## Handbook Debuts

continued from page 1

problems as well as understand their scope and the factors to be considered," he says. "It will also help SH&E professionals have a common framework for understanding, solving and discussing the challenges they face and the key areas of interest for the profession."

Joel Haight, Ph.D., P.E., the handbook's editor-in-chief, says a taskforce established by the CoPD came up with the handbook concept and put it into motion. This taskforce developed a proposed table of contents and determined the book's format, which features 12 topic areas and a consistent organizational breakdown within each topic area. These areas include chapters on regulatory issues, applied science and engineering principles, cost analysis and budgeting, benchmarking and performance measurement and best practices.

Topic areas include many traditional areas of safety and health, such as emergency response, ergonomics, risk assessment and hazard control, engineering management, fleet safety, industrial hygiene, environmental management, workers' compensation, fire prevention and protection, personal protective equipment and training practices. To determine and confirm the book's contents, some 1,700 professional ASSE members were surveyed of which 900 responded.

"In my opinion, this was an incredible amount of input from all the right people," Haight says. "Once the outline was established and confirmed, I was asked to be the editor-in-chief, and we set about the author selection process."

ASSE's 13 practice specialties were solicited for interested and qualified authors. A few hundred resumes from potential authors were received for what turned out to be about 80 chapters. The next step was to select 12 topic area coordinators—professionals who are experts in the field for which they were selected—who were responsible for managing the authors and content of the chapters in their topic area.

"This team worked as associate editors," Haight says. "Without them, this book would not have become near the quality publication that it is."

Since it is written to include every aspect and subject of the SH&E profession, this handbook, according to Smith,

would be the reference of choice for every SH&E professional, ranging from seasoned veterans to beginning students, and can even act as an academic text.

"This handbook should be used as a college text book for various safety courses. The chapters are of the utmost importance to a practicing professional and the authors have been engaged in these areas of practice and have excellent practical experience on the subject," Smith says. "I think the handbook is essential for both new professionals and veterans in the safety field. Obviously, veterans will be more familiar with many of the topics than a new professional, but I think the most essential point for a new professional is the issue of today's business environment."

Mike Burditt, ASSE's Manager of Technical Publications, agrees saying the peer-reviewed information in the handbook will help professionals benchmark and improve their SH&E programs in ways not afforded by other publications currently available. "Students will have firsthand information written by professionals with years of industry experience," he says. "Most of the chapters present information which is accessible, understandable and has direct business applications. This can literally help jump-start careers."

Burditt also says that an instructor's guide for each volume will be available for both the corporate and education fields in July 2008. "No other reference is available that contains as close to the amount of information on benchmarking or best practices for the twelve major SH&E programs covered as the handbook."

Smith says that since many new professionals do not have on-the-job mentors or a mentor who can spend the time needed to bring new professionals along, this handbook will give new professionals the mentoring needed on specific subjects since the topic is authored by seasoned and experienced safety professionals.

As a first edition, the handbook sets the bar for future editions. Haight says that new approaches are developed every day and new research is published every month. "Because the writing took nearly four years and to ensure that nothing was outdated, we updated a couple of chapters that were completed early in the process," he says. "So it is expected that we will continue to update this material and the book for years to come." ■

## Academics Practice Specialty

### The Educator

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# The Safety Professionals Handbook

## Volume 1: Management Applications

Basic Economic Analysis and Engineering Economics – Anthony Veltri and James D. Ramsay

### Section 1: Management of Safety Engineering Work

Regulatory Issues – Anjan K. Majumder  
Applied Science and Engineering  
•General Safety Management – Jeffery Camplin

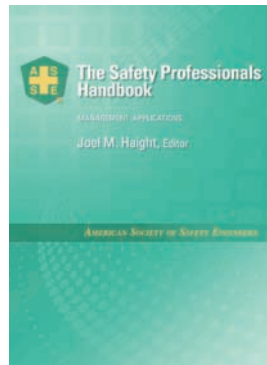
- Managing a Safety Engineering Project – Joel M. Haight
- Global Issues – Kathy Seabrook

Cost Analysis and Budgeting – Michael Toole

Benchmarking and Performance Criteria – Christopher Janicak  
Best Practices – Linda Rowley

### Section 2: Hazard Communication & Right-to-Know

Regulatory Issues – James Miller  
Cost Analysis and Budgeting – James D. Ramsay and Anthony Veltri  
Benchmarking and Performance Criteria – David Fender  
Best Practices – Sharon Campbell



### Section 3: Environmental Management

Air Pollution Control and Mitigation – Anthony Joseph  
Water and Wastewater – Judy Freeman  
Solid Waste – William Fink  
Hazardous Waste – Tom Butler, Judy Freeman and Barry Weissman  
Hazardous Material Spills and Responses – George Walton and Cherie Walton  
Management Systems – Robert Stewart

### Section 4 Safety & Health Training

Regulatory Issues  
•OSHA – Lon Ferguson  
•EPA – Charles Stanfill Jr.  
•NIOSH, ANSI Z490 and Other Standards – David Coble  
Applied Science and Engineering  
•Safety Training Theories – Phyllis Simmons  
•Safety Training and Document Principles – Fred Fanning  
Cost Analysis and Budgeting – Brent Altemose  
Benchmarking and Performance Criteria – Richard Stempniak and Linda Tapp  
Best Practices – C. Keith Stalnaker

### Section 5 : Workers' Compensation

Regulatory Issues – Adele Abrams  
Benchmarking and Performance Criteria – James Bradshaw  
Best Practices – Fred Drennan and Katina Drennan

### Section 6: Fleet Safety

Regulatory Issues  
•DOT Regulations – Greg Smith  
•OSHA and Other Regulations – Nancy Bendickson  
Applied Science and Engineering  
•Vehicles and Accidents – Jubal Hammernik  
•Vehicle Engineering and Ergonomics – Dennis Andrews  
Cost Analysis and Budgeting – Fran Sehn  
Benchmarking and Performance Criteria – Edward Musal  
Best Practices – Phil Moser and Carmen Daecher

### Appendix

Safety Engineering Tables and Calculations – Ben Cranor and Montral Walker

## Volume 2: Technical Applications

Basic Economic Analysis and Engineering Economics – Anthony Veltri and James D. Ramsay

### Section 1: Risk Assessment & Hazard Control

Regulatory Issues – Jerry Fields  
Applied Science and Engineering  
•Systems and Process Safety – Mark D. Hansen  
•Electrical Safety – Steven J. Owen  
•Permit-to-Work Systems – David Dodge  
•Basic Safety Engineering – John Mroszczyk  
•Pressure Vessel Safety – Mohammad Malek

Cost Analysis and Budgeting – Mark Friend  
Benchmarking and Performance Appraisal Criteria – Brooks Carder and Pat Ragan  
Best Practices – Stephen Wallace

### Section 2: Emergency Preparedness

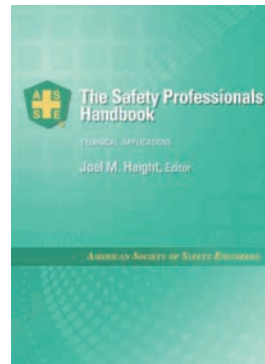
Regulatory Issues – Jon Pina  
Applied Science and Engineering – Susan Smith and Kathy Council  
Cost Analysis and Budgeting – Pam Ferrante  
Benchmarking and Performance Appraisal Criteria – Bruce Rottner  
Best Practices – Phillip Goldsmith

### Section 3: Fire Prevention & Protection

Regulatory Issues – James Olds  
Applied Science and Engineering  
•Fire Dynamics – David G. Lilley  
•Fire Prevention and Control – Craig Schroll  
•Fire Suppression and Detection – Dick Decker  
Cost Analysis and Budgeting – Ken Lewis  
Benchmarking and Performance Appraisal Criteria – Wayne Onyx  
Best Practices – Craig A. Brown

### Section 4: Industrial Hygiene

Regulatory Issues – Gayla McCluskey  
Applied Science and Engineering  
•General Principles – Susan Arnold, Sheryl Milz and Deborah Nelson  
•Chemical Hazards – William Piispanen  
•Physical Hazards – James Rock  
•Biological Hazards – Michael Charlton  
Cost Analysis and Budgeting – David Eherts  
Benchmarking and Performance Criteria – Forrest Illing



### Section 5 : Personal Protective Equipment

Regulatory Issues – Robert L. Edgar  
Applied Science and Engineering – David May  
Cost Analysis and Budgeting – Kevin E. Stroup  
Benchmarking and Performance Criteria – Kevin E. Stroup  
Best Practices – Michael B. Blayney

### Section 6 : Ergonomics & Human Factors Engineering

Regulatory Issues – Carol Stuart-Buttle  
Applied Science and Engineering  
•Principles of Ergonomics – Magdy Akladios  
•Work Physiology – Carter Kerk  
•Principles of Human Factors – Steven Wiker  
Cost Analysis and Budgeting – Rani Muhdi and Jerry Davis  
Benchmarking and Performance Criteria – Robert Coffey  
Best Practices – Farhad Booshaghi

### Appendix

Safety Engineering Tables and Calculations – Ben Cranor and Montral Walker

# HazCom & Right to Know

## An Inside Look at Section 2

*James D. Ramsay, Ph.D., CSP, is an associate professor and coordinator of the Homeland Security Program at Embry-Riddle Aeronautical University. He holds a bachelor's degree in biochemistry and a Ph.D. in industrial engineering and preventive medicine. Ramsay is self-taught in the field of occupational safety. He spent nearly 10 years working on various committees and councils related to workplace safety, and he has conducted research on occupational and environmental health. This article describes Section 2 of The Safety Professionals Handbook.*

**O**SHA's HazCom and Right-to-Know standards require employers to inform employees of the hazards they face in the workplace and to provide them with the information they need to work safely. Designed with workers in mind, compliance with these standards and the implementation of appropriate safety programs often present challenges for employers. The Safety Professionals Handbook addresses these challenges in Section 2: Hazard Communications and the Right-to-Know.

Section 2 follows the structural motif outlined in the other sections of the handbook. According to section coordinator Dr. James Ramsay, HazCom is a critical and broad-reaching part of safety management and, if neglected, it can present huge consequences for the company, the employees and the surrounding community.

Section 2 provides important, comprehensive information to help safety professionals avoid these consequences, focusing on cost analysis, ethical issues and recommended practices for HazCom programs. The section begins with a discussion of cost analysis and budgeting, tackling the economic considerations of safety training. The authors, Ramsay and Anthony Veltri, Ed.D., MS, analyze the opportunity costs of implementing HazCom programs. According to Ramsay, if upper management does not view safety programs as cost-effective, these programs will not receive the attention they deserve.

The economic considerations of HazCom are important because they are often the first step in the implementation process. "We thought long and hard about what [the handbook] was to represent to our target audience," Ramsay says. He

adds that the authors wanted the handbook to drive home the impact of cost-analysis.

According to OSHA regulations, all employees have the right to know and must be provided with safety training specific to the hazards in their workplace. Because of the lost workhours that accompany training, it has potential to cost companies a lot of money and does not seem cost-effective. Section 2 suggests methods that companies can use to be compliant, save money and protect employees and the community. "Safety is not done because it's the right thing or the legal thing to do," Ramsay says. "Safety is done because it makes sense—dollars and cents."

Aside from the economic conundrum,

**"HazCom is absolutely critical, you can't get away from it. I can't think of any other topic that is so broad-reaching."**

the authors also worked to infuse the ethical issues involved in the implementation of HazCom programs into Section 2 of the handbook.

According to Ramsay, this section discusses American corporations' long history of keeping employees ignorant of the potential hazards around them, particularly in the chemical industry. For example, chemical companies for years denied allegations that vinyl chloride was harmful to employees, even though internal research indicated otherwise. In 1992, EPA classified vinyl chloride as a Group A human carcinogen.

"It took a lot of sick people before these companies would fess up. We tried to attack [these ethical issues] without being preachy," Ramsay explains.

Another ethical issue addressed in Section 2 concerns training and expertise. According to Ramsay, companies generally do not want employee training outside

their area of expertise. Yet, true expertise is gained through practice in real-world situations, not just in a classroom. This presents the question of how employees can gain expertise without practicing outside their comfort zone. Ramsay explains that Section 2 addresses the fact that lines get blurry in this gray area of training programs, and safety issues begin to arise. "Ethics is at the forefront of everything you do in SH&E [fields]," says Ramsay.

In addition to Ramsay, four other authors contributed to Section 2. Veltri wrote the subsection on cost analysis and budgeting. He is an associate professor of environmental health and safety at Oregon State University.

Sharon Campbell, M.A., CSP, president of S.L.C. Communications, authored the Best Practices subsection, which focuses on legal issues and on translating rules and regulations into real-world policies that make sense to trainees.

James Miller, Ph.D., P.E., drew on his engineering experience to write the Regulatory Issues subsection, which considers the effective implementation of safety programs. Miller is an emeritus professor of industrial and operations engineering at the University of Michigan and president of Miller Engineering Associates, Ann Arbor, MI.

David Fender, Ed.D., CSP, wrote the Benchmarking and Performance Appraisal Criteria subsection. HazCom is among the most cited OSHA regulations, partly because it is specific and difficult to implement. The Benchmarks section presents a comprehensive guide to ensure compliance and to help companies pass inspections. According to Ramsay, companies often think they are compliant but are cited on the fine print during inspections. This section is designed to help eliminate that problem. Fender is an associate professor in the Department of Occupational Safety and Health at Murray State University.

Ramsay believes the future of HazCom will go global. "America must globalize its standards to compete with other nations," he says. "HazCom is absolutely critical, you can't get away from it. I can't think of any other topic that is so broad-reaching." ■

# Getting the “E” in SH&E

*ASSE recently spoke with Jeff Camplin, coordinator of Section 3 of The Safety Professionals Handbook. In this interview, Camplin discusses the environmental management topics covered in Section 3 and how he and other subject-matter experts worked together to develop this section.*

**ASSE:** What is your experience in the field of safety and, specifically, in environmental management? How has your experience enabled you to contribute to *The Safety Professionals Handbook*?

**JC:** I am a CSP and CPEA, and I hold a bachelor’s in safety. I have always been involved with safety issues that overlap into the environmental arena, ranging from asbestos and indoor air quality to waste management and hazardous material response. For the past 8 years, I have been involved in the administration of ASSE’s Environmental Practice Specialty, serving the last 4 years as administrator. I have also been on the Professional Safety Editorial Review Board for more than 5 years where I annually peer review 100+ SH&E safety and environmental manuscripts. All of these experiences made me a perfect fit for coordinating the topics and authors of the environmental section.

**ASSE:** Who are the other contributing authors in Section 3: Environmental Management, and what unique experience do they bring to the table?

**JC:** We were fortunate to have top subject-matter experts involved with environmental management in the subject areas of air (Anthony Joseph), water (Judy Freeman), wastewater (Judy Freeman), hazardous waste (Tom Butler, Sal Caccavale and Judy Freeman), solid waste (William Fink), hazardous materials response (George and Cherie Walton) and environmental management systems (Robert Stewart). Our authors have taken their strong educational backgrounds combined with their impressive practical experiences to provide cutting-edge knowledge on environmental management. These authors are all successful subject matter experts honing their skills and experience in academia, industry, the regulatory community and consulting. This blend of knowledge and experience makes the environmental section a must-read for SH&E professionals who are either new to or well-versed in environmental management issues.

**ASSE:** How does environmental management vary across the different areas (air, water, solid waste, etc.)?

**JC:** This section of the handbook breaks down environmental topic areas by regulated categories of hazardous waste, solid waste, water, wastewater, air and hazardous materials spills/response. However, these topic areas are not meant to be separate “silos” of stand-alone environmental topics, which is a common mistake many SH&E professionals make when developing environmental management systems.

Although subject-matter expertise is needed in each of the disciplines, all of the topics must be integrated into a holistic approach for successful environmental management. Therefore, we have tied together each individual environmental topic area into a final chapter, “Environmental Management Systems,” which will help the SH&E professional coordinate and manage all environmental topic areas as an integrated system. This final chapter provides a best practices framework for developing effective environmental systems and comprehensive environmental management.

**ASSE:** Summarize this section of the handbook. What issues are discussed (regulatory, ethical, economic and legal)?

**JC:** The bulk of each chapter focuses on environmental regulations and legal issues. Compliance with environmental regulations is important to avoid huge fines and potential criminal prosecutions. Of course, good environmental management also makes good business sense while demonstrating concern for the environment and affected communities. With this in mind, we complemented each chapter with discussions on the economics of environmental management, ethics and community relations and best practices. Our goal was to ensure regulatory compliance, discuss legal obligations, promote ethical management and community relations and provide examples of best practices and resources for effective environmental management.

**ASSE:** Why is this information important for safety professionals?

**JC:** Environmental information is important for SH&E professionals. The “E” in SH&E is no longer a small “e.” The

environmental arena is growing on a local, national and international level each year. The safety profession must embrace the need to learn environmental management to continue to maintain their competitive advantage in the SH&E profession for now and well into the future.

I have found that most SH&E professionals struggle with wearing two hats within their organizations: the safety hat and environmental hat. SH&E professionals will find themselves challenged with managing the competing priorities found in safety and environmental management with the scarcity of available resources. A stronger knowledge of environmental systems will assist our profession in effectively managing both safety and environmental issues within their organizations.

**ASSE:** Who should be interested in the information in Section 3?

**JC:** This section is designed for two primary audiences: the novice safety professional with little or no environmental background and the more experienced SH&E professional looking for state-of-the-art environmental management techniques and best practices. We arranged the section so readers can quickly get up to speed on a given topic area or regulatory compliance issues. Yet the section is also arranged from the perspective of comprehensive environmental management, which demonstrates how each topic “silo” actually fits into an overall environmental system. There is something in these chapters for every SH&E professional.

**ASSE:** Many companies are “going green.” Does this section discuss ways for companies to become more environmentally friendly?

**JC:** The concept of “going green” is nothing new to those who implement and manage successful environmental systems. Our chapters embody these tried-and-true principles for sound environmental stewardship. Key green philosophies incorporated into the section include source reduction (elimination or substitution of hazards), waste minimization (reuse, recycle, reclaim) and environmental awareness (smart purchasing, energy efficiency, ISO 1400X certification). Each chapter of this section embraces these “green” concepts

*continued on page 7*

# Fire Protection & Prevention

## A Single Point of Reference for Practitioners

*Dick A. Decker, P.E., received his fire protection engineering degree from the University of Maryland and completed post-graduate study in chemical engineering at West Virginia University. He is director of safety at Standard Steel LLC and is a consulting safety engineer for several companies. Prior to this, he was safety director for Cerro Metal Products Co. and a fire protection and safety design engineer for Gilbert Associates Inc. He is a licensed professional safety and fire protection engineer in Ohio and Pennsylvania and a member of various professional organizations, including NFPA, SFPE, ASSE and the Association of Professional Industrial Hygienists. He has presented professional papers, written various professional articles and served on NFPA and ANSI standards committees. In this interview, Decker speaks about the fire protection/prevention section of The Safety Professionals Handbook.*

**ASSE:** What is your experience in the field of fire prevention/protection?

**DD:** I have more than 40 years of hands-on fire protection and safety engineering experience covering chemical and metals industries, public utilities, health-care and public facilities. My experience involves hazard analysis, fire protection system and water supply system design, implementation, training and auditing.

**ASSE:** What other authors contributed to this section and what experience do they bring to the table?

**DD:** James Olds, M.S., ARM, CSP, manager of safety and emergency management for the City of Lakeland, FL, has experience applying codes in the municipal setting. He has a good understanding of the code and regulatory process. His experience with a large selection of codes and standards enabled him to provide a broad overview of the topic.

David G. Lilley, Ph.D., D.Sc., P.E., is owner of Lilley and Associates Consulting Engineers in Stillwater, OK, a company specializing in technical aspects of fire dynamics, fire causation, propagation and analysis for fire investigation and litigation. He is a recognized expert in the fire dynamics area and has written extensively on the subject.

Craig Schroll has been involved in safety and emergency response issues for more than 35 years. He has extensive hands-on practical experience along with formal training. He is a frequent conference speaker and seminar leader and has

been published in many professional and trade publications. He is the author of the *Industrial Fire Protection Handbook* published by CRC Press. He is president of FIRECON, a consulting and training company that helps clients prevent, plan for and control emergencies.

James G. Gallup, P.E., CSP, a senior fire protection engineer for Rolf Jensen & Associates Inc. and Ken Lewis, M.P.A., CSP, an adjunct faculty member for Grand Canyon University, co-authored the cost analysis and budgeting section. Both have experience in cost evaluations and fire protection system justifications.

Wayne Onyx, P.E., is an area senior vice president of HPR Engineering for Arthur J. Gallagher Risk Management Services.

Craig A. Brown, M.S., P.E., CSP, is an advisor in health, environment and safety for Chevron. He has worked on Chevron petrochemical projects worldwide and has considerable background in selecting the best fire prevention and protection features for such facilities.

**ASSE:** Why did you contribute to *The Safety Professionals Handbook*?

**DD:** I wanted to help mesh the broad discipline of safety engineering, which often involves fire protection engineering, into a single reference for the practicing professional and for those new to the field. It was an opportunity for me to share my years of professional experience with others in the SH&E profession.

**ASSE:** Summarize the fire prevention and protection part of the book.

**DD:** The section explains the consensus standards process and provides an overview of key NFPA fire codes and building codes as a basis for defining fire prevention and protection provisions needed to protect life and property at varied facilities.

The second section explains current scientific theory and mathematical relationships available for safety professionals to use in estimating fire risks and protection needs. It provides a concise collection of the latest information and puts it into a usable format.

The third section explains fire prevention, including ignition source controls,

fuel hazards and the value of compartmentation.

Section 4 explains fire detection and extinguishing options and gives both pros and cons of each. It explains the functioning characteristics of detection and extinguishing system components and how they fit together to form a system and provide protection.

Section 5 explains costs associated with fire protection from the public sector through the private facility and shows how fire protection needs can be justified. The benchmarking section explains the need to inspect fire protection provisions to ensure their continuity and how to test them to ensure they will perform when needed.

The best practices section shows how safety professionals must apply fundamental principles to achieve a safe facility. It explains how safety professionals must use codes and standards, scientific relationships, fire prevention, detection and suppression methods in a cost-effective way that can be maintained and proven ready.

**ASSE:** Why is this information important to safety professionals?

**DD:** Since most SH&E professionals have various broad responsibilities, [this information] will provide a single point of reference for a good overview of the subject, and the section references can lead practitioners to more detailed information.

**ASSE:** For whom is this information most important?

**DD:** The information is most important for safety professionals with limited fire protection experience and for those who have fire protection responsibility and need a quick review of the subject.

**ASSE:** What kind of science is used to study fire? How has science led to an increased understanding of fire, and how can it be used to increase safety in the workplace?

**DD:** Study of fire involves many scientific and engineering disciplines, including basic chemistry and physics, organic chemistry, fluid mechanics, hydraulics,

*continued on page 10*

# Ergonomics

## Focusing on Active Injury Prevention

Magdy Akladios, Ph.D., M.B.A., P.E., CSP, CPE, CSHM, is an assistant professor at the University of Houston-Clear Lake. He holds a Ph.D. in industrial engineering, masters' degrees in occupational health and safety, and in industrial engineering, an M.B.A. and a bachelor's degree in mechanical engineering. Akladios is involved in curriculum development, authoring book chapters and professional journal articles and website development and maintenance. He is also involved with noncredit and continuing education centers such as Texas Engineering Extension and the College of the Mainland. This article describes the Ergonomics section of The Safety Professionals Handbook.

**E**rgonomics is the applied science of equipment design for the workplace, intended to maximize productivity by reducing user fatigue, discomfort and long-term injury. This field has become increasingly important as more and more research indicates that everyday workplace activities can produce long-term injuries and strain.

Section 12 of *The Safety Professionals Handbook* brings together a team of authors with various backgrounds as researchers, educators and consultants in the field of ergonomics to deliver new and relevant information to safety professionals. Dr. Magdy Akladios coordinated this section of the handbook and oversaw its authorship.

According to Akladios, "The basic principles include information about the importance of ergonomics in occupational settings, how it affects the bottom line and productivity, how to help companies identify problem jobs and the risks associated with them and how to tackle these problems by using sound measures. The ultimate goal is worker protection."

Section 12 is divided into five subsections, the first of which addresses the regulatory issues associated with ergonomics. Carol Stuart-Buttle, CPE, principal of Stuart-Buttle Ergonomics, wrote this portion. According to Akladios, Buttle's section focuses on workers' compensation, OSHA rules, state regulations and ISO standards.

The next subsection addresses scientific information, including the science of ergonomics, the science of work physiology and the cognitive human factors behind ergonomics. It provides information about the physical limitations of the human

body while also considering human error in the equation. The authors of this subsection are Carter Kerk, Ph.D., CSP, CPE, Steven Wiker, Ph.D., CPE, and Akladios.

Much of the work in applied ergonomics involves designing equipment, machinery, tools and workspaces that better conform to the body. This can be very costly because of individual differences among workers. According to Akladios, the one-size fits all approach has proven extremely unsuccessful. Although this may seem like the most cost-effective way to run a business, companies will actually save money in the long run if they invest in equipment that truly fits their workers, he says.

"In the long run, the initial cost savings will turn into major expenses," Akladios says. "Many differences exist among workers in terms of size, strength, gender, age, etc. Each requires specific accommodations. If equipment were designed with that variability in mind, workers would be more productive and less prone to errors, hence less injuries."

This issue is thoroughly addressed in the Cost Analysis and Budgeting section of the handbook, along with information on loss analysis, premium audits and production improvement. The author, Jerry Davis Ph.D., P.E., CSP, CPE, is a professor at Auburn University.

"Ergo-related costs can range anywhere between a few dollars for a quick adjustment to \$250,000 for a major back surgery," Akladios says. "These expenses will reflect in the company's bottom line,

as well as in their reputation, not to mention the pain and suffering that the worker had to endure."

The remaining two subsections cover Benchmarks, written by Robert Coffey, CSP, CPEA, and Best Practices, written by Farhad Boeshaghi, Ph.D., P.E. These subsections offer ideas and suggested methods for redesigning the workplace to reduce injuries.

According to Akladios, ergonomic injuries do not receive as much attention as other workplace injuries, but they account for up to one-third of all money spent in workers' compensation.

"If a piece of equipment breaks down, you can always replace some parts and the machine will go back to normal," Akladios says. "The human body is not the same way. Once injured, it is very difficult to bring it back to the original state. Even with all of the advancements in the medical field, we have not yet mastered the human body. The amount of knowledge included in this section will certainly open a safety professional's eyes to this hard truth that, in safety, active injury prevention is the best way."

Akladios says that *The Safety Professionals Handbook*, including the ergonomics section, is written so that it can be used as a field manual or textbook for students of the safety field. "Safety professionals can expect to find all they need to know about ergonomics in an easy-to-follow format and in an easy-to-find manner in this book," he says. ■

### Getting the "E" in SH&E

*continued from page 5*

into the definition of best practices for environmental management.

**ASSE:** What does the future hold for the field of environmental management?

**JC:** As previously discussed, the "E" in SH&E is growing by leaps and bounds. It is almost impossible for a safety professional to function effectively without a strong working knowledge of environmental issues. Environmental regulations, legal liabilities and compliance issues dwarf those found in the safety field. Upper management pays much

more attention to environmental impacts due to the huge costs associated with compliance, liabilities and public relations. Many safety professionals report to the environmental compliance departments of a company. ASSE leadership has identified the need to increase environmental competencies of their membership to gain a competitive advantage in the SH&E profession for today as well into the future. Understanding environmental systems discussed in this section will prepare the safety professional who must also wear the hat of environmental compliance manager. This section helps put the "E" in SH&E. ■

## An Interview with Joel Haight

*continued from page 1*

budgeting, benchmarking and performance measurement, and best practices.

As one might expect, the topic areas include many traditional areas of safety and health, including emergency response, ergonomics, risk assessment and hazard control, engineering management, fleet safety, industrial hygiene, environmental management, workers' compensation, fire prevention and protection, PPE, HazCom and training. The book also includes sections on equations, common calculations, conversions, constants, etc.

To determine, confirm and validate the book's contents, about 7,300 professional members of ASSE were surveyed (900 responses were received). In my opinion, this was an incredible amount of input from all the right people. Once the outline was established and confirmed, I was asked to be the editor-in-chief and we set about the author selection process.

ASSE's practice specialties were solicited for interested authors. We received a couple hundred resumes from potential authors for what turned out to be about 80 chapters. The next step was to select 12 topic area coordinators—professionals who are experts in the field for which they were selected—who were then given responsibility for managing the authors and content of the chapters in their topic area. This team worked as associate editors. Without them, this book would not have become near the quality publication that it is.

Individual authors were then selected based on several factors. Their experience in the field for which they were proposing themselves was critical. We also looked for experienced writers. Although we favored those who had written for peer-reviewed publications, that wasn't a requirement. We selected authors in 2003 and the writing began in 2004. We began receiving first drafts in late 2004 and early 2005. The group of authors turned out to be a good mix of industry and academic professionals, as well as a good mix of people from around the country and from many types of industries, and academic and research institutions.

The review and revision process took the longest. It was rigorous and as a volunteer project, we had to compete with our authors' work schedules and priorities. We just finished in February 2008.

**ASSE:** How many people were involved in the project?

**JH:** Given that some chapters have more than one author, we have about 85 authors and nearly 80 reviewers. If we add all those involved in this publication—including the members who were surveyed—there were nearly 1,000 contributors to the process. I think this speaks volumes about this publication.

**ASSE:** How/why did you become interested in this project? Why did you see a need for such a book in SH&E?

**JH:** I was asked to take on this role in 2003 by Mike Burditt, ASSE's technical publications manager. He knew me from some review work I had done for another ASSE publication. When I saw the magnitude and the potential impact of such an important contribution to our profession based on the input of so many in our profession, I couldn't refuse.

Up to that point, as a researcher, I had only written articles for scientific journals and book chapters. Not having taken on a publication this large in the past, I was a bit naive in considering the extent of the time commitment involved and the difficulty of managing such a large publication, but it was all worth it. I think readers will think it was as well.

Much of what is published in the safety and health area is written by individual authors, so it represents the results of their work and experience. This book brings together a much larger body of knowledge and represents a summary of all or nearly all that is known about each particular subject. This sets the book apart from many others in the field. I was very interested in the idea of such a large group pulling together the vast body of knowledge surrounding these 12 topic areas.

**ASSE:** Talk about the scope and audience of this publication. What are its goals and for whom is it most intended?

**JH:** This is a reference handbook. As such, its initial intended audience was working professionals who could pull the book off the shelf, refer to a specific section, and look up the information needed.

At an author's meeting held in June 2004, the group of authors and topic coordinators agreed that the book covered so much valuable territory that we should also make it available as a textbook for university students studying to enter the safety and health field. So, we added learning

objectives to each chapter; for the textbook version, we added review questions, exercises, case studies and similar tools so that a professor can add review work to a course based on what the author believes is most important about the chapter.

As it turned out, as each chapter came in, it was apparent that the book was going to be so thorough and cover the topic areas so well that it would be valuable to anyone in the safety profession at any level—students, new professionals, seasoned professionals and anyone needing to have access to additional information about the safety and health field.

**ASSE:** The foreword mentions the peer-review process used in the development of this book. What does this mean to readers and the profession?

**JH:** Many safety- and health-related books are written by one or two authors, and they are often based on each individual author's opinions, ideas and "this is how I would do it" type presentations. While facts and figures are always checked during the publishing process, many author opinions and claims are not challenged.

The safety and health field, as an applied field, does not always have the predictability of the physical and natural sciences, so there is not always one right answer or one right way to do things. Opinions, while valuable, may not work for everyone and may not lead a reader to the correct solution for a safety and health problem.

We set out to ensure that this book was first a collection of tried-and-true information. For information to be included, it had to have been published or been proven by long-term, widely accepted or industrywide practice. Then each author was asked to add the benefit of his/her vast experience through insight, supporting or challenging opinions, and results of the approach as well as his/her own creativity where appropriate.

To ensure that this expectation was upheld, we enforced a rigorous peer review process in which each chapter was evaluated by three reviewers, one of whom the author could select. The process was not the double blind process used by many scientific journals, but the authors were challenged to substantiate many claims, opinions and practices. They were also challenged to ensure that their literature review was extensive and

that all references were properly cited so readers can follow them to find additional or more detailed reading.

This was a lengthy process, as many chapters had to be revised three or four times. All chapters were checked to be sure that the authors either made all the reviewer-suggested changes or justifiably declined to do so. This was a difficult process for many authors because it can be hard to have your work criticized or challenged. We made it through, though, and I think the book is much better for it.

**ASSE:** Discuss how the volumes are put together. What approach(es) were used to present the information? Why were those approaches selected—how does the reader benefit?

**JH:** Early on, it was clear this book would become a multivolume set. In the end, it became two volumes, each organized to make sense from a purchasing point of view. Since some readers may only purchase one volume, we tried to group the topic areas into two broad categories. We believe this approach keeps similar topics together so a reader may purchase only one volume if s/he chooses.

In our groupings, the technical, fundamental science-related topic areas are included in one volume and the applied managerial topic areas are in the other. While we encourage readers to buy both volumes, this organization will allow readers to concentrate their purchase if needed.

**ASSE:** What are some strengths of the book? What will distinguish it?

**JH:** As a handbook, this book is a collection and a summary of what is known about each of the 12 topic areas. The content is well-known, well-established, time-honored material that represents accepted practice and knowledge in the safety field. It has a bit of the feel of an encyclopedia, but with more of a story and filled with applied and real examples of the points made.

Another strength is that it is written by a group of people who cumulatively have nearly 2,000 years of work experience. This adds a real and applied nature to the book that comes from the foundation of the science and engineering of safety. Coupled with the insight and creativity of the authors, this has resulted in a book that will provide readers with the tools they need to learn the field and to continue its effective practice all the way to retirement.

In addition, as noted, in 2004, the author group decided that the book could serve as a textbook as well as a reference handbook. Since it was early in the process, we were able to borrow from the ideas of ASSE's Construction Safety Management publication.

We added learning objectives, review questions and exercises, problems and case studies to address the content of each chapter and its specific learning objectives. The instructor's version will contain all the review exercises and solutions. However, because this is a physically large book, we are exploring ways to make the book reasonable in terms of subject matter, size and cost for students. An electronic version is also being explored.

**ASSE:** What were some of the challenges of putting together an authoritative text? What did you learn from going through this process?

**JH:** A text such as this first requires an extensive review of the literature. It is challenging for authors to pull together all of what is known about each topic, then assimilate it all into a coherent, readable chapter while incorporating their own extensive body of experience. The process forced authors to not only gather the information, but also to think critically about each concept and point, and incorporate their ideas, experience and opinions as to how they apply or think about it. They also had to include examples that illustrate for the readers how they may understand or use the concepts or information. It is a difficult process, but I think our authors really shined throughout.

I learned that there is an incredible amount of talent and knowledge in the profession. This group of authors is impressive. It was a humbling experience for me. I never thought of myself as an expert in the safety field, but after reading and reviewing these chapters, I realized I am even less of an expert than I thought I was. Of course, I have learned much from each chapter as well. That was a criteria I used in assessing each chapter—to make sure that I also learned something from reading each one—and I certainly did.

**ASSE:** Why is such a text important to the SH&E profession?

**JH:** I think this text is so important to the profession because the field is multidisciplinary. If one wanted to read about every topic in the field, s/he would have

to put in a whole wall of bookshelves to hold the books that would need to be read. This text provides a solid and thorough summary of what those books contain—and it puts it into one place.

In addition, this book comes from the profession's foundation, so it could be called a grassroots publication—it comes from the people who make up the profession. It is not the opinions of one author. It is full of real-life examples and was written by safety and health professionals for safety and health professionals.

**ASSE:** As the editor-in-chief, what is your hope for this book?

**JH:** Having seen firsthand the work, energy, enthusiasm and experience that went into the creation of this book, it is my hope, as well as ASSE's hope, that this book makes its way to the shelves of every safety professional. While nothing is absolute, we expect that readers will find everything they are looking for in this book and that this will be reason for them to help get the word out about such a thorough collection of the body of knowledge in the safety and health field.

**ASSE:** Will there be future editions?

**JH:** This information is too important to allow it to become outdated. New approaches are developed each day and new research is published every month. In fact, because the writing took nearly 4 years, to ensure that nothing was outdated we updated a couple of chapters that were completed early in the process. So, yes, it is expected that we will continue to update this material and the book.

**ASSE:** Tell readers about yourself.

**JH:** I started in the safety field in 1977 when I entered the safety sciences major at Indiana University of Pennsylvania. In 1981, I went to work for Chevron Corp. in Bakersfield, CA. After 18 years working in the oil business for Chevron both in the U.S. and overseas, I retired and entered academia to teach and do research.

In 1991, while I was still working full time for Chevron, I entered the graduate program in Industrial Engineering at Auburn University and for the next 9 years, attending part time, I earned both M.S. and Ph.D. degrees in Industrial and Systems Engineering. That step helped me obtain my current position in 2000 as an associate professor of energy and mineral engineering at Penn State University. ■

## Fire Protection & Prevention

continued from page 6

statics and dynamics, thermodynamics, strength of materials, heat transfer, ventilation and air flow.

Human factors and the human interaction with conditions complicate the science and the application of principles. Applied research in recent years has enabled practitioners to scientifically quantify the degree of hazard and the level of protection provided by various static and dynamic safeguards. Using these scientific relationships and estimations of potential scenarios can help safety professionals define risk and minimize any potential consequences.

**ASSE:** You wrote the chapter on fire suppression and detection. What topics are discussed in that chapter?

**DD:** It covers fire development stages, detection methods and design basics, extinguishing agents and application

method, fire extinguishing phenomena, basics on water as an extinguishing agent, including basic fire protection hydraulics, and common types of extinguishing systems along with their applications, advantages and disadvantages. The learning objectives section outlines it even more.

**ASSE:** What economic issues are addressed in the cost analysis section?

**DD:** The section discusses the total cost of fire protection, including public fire protection services, building fire features, human costs, indirect costs and insurance costs. It discusses risk analysis and benefit cost analysis, and it provides case studies to illustrate the application of cost analysis to the decision-making process.

**ASSE:** What new information can safety professionals expect to find in this section of the handbook?

**DD:** The information is concise with many of the extraneous supporting issues left out. It gives a basic discussion of the subject with adequate detail to enable the

safety professional to apply it to the solution of real-world problems. Good examples of applications of the information are incorporated in this section.

**ASSE:** What is the future of fire prevention and protection?

**DD:** As we move into the future, a better understanding of the complex reactions in a fire and the associated response of materials and extinguishing agents will make it possible for engineers to more accurately postulate fire scenarios and results and prevention methods. Due to the complexity of the relationships, computer-aided analysis will be required to ensure that all relevant factors are properly incorporated into the design of facilities and processes to minimize property and human losses and injury. Higher costs and a society more sensitive to what is correct will dictate a more scientifically sound approach to fire prevention and protection. ■

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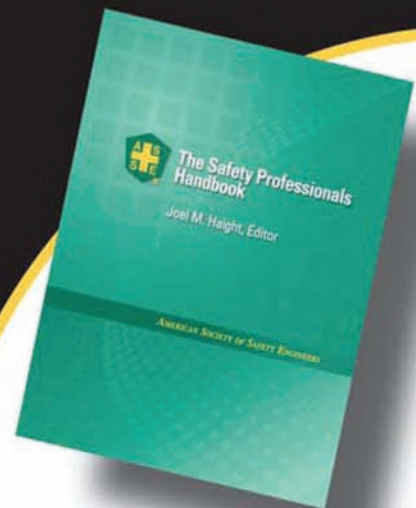


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