

SPECIAL ISSUE  
ANSI/AIHA Z10 &  
the SH&E Profession

# The Compass



AMERICAN SOCIETY OF SAFETY ENGINEERS

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## Impact of ANSI Z10 Perspectives from ASSE Members

Since its approval in July 2005, ANSI/AIHA Z10-2005, Occupational Health and Safety Management Systems, has generated much interest among ASSE members. Debate about what kind of impact the standard will have on the SH&E profession has been widespread. The Society has made the standard available through a partnership with AIHA and it has also created a Z10 website to address member inquiries.

To gather member feedback on the Z10 standard, ASSE's practice specialties leadership sent an e-mail to 250 members asking them to share comments on the standard. This was not a survey but a request for feedback and insight. Thirty-two members (13%) responded. While this response rate may not meet the needs for a statistical evaluation, we believe the response provides a good snapshot of what SH&E professionals are doing to implement the standard and what they see as its strengths and weaknesses. Following are some responses.

▶▶ I do not care what anybody says. The SH&E profession is driven by compliance with standards and guidelines via the government and recognized standards such as OSHA. I have been able to get buy-in from my management team, but the credibility of ANSI meant a lot to our senior management team. We work in the high-tech industry and ANSI standards

carry a great deal of weight in their eyes. The ASSE legal opinion, written by the Society attorney, also made some people sit up and take notice. I put together an action plan that really worked. This is

We are pleased to see that since the standard, Occupational Health and Safety (OHS) Management Systems (ANSI/AIHA Z10), received final ANSI approval in 2005, organizations across the U.S. have implemented the standard to reduce workplace risks, injuries, illnesses and fatalities and also to improve their bottom line.

A voluntary consensus standard, Z10 applies to organizations of all types and sizes. It is compatible with quality and environmental management system standards, and it aligns with international and other U.S. guidelines for OHS management systems (OHSMS).

Z10's management system approach seeks a long-term solution to eliminate the causes of deficiencies. The standard outlines an OHSMS cycle that when repeated can lead to reduced hazards and risks as well as to improved productivity and financial results. We encourage organizations to

what I gave our senior management team: 1) the legal article from ASSE; 2) the ASSE paper on how consensus standards are used in regulation; and 3) the article

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use Z10 as a tool to continually improve OHS performance.

To highlight the many benefits of the Z10 standard, the Council on Practices and Standards has published this special newsletter issue on behalf of the Management Practice Specialty and the Standards Development Committee. We believe that with the dedication of senior management and SH&E professionals, Z10's potential to protect and improve worker safety and health is unlimited.

We hope you will continue to incorporate the Z10 standard into your own OHS management systems, and we welcome you to share your successes with us.

**Jim Smith, CSP**  
*Vice President, ASSE Council on Practices & Standards & Delegate, Z10 Committee*

**Paul Riley, CSP**  
*Administrator, Management Practice Specialty*



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# Legal Perspectives on ANSI Z10-2005

## Significant Implications for SH&E Practitioners & Employers

By Adele L. Abrams, Esq., CMSP

The July 2005 release of ANSI Z10-2005, Occupational Health and Safety Management Systems, has significant implications for SH&E practitioners and employers—with equal measures of danger and opportunity. In general, the use of national consensus standards will be of increased importance to this country as the U.S. economy moves toward a more global perspective. National consensus safety and health standards such as ANSI Z10 reflect the opinions of SH&E professionals and users working at all levels of the public and private sectors in technology development, manufacturing, training and academia.

Adoption of the basic precepts in such standards has many benefits and may protect users of the standard, while furthering the interests of affected businesses. However, the far-reaching implications of such standards in OSHA enforcement actions and in tort litigation must also be recognized. It is also essential to focus on the fact that these standards are voluntary until such time as they are incorporated by reference into a binding regulation. Even reference to the ANSI Z10 standard in policy documents created by federal or state governments does not convert the nature of the standard from voluntary to mandatory.

The goal of ANSI Z10 is to use recognized management system principles, compatible with quality and environmental management system standards such as the ISO 9000 and ISO 14000 series, as well as with principles adopted by the International Labor Organization, to encourage integration of safety into other business management systems. At the present time, however, there is no apparent Z10 certification scheme similar to the international recognition program developed pursuant to the ISO standards.

The basic elements of the standard address management leadership and employee participation, planning, implementation, evaluation and corrective action and management review. Thus, in many important aspects, ANSI Z10 encompasses the basic tenets that OSHA included in its draft Safety and Health Management Standard, which was later

withdrawn from its regulatory agenda. The complete original text of the non-mandatory guidelines is found in the Jan. 26, 1989, *Federal Register*. When OSHA announced a proposed rule in its 1990s regulatory agenda, the agency articulated its intent to have a standard that would include at least the following elements: management leadership; active employee participation; analysis of the worksite to identify serious safety and health hazards; training; and program evaluation.

All of these components are present in ANSI Z10. However, Z10 goes beyond the OSHA draft standard because it also contains provisions that address risk controls, audits, incident/accident investigations, responsibilities and authorities.

It is unlikely that OSHA will resume regulatory activity concerning its withdrawn standard under the current administration. However, if the agency should proceed in the future, it would be statutorily required to consider adoption of ANSI Z10 to address this issue based on the requisites of the National Technology Transfer and Advancement Act (NTTAA) (15 USC §272) and the Office of Management and Budget's (OMB) Circular A-119, "Federal Participation in the Development and Use of Voluntary Consensus Standards and in Conformity Assessment Activities."

The OMB circular [consistent with Section 12(d) of NTTAA] directs agencies to use voluntary consensus standards in lieu of developing government-unique standards, except when such use would be inconsistent with the law or otherwise impractical. However, under the current OSH Act, only national consensus standards that have been adopted as or incorporated by reference into an OSHA standard pursuant to Section 6 of the OSH Act provide a means of compliance with Section 5(a)(2) of the OSH Act. Therefore, at some future time, OSHA could adopt Z10 as a mandatory safety and health standard through notice-and-comment rulemaking.

### General Duty Clause Violations

Aside from formal rulemaking, ANSI Z10 is a valuable reference. It could also have possible enforcement ramifications

under the General Duty Clause (GDC) by federal OSHA. For example, it may be employed to satisfy regulatory requirements of certain state-plan OSHA programs. Several states have enacted laws mandating such programs for some or all employers (for example, Cal/OSHA's standard found at [www.dir.ca.gov/title8/8406.htm](http://www.dir.ca.gov/title8/8406.htm)), so adoption of ANSI Z10 may satisfy the compliance obligations for employers in those jurisdictions. In addition, insurance companies encourage client companies to implement safety and health management programs and, therefore, use of Z10 may generate monetary savings on insurance (both liability and workers' compensation).

One recent example is the recommendation in the 9/11 Commission Report which stated that it "encourage[d] the insurance and credit-rating industries to look closely at a company's compliance with the ANSI standard [on emergency preparedness] in assessing its insurability and creditworthiness" (CRS).

Subpart C of OSHA's construction standards (29 CFR Part 1926) contains specifications for safety and health training and management programs (29 CFR 1926.20 and 1926.21). Aside from these mandatory standards, the GDC [Section 5(a)(1)] outlines every employer's legal obligation to keep its workplace free of recognized hazards that are likely to cause death or serious physical harm to its employees for which a feasible means of abatement exists.

Citations for GDC violations are issued when the four components of this provision are present and when no specific OSHA standard addresses the recognized hazard. These four elements are: 1) the employer failed to keep its workplace free of a "hazard"; 2) the hazard was "recognized" either by the cited employer individually or by the employer's industry generally; 3) the recognized hazard was causing or was likely to cause death or serious physical harm; 4) a feasible means was available that would eliminate or materially reduce the hazard.

By definition, the GDC requirements

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encompass recognized threats that result in occupational illness or injury. Thus, recognized experts' findings that a series of actions or conditions are required to prevent harm to workers are likely to satisfy the requirement for GDC applicability under the applicable legal tests. Voluntary guidelines, including standards promulgated by ANSI, have been used to support GDC citations and to enunciate an industry "standard of care" even though the consensus standards themselves are not specifically enforceable by the agency.

However, although decisions have varied over the years, in at least one case, the Occupational Safety and Health Review Commission (OSHRC) has stated that OSHA consensus standards taken from private standard-setting organizations "were not intended to be used as mandatory, inflexible legal requirements" (Dun-Par Engd. Form Co.).

MSHA has no rule or clause comparable to OSHA's GDC. To date, neither OSHA nor MSHA has referenced ANSI Z10 in any of its standards, but this remains a future possibility that would enhance the stature of the standard in agency enforcement actions. Currently, ANSI Z10 is strictly voluntary and does not create any specific duties under the OSH Act. Therefore, an employer's failure to implement the programmatic provisions of this consensus standard—absent from other findings—does not constitute a violation of Section 5(a)(1).

In summary, national consensus standards lack the force and effect of codified rules, which can only be promulgated after notice-and-comment rulemaking under the Administrative Procedures Act (5 USC §551 et seq). Furthermore, as noted by the U.S. Court of Appeals in *B & B Insulation Inc. v. OSHRC, Et. Al.* [583 F.2d 1364, 1367-1368 (5th Cir. 1978)], the law requires only those protective measures that the knowledge and experience of the employer's industry would clearly deem appropriate under the circumstances. However, readers are advised to review *National Realty & Construction Co. Inc. v. OSHRC* [489 F.2d 1257, 1266 (D.C. Cir. 1973)] in which the court stated, "the question is whether a precaution is recognized by safety experts as feasible, not whether the precaution's use has become customary."

## A Potential Help with VPP Participation

Another important potential function of ANSI Z10 concerns OSHA's Voluntary Protection Programs (VPP). For nearly 2 decades, OSHA has approved worksites with exemplary safety and health management programs as participants in its VPP. Thus, for companies that aspire to attain VPP status, adoption of ANSI Z10 may help to jump-start the application process and may foster participation by smaller companies which might otherwise be without adequate guidance on how to design and implement such management systems. Data suggest that VPP companies report injury and illness rates which are sometimes 20% or less than the average for other establishments in their industry.

**Willful ignorance of the best practices set forth in ANSI Z10 and/or failure to incorporate such preventive measures in the workplace or programs under the SH&E professional's direction or oversight could lead to personal tort liability or professional liability as well.**

## Tort Litigation

In tort litigation, actions arising from workplace accidents, the presence or absence of a recognized and substantive safety and health management program can be critical in controlling financial liability. Consensus standards may be used by plaintiffs' attorneys to demonstrate the appropriate "standard of care," violation of which supports awards for personal injuries.

For example, see *Hansen v. Abrasive Engineering & Manufacturing Inc.* [831 P.2d 693 (Ct. App. Ore. 1992)], in which the jury considered an ANSI standard violation in determining liability because it was relevant to the standard of care a manufacturer should be expected to meet, even though it was a voluntary consensus stan-

dard. For another example, see *Bowles v. Litton Industries Inc.* [518 So. 1070 (La. Ct. App. 1987)]. Thus, the extent to which OSHA and MSHA reference ANSI Z10 in future publications or rulemaking activities will increase its judicial recognition and create a guideline against which employer programs will be benchmarked.

A national consensus standard that is "known generally" in a particular industry can reasonably be construed as providing the requisite actual or constructive knowledge to support a cause of action in litigation brought by OSHA or private sector third parties. For example, see *U.S. v. B&L Supply Co.* [486 F.Supp. 26 (N.D. Tex. 1980)], in which a recognized hazard was defined as one known after taking into account the standard of knowledge in the industry, and an employer cannot defend a citation by claiming ignorance of the practice/condition or its potential for harm.

In another case, *Titanium Metals Corp. v. Uery* [579 F.2d 536 (9th Cir. 1978)], a GDC citation was affirmed because the national fire code provided substantial evidence that the industry recognized the particular hazard presented. In *Getty Oil Co. v. OSHRC* [530 F.2d 1143 (5th Cir. 1976)] and *Boeing Co., Wichita Div. [1977-78 CCH OSHD ¶ 22266 (1977)]*, violations were affirmed where an employer deviated from "standard industry practice" or "industry pressure vessel code" concerning testing of pressure vessels.

In *American Smelting & Refining Co. v. OSHRC* [501 F.2d 504 (8th Cir. 1974)], a GDC citation was affirmed where an employer exposed workers to lead concentrations "greater than an acceptable nationwide standard." In *Bethlehem Steel Corp. v. OSHRC & Marshall* [607 F.2d 871 (3d Cir. 1979)], the company safety officer admitted that an advisory ANSI standard represented industry consensus. And, in *Betten Processing Corp.* [75 OSAHRC 43/E2, 2 BNA OSHC 1724, 1974-75 CCH OSHD P19,481 (No. 2648, 1978)], the judge erred in failing to consider an ANSI standard as evidence of a recognized hazard. Thus, to the extent that industry consensus standards reflect an industry's recognition of a hazard, they are relevant, probative evidence of a recognized hazard in the view of American federal courts.

SH&E professionals have an obligation to keep abreast of the latest knowledge and to include, to the maximum

extent feasible, best practices in their safety programs and consultation activities. The fundamental difference between an ordinary suit for negligence and a suit for malpractice lies in the definition of the prevailing standard of care.

If an individual is sued for ordinary negligence, the court will compare his/her behavior to what any reasonable person would have done under the circumstances. However, if an SH&E professional is sued for malpractice, the court will compare his/her behavior to what a reasonable member of the profession would have done (Keeton, et al). Professional standards are much higher and much better documented, and ANSI standards such as Z10 often serve to satisfy the evidentiary burden and to determine the appropriate standard of care. Therefore, knowledge and comprehension of ANSI Z10 may be imputed to SH&E professionals in terms of determining what a "reasonable person" with similar training would be likely to know.

Willful ignorance of the best practices set forth in ANSI Z10 and/or failure to incorporate such measures in the workplace or programs under the SH&E professional's direction or oversight could lead to personal tort liability or professional liability as well. To the extent that an SH&E professional is a management representative of the employer, the negligence could be imputed under the theory of respondeat superior. Thus, careful scrutiny and consideration of ANSI Z10's applicability to programs and practices is certainly warranted by all SH&E practitioners.

Finally, ANSI Z10 has possible value in constructing settlement agreements or consent orders with federal OSHA, state-plan OSHA agencies and MSHA. Often employers who have systemic safety problems will be encouraged or required, as a condition of abatement or settlement, to design and implement programs that will address management failures in a cohesive manner. The scope and function of Z10 would likely satisfy the enforcement goals of prevention of future safety issues while encouraging penalty reductions to offset the costs of program implementation. There is the strong potential of the standard being included in settlement proceedings for occupational safety and health citations.

#### **Prudent Course of Action**

SH&E professionals should be encouraged to take the following actions:

- Obtain a copy of the standard, review it and its background materials, and discuss it with senior management and legal counsel so that all parties are aware of what is expected. A legal opinion written by corporate counsel would also be a prudent action.

- Write and publish a policy that addresses ANSI Z10 with regard to how it fits in with the organization's current program and the OSH Act.

- Write, implement and document communication structures detailing how information is passed up the communication chain to senior management.

- Conduct thorough assessments to identify significant SH&E exposures and the means used to communicate them to those in a position of authority.

- ANSI Z10 places significant emphasis on accountability by senior management, giving it some correlation with the requirements of the Sarbanes Oxley Act of 2002 (Public Law 107-204). It is important to ensure that SH&E audits are independent and that the results are reported and acted on. Those SH&E practitioners who author/sign those audit reports and who fail to follow up on the recommended actions may be subject to sanctions such as listed under the new law. The point has been made that they now have a duty beyond just informing management.

- Follow the ASSE Code of Conduct.

ANSI Z10-2005 provides SH&E professionals with a significant new tool to enhance existing programs or to help smaller employers create effective programs that also satisfy regulators and insurers, effectuating cost savings and minimizing legal liability. ■

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# **ANSI Z10 Is Here and ASSE has it.**



**ANSI/AIHA Z10:  
Occupational Health and Safety Management Systems**

Call ASSE at (847) 699-2929  
or visit [www.asse.org/fr3388.htm](http://www.asse.org/fr3388.htm).

# ANSI/AIHA Z10: OHS Management Systems

**Editor's Note:** To learn more about how ANSI/AIHA Z10 will affect the future of workplace safety and health, ASSE recently spoke to three representatives of the Z10 Committee—Don Jones, Kathy Seabrook and Jim Smith. ANSI Z10 covers management leadership and employee participation; planning; implementation and operation; evaluation and corrective action; and management review.

**N**ow that Z10 has received final approval, many have begun to predict how this performance-related standard, which helps companies to integrate OHS management into their overall business management systems, will impact safety and health in the workplace.

It may be too soon to determine exactly how Z10 will affect companies of all sizes, but some believe that medium-size companies will see the most change. Smith, one of two ASSE delegates on the Z10 Committee, asserts that the standard will most influence those medium-size companies “that use traditional safety programs and delivery processes.” He adds, “It will be difficult for small companies to comply with some components in Z10 because they generally do not have the safety resources to implement those components.”

Jones, representative for Dow Chemical Co. on the Z10 Committee, believes large-size companies will also benefit from the standard. “Since small-size companies have fewer SH&E resources, I do not think the standard will be as applicable to them,” says Jones.

How well Z10 will be received depends largely on marketing and regulatory efforts, but the standard’s user-friendly design is a major selling point. According to Seabrook, the second ASSE delegate on the Z10 Committee, “The Z10 standard is well-organized and balances what is required and what is suggested. It also contains concise definitions, clear visuals and an annex of resources, all of which make it a good process document for an OHS management system.” In addition, Seabrook predicts that if the market drives the need for third-party verification, RABQSA International will eventually provide an accreditation program for auditor certification as it has done for ISO 9001 and 14001 standards.

Another advantage of Z10 is that it is a voluntary consensus standard. OSHA regulatory standards can take a minimum of 12 to 15 years to pass. According to Smith, during the development of a volun-

tary consensus standard, different groups of experts and stakeholders from various industries meet “to create the best possible product in a short period of time.” Smith also believes that a voluntary consensus standard allows for more open discussion among representatives during the standard development process, and it curbs interference from lawyers and special interest groups. By definition, voluntary consensus standards are optional—companies can choose to use them. Jones believes that this feature alone increases the possibility that Z10 will be implemented.

However, Jones, Seabrook and Smith agree that the standard cannot be implemented without strong senior management leadership and commitment. Seabrook stresses that without appropriate “resources, focus, incentive and direction” from senior management, Z10 will be impossible to implement. But, as Smith emphasizes, employee participation is also important in the effective implementation of the standard.

## International Impact on Z10

Meanwhile, many have questioned how the Z10 standard would be affected should a similar international standard be introduced. It may be difficult to create an international standard since several different countries already have their own standards in place or in development, but Smith indicates that although the Z10 standard is not intended to become an international standard, an opportunity exists to produce an implementation guideline for the different standards worldwide.

“If you are working in the U.K., you could use the implementation guideline to follow that nation’s international standard. Conversely, if you are working in a country that does not have an OHS management systems standard, you could use the Z10 standard as a guideline. If you look at how the standard is written, you will see that it really is designed to move in the direction of an implementation guide,” says Smith.

Seabrook predicts that the International Organization for Standardization (ISO) will initiate an OHS management system standard, while Z10 will be used as a reference document. She adds, “OHSAS 18001 continues to be recognized outside the U.S., even for U.S. multinational companies’ operations outside the U.S.” Jones

believes that an international OHS management standard will have little effect on the use of Z10 at U.S. jobsites unless international companies require otherwise.

## Government Adoption

Many have also debated whether government agencies will adopt Z10 now that it is approved, especially since the Z10 Committee did not write the standard to accommodate government agency regulations. Jones points out that the U.S. Congress and OSHA have wanted to pass SH&E legislation for some time, but it is uncertain whether ANSI standards such as Z10 can be adopted by reference. Smith anticipates that given the current political climate, government agencies will not reference the Z10 standard into a regulation, but he does believe that OSHA could consider using the standard for enforcement action.

OSHA appears to be one government agency that would benefit greatly from the Z10 standard since it was represented on the Z10 Committee. Smith suggests that OSHA may use Z10 in place of its current proposed safety management standard, and that it could apply components of the standard to its Voluntary Protection Programs.

## Companies Encouraged to Use Z10

While advocating Z10 to government agencies is of high priority, companies of all sizes should be encouraged to use the standard. “Even those companies that have their own OHS management system standards in place can use the Z10 standard as a tool to improve them,” Jones suggests. “If companies compare their own standards to Z10 on an annual basis, they can identify any gaps and close them, which will ultimately improve performance and reduce incident rates.” Smith advises that companies should have “leadership commitment and employee participation in place before the Z10 standard is made functional in their management process.”

The Z10 standard’s potential to protect and improve worker safety and health is unlimited, but it will take a concerted effort among senior management and employees to ensure that the standard is successfully integrated into business management systems. With the support of government agencies such as OSHA, the impact of this standard on occupational safety and health will be nothing less than positive.

# ANSI/AIHA Z10-2005

## The New Benchmark for Safety Management Systems

By Fred A. Manuele, P.E., CSP

For the First Time In the U.S., a national consensus standard for a safety and health management system—applicable to organizations of all sizes and types—has been issued. On July 25, 2005, ANSI approved ANSI/AIHA Z10-2005, Occupational Health and Safety Management Systems.

This is a major development. The standard provides senior managements with a well-conceived, state-of-the-art concept and action outline to improve safety and health management systems. However, few organizations have management systems in place that meet all of the standard's provisions. As employers make improvements in their safety and health management systems to meet the standard's provisions, the frequency and severity of occupational injuries and illnesses will likely be reduced. The societal implications of this standard are substantial. A few of those implications are addressed in this article.

This standard will have a significant and favorable impact on the content of the practice of safety—and on the knowledge and skill requirements for SH&E practitioners. This article reviews select provisions of the standard to which SH&E practitioners should pay particular attention. Those provisions pertain to risk assessment and prioritization; applying a prescribed hierarchy of controls to achieve acceptable risk levels; design reviews; management of change systems; having safety specifications in procurement systems; and safety audits.

### ANSI/AIHA Z10-2005: Background

American Industrial Hygiene Assn. (AIHA) obtained approval as the ANSI Accredited Standards Committee (ASC) for this standard in March 1999. The first full meeting of the committee was held in February 2001. Over the past six years, as many as 80 SH&E practitioners have been involved as committee members, alternates, resources and interested commenters. They represented industry, labor, government, business organizations, professional organizations, academe and persons of general interest.

Through this, broad participation in the development of and acceptance of the standard was achieved. The breadth of that participation is significant. A large number of SH&E professionals have written a standard that incorporates what has been learned in the past several years concerning the best practices in occupational safety and health management. In effect, they have stated that no matter how effective an existing safety management system has been if it is lacking with respect to some of the provisions in the standard, risks can be further reduced by adoption of those provisions.

Employers who have a sincere interest in employee safety will welcome discussions on how their safety management systems can be improved. Many companies have issued safety policy statements that say the organization will comply with or exceed all relative laws and standards. Those employers in particular will want to implement provisions in the standard that are not part of their current safety management systems.

Furthermore, ANSI/AIHA Z10 places an obligation on SH&E professionals who give counsel on what safety management systems should encompass to become current with the standard's provisions. Having occupational safety and health management systems that comply with the standard is the right thing to do.

One reason the Z10 Committee succeeded was its strict adherence to the due diligence requirements mandated by the ANSI process. A balance of stakeholders provided input and open discussion, which resulted in vetting to a conclusion each issue raised. In the early stages of the group's work, safety and health, quality, and environmental standards and guidelines from around the world were collected, examined and considered. In crafting Z10, the intent was not only to achieve significant safety and health benefits through its application, but also to impact favorably on productivity, financial performance, quality and other business goals.

The standard is built on the well-known plan-do-check-act process for continuous improvement, for which there is

abundant reference material. Briefly stated, the purpose of the standard is to provide organizations with an effective tool for continuous improvement in their occupational health and safety management systems and to reduce the risk of occupational injuries, illnesses and fatalities. As to breadth of coverage, "This standard is applicable to organizations of all sizes and types" (AIHA).

A major theme apparent throughout the standard is that hazards are to be identified and evaluated, risks are to be assessed and prioritized, and risk elimination, reduction or control measures are to be taken to achieve an acceptable risk level. According to the standard:

A hazard is defined as a condition, set of circumstances or inherent property that can cause injury, illness or death.

Risk is defined as an estimate of the combination of the likelihood of an occurrence of a hazardous event or exposure(s) and the severity of injury or illness that may be caused by the event or exposures (AIHA).

One must understand these definitions to successfully apply the standard. Every SH&E practitioner who has responsibilities for occupational safety and health should have a copy of this standard and be familiar with its provisions. With its annexes, the standard is a brief safety and health management system manual.

### Compatibility, Harmonization & Possible International Implications

Z10 is a management system standard—a performance standard, not a specification standard (see sidebar on pg. 8). The drafters set out to ensure that it could be easily integrated into any management systems an organization has in place. As to structure, the standard is compatible and harmonized with quality and environmental management system standards (ISO 9000 and ISO 14000 series).

Of particular note is the recognition given in the Z10 introduction to the International Labor Organization's (ILO)

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## ANSI Z10: A New Benchmark

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Guidelines on Occupational Health and Safety Management Systems (ILO-OSH 2001) as a resource. The guideline is an additional reference for a safety and health management system. Available for purchase through ILO, the document can also be read (but not printed) online ([www.ilo.org/public/english/support/publ/xtextoh.htm](http://www.ilo.org/public/english/support/publ/xtextoh.htm)). ILO is an international organization of considerable influence. Intentionally, Z10 adopts from and is in harmony with ILO-OSH 2001.

Similarities between the guideline and Z10 are notable. However, Z10 goes beyond the guideline in some respects, and it may very well be considered as a model by the International Organization for Standardization (ISO). ISO is the world's largest nongovernmental developer of standards, working with a network of the national standards institutes of 148 countries. The U.S. is represented at ISO by ANSI, which is the approval body for Z10.

On two occasions—in 1996 and 2000—ISO voted on developing a standard for an occupational safety and health management system. Neither proposal

was approved; in the latter case, the vote against carried by a narrow margin. The ISO membership is worldwide and a consensus for such a standard has not yet emerged among its membership.

However, since Z10 represents current best practices and since ISO will likely again consider the development of an international safety and health management system, one can speculate that Z10 will become the model for that standard. Continue the speculation, and one can envision international requirements for accredited safety and health management system audits related to the provisions of ANSI/AIHA Z10.

### Long-Term Influence: Societal Implications

This is the standard's scope: "This standard defines the minimum requirements for occupational health and safety management systems (OHSMS)" (AIHA). Even though the standard sets forth minimum requirements, only a small segment of employment locations have safety management systems in place that include all of its elements. Over time, as the provisions of this ANSI standard are brought to the attention of employers and

they strive to have safety management systems that are compatible with those provisions, its impact on what employers and society believe to be an effective safety management system will be extensive.

The reader should understand that the standard sets forth minimum requirements, which in the U.S. may not be enough. According to Ralph L. Barnett, chair of Triodyne Inc. and professor of mechanical and aerospace engineering at Illinois Institute of Technology, while complying with a standard is necessary, doing so may not be sufficient.

Technologists, by and large, treat a standard as a "bible" which provides guidance for the discharge of their professional duties. Throughout the world, compliance or non-compliance with a safety standard is the criterion for determining whether or not safety has been achieved. Only in the [U.S.] is compliance with an appropriate standard treated as a necessary but not sufficient condition for precluding liability. [Thus, the term] minimum standard is an oxymoron (Barnett).

ANSI standards acquire a quasi-official status. Consultants who give counsel on safety management systems to employers other than their own should recognize the status that ANSI standards acquire from a legal liability viewpoint. As Barnett says, "Technologists, by and large, treat a standard as a 'bible' which provides guidance for the discharge of their professional duties."

Over time, as this standard attains that stature, it will become the benchmark against which the adequacy of safety and health management systems will be measured. Societal expectations of employers with respect to their safety and health management systems will be defined by the standard's provisions.

As awareness of the standard's provisions spreads, employers will likely seek SH&E practitioners able to give counsel on meeting its requirements. In that respect, certain provisions are of particular importance to safety practitioners; those provisions are in Planning (4.0); Implementation and Operations (5.0); and the Audit provision in Checking and Corrective Action (6.0). In summary, they state that employers "shall" establish and implement processes to:

- identify and control hazards in the

## Management System Standards vs. Specification Standards

In a management system standard, which is essentially a performance standard, general process and system guidelines are given for a provision without specifying the details on how the provision is to be carried out, as would be the case in a specification standard. Section 5.2-B, a "shall" provision in ANSI/AIHA Z10, is used to illustrate the difference.

*Section 5.2: Education, Training, Awareness and Competence. The organization shall establish processes to:*

*B) Ensure through appropriate education, training or other methods that employees and contractors are aware of applicable OHSMS requirements and are competent to carry out their responsibilities as defined in the OHSMS (AIHA).*

That is the extent of the requirements for Section 5.2-B. Comments are made in the "should" column—the advisory column—on certain subjects such as training for safety design, incident investigation, hazard identification, good safety practices and the use of PPE, but those comments are not part of the standard.

If Z10 were written as a specification standard, requirements comparable to the following might be extensions of 5.2-B in the "shall" column (that is, the required column).

- a) A minimum of 12 hours of training shall be given initially to engineers and safety practitioners in safety through design, to be followed annually with a minimum of six hours of refresher materials.
- b) All employees shall be given a minimum of three hours training annually in hazard identification.
- c) All employees shall be given a minimum of four hours training annually in the use of PPE.
- d) All training activities conducted as a part of this provision shall be documented and the records shall be retained for a minimum of five years.

design process and when changes are made in operations—which requires that safety design reviews be made for new and altered facilities and equipment, and that a management of change system be put in place through which hazards and risks are identified and evaluated in the change process;

- assess the level of risk for identified hazards—for which knowledge of risk assessment methods will be necessary;

- use a prescribed hierarchy of controls in dealing with hazards to achieve acceptable risk levels—for which the first step is to attempt to design out or otherwise eliminate the hazard;

- avoid bringing hazards into the workplace by incorporating design and material specifications into procurement contracts for facilities, equipment and materials.

Furthermore, the content of college-level safety degree programs will be affected as employers will seek candidates who understand the standard's requirements. Since one measure of a technical degree program's success is employment possibilities for its graduates, professors responsible for those programs will likely ensure that core courses properly equip students to meet employer needs. In many cases, that will require substantive curricula modifications.

Content of the examinations for the CSP designation is reviewed about every 5 years to ensure that the exams are current with respect to the work SH&E professionals actually perform. As the substance of SH&E practice changes in light of the impact of Z10, what those professionals who participate in the examination review process say about the content of their work at that time will influence the content of the CSP examinations.

### The Continuous Improvement Process

In accord with the plan-do-check-act concept, the major sections of the standard are:

- 3.0: Management Leadership and Employee Participation;
- 4.0: Planning;
- 5.0: Implementation and Operation;
- 6.0: Evaluation and Corrective Action;
- 7.0: Management Review.

Brief comments on 3.0 and 7.0 follow; more extensive remarks are made on select sections in 4.0, 5.0 and 6.0. When reviewing these excerpts, keep in mind

## Z10 Table of Contents

To provide a base for review and comparison with safety management systems with which SH&E practitioners are familiar, following is the table of contents from Z10.

### Foreword

#### 1.0 Scope, Purpose and Application

- 1.1 Scope
- 1.2 Purpose
- 1.3 Application

#### 2.0 Definitions

#### 3.0 Management Leadership and Employee Participation

- 3.1 Management Leadership
  - 3.1.1 Occupational Health and Safety Management System
  - 3.1.2 Policy
  - 3.1.3 Responsibility and Authority
- 3.2 Employee Participation

#### 4.0 Planning

- 4.1 Initial and Ongoing Review
  - 4.1.1 Initial Review
  - 4.1.2 Ongoing Review
- 4.2 Assessment and Prioritization
- 4.3 Objectives
- 4.4 Implementation Plans and Allocation of Resources

#### 5.0 Implementation and Operation

- 5.1 OHSMS Operation Elements
  - 5.1.1 Hierarchy of Controls
  - 5.1.2 Design Review and Management of Change
  - 5.1.3 Procurement
  - 5.1.4 Contractors
  - 5.1.5 Emergency Preparedness

- 5.2 Education, Training and Awareness
- 5.3 Communication
- 5.4 Documentation and Record Control Process

#### 6.0 Evaluation and Corrective Action

- 6.1 Monitoring and Measurement
- 6.2 Incident Investigation
- 6.3 Audits
- 6.4 Corrective and Preventive Actions
- 6.5 Feedback to the Planning Process

#### 7.0 Management Review

- 7.1 Management Review Process
- 7.2 Management Review Outcomes and Follow-Up

#### Annexes

- A Policy Statements (Section 3.1.2)
- B Roles and Responsibilities (Section 3.1.3)
- C Employee Participation (Section 3.2)
- D Initial/Ongoing Review (Section 4.1)
- E Assessment and Prioritization (Section 4.2)
- F Objectives/Implementation Plans (Sections 4.3 and 4.4)
- G Hierarchy of Control (Section 5.1.1)
- H Incident Investigation Guidelines (Section 6.2)
- I Audit (Section 6.3)
- J Management Review Process (Sections 7.1 and 7.2)
- K Bibliography and References

The annexes contain explanatory comments, examples of forms and references. While information in the annexes is not part of the standard, it will be helpful to those charged with its implementation.

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the intent of the terms “shall” and “should.” As is common in ANSI standards, requirements in the left column are identified by the word “shall.” An organization that chooses to conform to the standard is expected to fulfill these requirements. The text in the right-hand column uses the word “should” to describe recommended practices or to explain the requirements on the left. Comments in the right-hand column are not requirements and are prefaced with an “E.” The reader should note that the material printed in italics is taken verbatim from the standard.

### 3.0: Management Leadership & Employee Participation

Literature commenting on safety management, leadership and employee participation is abundant. Thus, this section of the

standard is dealt with briefly here. However, the reader should understand that this is the standard's most important section. SH&E practitioners will surely agree that “top management leadership and effective employee participation are crucial for the success of an occupational health and safety management system (OHSMS)” (AIHA). The standard says:

*Top management shall direct the organization to establish, implement and maintain an OHSMS.*

*The organization's top management shall establish a documented occupational health and safety policy.*

*Top management shall provide leadership and assume overall responsibility.*

*The organization shall establish and*

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## ANSI Z10: A New Benchmark

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*implement processes to ensure effective participation in the OHSMS by its employees at all levels (AIHA).*

Annexes A, B and C provide supporting data on these areas.

### 4.0: Planning

This section sets forth the planning process to implement the standard and to establish plans for improvement. “The planning process goal is to identify and prioritize OHSMS issues (defined as hazards, risks, management system deficiencies and opportunities for improvement)” (AIHA).

An initial review of the OHSMS is to be made for that purpose (4.1). Issues identified during the review are to be assessed and priorities determined, and documented risk reduction objectives are to be established for the issues selected. An ongoing review process (4.1) is to be maintained for the same purposes. (Note the emphasis on hazards, risks and management systems deficiencies.)

### 4.2 Assessment & Prioritization

Subsection 4.2 sets forth the requirements

for assessment and prioritization. Few current safety management systems contain similar provisions.

*The organization shall establish and implement a process to assess and prioritize OHSMS issues identified in 4.1. The process shall:*

- A) Assess the impact on health and safety of OHSMS issues and assess the level of risk for identified hazards;*
- B) Establish priorities based on factors such as the level of risk, potential for system improvement, standards, regulations, feasibility, and potential business consequences; and*
- C) Identify underlying causes and other contributing factors related to system deficiencies that lead to hazards and risks (AIHA).*

These are the explanatory notes for 4.2A and 4.2B.

*E4.2A: The assessment of risks should include factors such as identification of potential hazards, exposure, measurement data, sources and frequency of exposure, types of measures used to control hazards and potential severity of hazards.*

*Assessing risks can be done using quantitative (numeric) or qualitative (descriptive) methods. There are many methods of risk assessment. Examples are included in the Annexes and References.*

*E4.2B: Business consequences may include either increased or decreased productivity, sales or profit (AIHA).*

Thus, employers are to have processes in place to identify and analyze hazards, assess the risks deriving from those hazards, and establish priorities for improvement that, when acted on, will achieve acceptable risk levels.

Annex K (Bibliography and References) provides a list of publications that describe the many possible risk assessment methods. For example, the *System Safety Analysis Handbook* describes 101 such methods.

The breadth of the field of knowledge in risk assessment can be daunting but it need not be. SH&E practitioners who become familiar with several basic and easily applied risk assessment methods will be able to give counsel on and apply the standard’s risk assessment provisions. *Innovations in Safety Management: Addressing Career Knowledge Needs* includes the chapter, “A Primer on Hazard Analysis and Risk Assessment.” It is designed to counter the dread that SH&E practitioners may experience in thinking about achieving an understanding of commonly used risk assessment techniques, and to give assurance that acquiring such understanding will not be overly difficult [Manuele(a)].

The chapter provides brief descriptions of eight hazard analysis and risk assessment techniques—preliminary hazard analysis; safety reviews/operations analyses; what-if analysis; checklist analysis; what-if/checklist analysis; hazard and operability analysis; failure modes and effects analysis; and fault tree analysis. Having knowledge of those techniques and how they are applied will satisfy the needs and requirements of Z10. It should also be noted that in the application of these eight techniques, qualitative rather than quantitative judgments will prevail since for all but the complex risks qualitative judgments will be sufficient; in addition, mathematical calculations will be limited.

Annex E provides information on the standard’s assessment and prioritization requirements. It also contains a brief out-

## Hazard Analysis & Risk Assessment Guide

- 1) Select a manageable task, system or process to be analyzed.
- 2) Identify the hazards. Ask the question, “What characteristics of things or actions [or inactions] of people present a potential for harm?”
- 3) Define possible failure modes that result in exposure to hazards and the realization of the potential harm. Ask, “How could an undesirable event happen for a task and each associated hazard?”
- 4) Estimate the frequency and duration of exposure to the hazard.
- 5) Assess the severity of injury/illness. Based on experience and knowledge, make an estimate of the worst credible injury or illness consequence(s), should an incident occur.
- 6) Determine the likelihood of the occurrence of a hazardous event. This is usually subjective. For complex hazard exposure scenarios, brainstorming with knowledgeable people is advantageous. The likelihood of occurrence is normally related to an interval of time (several times a day, weekly, monthly, yearly, etc.).
- 7) Define the level of risk using a risk assessment matrix, risk ranking or scoring system. [An example of a risk assessment matrix can be found in Figure 1 of this article.] The level of risk is determined by plotting the likelihood of an occurrence or exposure and the potential severity of the injury or illness. The organization must then determine if the level of risk is acceptable or unacceptable.
- 8) Hazard risks can then be listed and ranked. Risks, system deficiencies and opportunities for system improvement make up the OHSMS issues for a particular organization. All OHSMS issues are then prioritized by considering the level of risk, potential for system improvements, compliance with standards and regulations, feasibility and business consequences.
- 9) The organization selects prioritized OHSMS issues and develops documented objectives and implementation plans.

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**Figure 1**

## Example of a Risk Assessment Matrix

		Severity of Injury or Illness Consequence & Remedial Action			
		<b>CATASTROPHIC</b> Death or permanent total disability	<b>CRITICAL</b> Disability in excess of three months	<b>MARGINAL</b> Minor injury, lost workday accident	<b>NEGLIGIBLE</b> First aid or minor medical treatment
Likelihood of Occurrence or Exposure For selected unit of time or activity	<b>FREQUENT</b> Likely to occur repeatedly	<b>HIGH</b> Operation not permissible	<b>HIGH</b> Operation not permissible	<b>SERIOUS</b> High priority remedial action	<b>MEDIUM</b> Take remedial action at appropriate time
	<b>PROBABLE</b> Likely to occur several times	<b>HIGH</b> Operation not permissible	<b>HIGH</b> Operation not permissible	<b>SERIOUS</b> High priority remedial action	<b>MEDIUM</b> Take remedial action at appropriate time
	<b>OCCASIONAL</b> Likely to occur sometime	<b>HIGH</b> Operation not permissible	<b>SERIOUS</b> High priority remedial action	<b>MEDIUM</b> Take remedial action at appropriate time	<b>LOW</b> Risk acceptable: remedial action discretionary
	<b>REMOTE</b> Not likely to occur	<b>SERIOUS</b> High priority remedial action	<b>MEDIUM</b> Take remedial action at appropriate time	<b>MEDIUM</b> Take remedial action at appropriate time	<b>LOW</b> Risk acceptable: remedial action discretionary
	<b>IMPROBABLE</b> Very unlikely; may assume exposure will not happen	<b>MEDIUM</b> Take remedial action at appropriate time	<b>LOW</b> Risk acceptable: remedial action discretionary	<b>LOW</b> Risk acceptable: remedial action discretionary	<b>LOW</b> Risk acceptable: remedial action discretionary

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line titled “Hazard Analysis and Risk Assessment Guide” which presents an easily understood and applied thought-and-action process on how to conduct a hazard analysis and a risk assessment.

Annex E also gives an example of a risk assessment matrix for illustrative purposes (Figure 1). This matrix gives incident probability categories, severity categories and risk levels, which is typical, but it also incorporates recommended management action levels within the matrix. Such a matrix can serve as a valuable instrument in working with decision makers to set risk levels and prioritize corrective actions. Published risk assessment matrixes vary widely, so SH&E practitioners should develop models that are suitable to the organizations they serve. [See also Manuele(a) and (c).]

### 5.0: Implementation & Operation

According to the standard, “This section defines the operational elements that are required for implementation of an effective OHSMS” (AIHA). The comments here focus on only four provisions—hierarchy of controls, design review, management of change and procurement. Only a few safety management systems have comparable provisions.

#### 5.1.1: Hierarchy of Controls

Z10 outlines provisions for the use of a specifically defined hierarchy of controls. The organization “shall” apply the methods of risk reduction in the order prescribed. The standard and the explanatory comments state:

*The organization shall implement and maintain a process for achieving feasible risk reduction based upon the following preferred order of controls:*

- A) Elimination;
- B) Substitution of less hazardous materials, processes, operations or equipment;
- C) Engineering controls;
- D) Warnings;
- E) Administrative control; and
- F) PPE. Feasible application of this hierarchy of controls shall take into account:
  - a) the nature and extent of the risks being controlled;
  - b) the degree of risk reduction desired;
  - c) the requirements of applicable local, federal and state statutes, standards and regulations;
  - d) recognized best practices in industry;

- e) available technology;
- f) cost-effectiveness; and
- g) internal organization standards.

*E5.1.1: The hierarchy provides a systematic way to determine the most effective feasible method to reduce the risk associated with a hazard. When controlling a hazard, the organization should first consider methods to eliminate the hazard or substitute a less hazardous method or process. If this is not feasible, engineering controls such as machine guards and ventilation systems should be considered. This process continues down the hierarchy until the highest level feasible control is found.*

*Often a combination of controls is most effective. In cases where the higher order controls (elimination, substitution and implementation of engineering controls) do not reduce risk to an acceptable level, lower order controls may be necessary (e.g., warnings, administrative controls or personal protective equipment).*

*For example, if an equipment modification or noise enclosure (engineering control) is insufficient to reduce noise levels, then limiting exposure through job rotation and using hearing protection would be an acceptable supplemental means of control (AIHA).*

Note that Z10 prescribes a hierarchy of controls which contains six elements, the first of which, in priority order, is to design out or otherwise eliminate the hazard. If the hazard is eliminated, so is the risk. Also note that the substitution element is separate from the elimination element.

The number of elements and the separation of substitution from elimination are important. Other published hierarchies of control are not quite as descriptive and complete. Some have as few as three elements. Over time, the hierarchy of controls set forth in Z10 will become the accepted norm. Annex G provides a pictorial and verbal display of the hierarchy of controls listed in 5.1.1 with application examples for each element.

In an occupational setting, these outcomes are to be achieved through the application of the hierarchy of controls:

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1) an acceptable risk level;  
2) work methods and processes in which the probability of a) errors by supervisors and workers because of design inadequacy is at a practical minimum; and b) supervisors and workers defeating the system is at a practical minimum.

Similar outcomes should be expected when applying the hierarchy of controls to other hazards and risks, such as for the design and use of industrial and consumer products, and environmental management systems. [See also Manuele(c).]

### 5.1.2: Design Review & Management of Change

The following excerpts indicate what the standard requires for design reviews and management of change, and replicate the explanatory information given in its right-hand column. Again, these are “shall” provisions.

*The organization shall establish and implement processes to identify, and take appropriate steps to prevent or otherwise control hazards and reduce potential risks associated with:*

- A) *New processes or operations at the design stage; and*
- B) *Changes to its existing operations, products, services or suppliers.*

*The process for design reviews and management of change shall include:*

- a) *identification of tasks and related health and safety hazards;*
- b) *consideration of hazards associated with human factors;*
- c) *consideration of control measures (hierarchy of controls—5.1.1);*
- d) *review of applicable regulations, codes and standards; and*
- e) *a determination of the appropriate scope and degree of the design review and management of change.*

*E5.1.2: The process for conducting design reviews and managing changes is designed to prevent injuries and illnesses before new*

*hazards and risks are introduced into the work environment. The design review should consider all aspects including design, construction, operation, maintenance and decommissioning.*

*The following are examples of conditions that should trigger a design review or management of change process:*

- *new or modified technology (including software), equipment or facilities;*
- *new or revised procedures, work practices, design specifications or standards;*
- *different types and grades of raw materials;*
- *significant changes to the site’s organizational structure and staffing, including use of contractors;*
- *modification of health and safety devices; and*
- *new health and safety standards or regulations (AIHA).*

### Design Review

The author has long professed that the most effective and economical way to minimize risks is to address the hazards from which they derive during the design process. That is what this standard requires—and it is an extremely important element in this standard. Its impact can be immense.

To become qualified to give counsel on establishing a management system to apply the design review requirements of this standard, many SH&E practitioners will have to acquire new knowledge and skill. A chapter in *Innovations in Safety Management* titled “How to Avoid Bringing Hazards into the Workplace” covers this topic [Manuele(a)]. It includes a general industry guide to safe design and operational requirements; general design safety checklist; and a section on design safety reviews.

Another key reference in this area is *Safety Through Design*, which contains these three major sections: Introducing Safety Through Design; Integrating [Safety Through Design] into Business Processes; and Safety Through Design in Industry. The latter section contains six chapters pertaining to application of safety through design concepts in general industry, the automotive industry, aircraft manufacturing, the chemical industry,

construction and in the electronics industry (Christensen and Manuele).

In the chapter on application in general industry, Adams discusses challenges to process implementation and maintenance. He notes: “Implementing an effective safety through design process often requires challenging the culture within an engineering organization” (Adams). If a design safety review management system is not in place in an organization, SH&E practitioners should anticipate a long-term effort to achieve the culture change necessary to meet the requirements of Z10. This often means establishing a management system that mobilizes engineering, purchasing, quality control and other departments which may not be accustomed to working collaboratively. (To assist in that accomplishment, *Safety Through Design* includes a chapter titled “Achieving the Necessary Culture Change” by Steven I. Simon.)

### Management of Change

Employers are to have processes in place to identify and take the appropriate steps to prevent or otherwise control hazards and reduce the potential risks associated with them when changes are made to existing operations, products, services or suppliers.

With respect to drafting and implementing management of change procedures, generalists can learn from those in organizations that have met the management of change requirements of OSHA’s Process Safety Management of Highly Hazardous Chemicals standard (1910.119), issued in 1992. Briefly, 1910.119 requires that employers establish and implement written procedures to manage changes. Requirements of Z10 and 1910.119 have similar purposes. Getting effective management of change procedures in place and maintained is not easily done, however.

For all occupations, many incidents that result in severe injury occur when out-of-the-ordinary situations arise, particularly when unusual and nonroutine work is being performed and when sources of high energy are present. In support of that premise, consider these excerpts from historical and explanatory data published with respect to 1910.119.

Management of Change: OSHA believes that one of the most important and necessary aspects of a process safety management program is appropriately managing changes to the process. This is because many

of the incidents that the agency has reviewed resulted from some type of change to the process. While the agency received some excellent suggestions concerning minor changes to improve this proposed provision, there was widespread support for including a provision concerning the management of change in the final rule (OSHA).

As noted, support for the management of change provisions was strong. However, about 2 years after 1910.119 became effective, Thomas Seymour, a director at OSHA as the standard was being developed, said that chemical plant operators had reported that the management of change requirement in the standard was the most difficult to apply. Therefore, it is not surprising that courses have been developed to help those responsible for meeting the management of change requirements.

Given this, SH&E practitioners should thoroughly study the management of change requirements of Z10 to determine how they might help to achieve the culture change necessary for their implementation. Applying change management methods will be necessary. Fortunately, the literature on change management is extensive. One good reference on the process is Casada, et al's *A Manager's Guide to Implementing and Improving Management of Change Systems*.

### 5.1.3: Procurement

Although the requirements for procurement are plainly stated and easily understood, they are brief in relation to the enormity of what will be required to implement them. An interpretation of the requirements could be: SH&E practitioners, you are assigned the responsibility to convince managements and purchasing agents that, in the long term, it can be very expensive to buy cheap. This is what the standard and the explanatory data state.

*The organization shall establish and implement processes to:*

- A) *Identify and evaluate the potential health and safety risks associated with purchased products, raw materials, and other goods and related services before introduction into the work environment;*
- B) *Establish requirements for*

*supplies, equipment, raw materials, and other goods and related services purchased by the organization to control potential health and safety risks; and*

- C) *Ensure that purchased products, raw materials, and other goods and related services conform to the organization's health and safety requirements.*

*E5.1.3: The procurement process should be documented. See section E5.4.*

*E5.1.3A: For example, organizations should evaluate MSDS and other health and safety information of a new chemical, or examine the design specifications and operations manual for a new piece of equipment being considered for purchase (AIHA).*

Only a small percentage of employers have included specifications in their purchasing agreements and contracts that require suppliers to identify the hazards and assess the potential risks in the equipment and materials being purchased. As a safety director in a major company said recently, the only safety specification in their contracts is that OSHA standards and other legislative requirements be met.

The Z10 standard implies that safety through design concepts are to be applied in an organization's purchasing system with respect to both physical hazards and work methods. Adding an element to safety management systems that will help to avoid bringing hazards into the workplace could produce startling good reductions in the frequency and severity of hazardous incidents and exposures.

Procedures encompassing the requirements will not be easy to implement, but recognition slowly arises that they should be an integral part of a safety management system. One example, the ergonomic design criteria established by DaimlerChrysler for equipment suppliers and vendors and company engineers, is cited here to indicate how broad and complex procurement requirements. These criteria can be found at <https://gsp.extra.daimlerchrysler.com/mfg/amedd/toolddesign/textsection15.htm>. The 13-page document covers ergonomics criteria only. It sets forth specifications for suppliers and vendors to meet so as to

avoid bringing ergonomics hazards into the workplace. To review the general acquisition provisions instituted by DaimlerChrysler pertaining to "Tool and Equipment Follow-up, Certification and Buy-Off Procedures," change the "15" in the website address to "14."

Getting these procurement provisions in place will be a challenge for SH&E practitioners, but the benefits can be immense.

### 6.0 Evaluation & Corrective Action

This section of the standard outlines the requirements for processes to evaluate the performance of the safety management system and to take corrective action when shortcomings are found. Provisions pertain to monitoring, measurement and assessment, incident investigation and audits. Comments address only one provision in 6.0 (audits). Why only this one? Because audits "shall" be made. From a review of the requirements of this section, it seems that many organizations may be making substantive revisions in their audit systems.

Audit requirements are for safety management systems audits, not specification audits. The audits are to measure the organization's effectiveness in implementing the OHSMS elements. Thus, audits are to determine whether the management systems in place do/do not effectively identify hazards and control risks. This is what the standard and the explanatory data state.

### 6.3 Audits

*The organization shall establish and implement processes to:*

- A) *Conduct periodic audits to determine whether the organization has appropriately applied and effectively implemented the OHSMS elements, including identifying hazards and controlling risks;*
- B) *Document and communicate audit results to:*
  - a) *Those responsible for corrective and preventive action;*
  - b) *Area supervision; and*
  - c) *Other affected individuals, including employees and employee representatives.*
- C) *Immediately communicate situations identified in audits that could be expected to*

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*cause a fatality, serious injury, or illness in the immediate future, so that prompt corrective action under 6.4 is taken.*

*E6.3 Audits required by this section are "system" oriented rather than "compliance" oriented. The audit should determine if the OHSMS meets the requirements of this standard. Audits should be conducted by individuals independent of the activities being examined. This does not mean that audits must be conducted by individuals external to the organization (AIHA).*

Although many SH&E practitioners are familiar with safety audit processes, they should review what the standard requires and determine whether it will be to their benefit to revise their audit systems. Annex I is helpful in this respect; it contains an example of an audit outline that matches the plan-do-check-act sections of Z10.

### 7.0: Management Review

This section requires that OHSMS performance be reviewed and that management take appropriate actions in response. It is an important part of the plan-do-check-act process.

*7.1 The organization shall establish and implement a process for top management to review the OHSMS at least annually, and to recommend improvements to ensure its continued suitability, adequacy, and effectiveness.*

*E.7.1: Management reviews are a critical part of the continual improvement of the OHSMS (AIHA).*

These are a few of the subjects to be reviewed at least annually: progress in risk reduction; effectiveness of processes to identify, assess and prioritize risk and system deficiencies; and effectiveness in addressing underlying causes of risks and system deficiencies.

### Conclusion

ANSI/AIHA Z10-2005 represents an important step in the evolution of the practice of safety. Realistically, it can be expected that over time it will become the

benchmark against which safety and health management systems will be measured. As the quality of safety and health management systems improves, it is logical to expect that the frequency and severity of occupational injuries and illnesses will be reduced.

SH&E practitioners must not ignore the long-range impact Z10 will have on societal expectations concerning the quality of safety management systems that employers have in place, and on the expectations employers will have concerning the knowledge and capabilities of SH&E personnel. Prudent SH&E practitioners will study the requirements of the standard to determine whether they need additional skills and capabilities, then will take action to acquire those skills. Having done so, they will be equipped to help managements put in place safety management system elements that may not currently exist.

The author also suggests that the leaders at professional organizations such as ASSE consider developing seminars to instruct SH&E practitioners about the content and application of ANSI/AIHA Z10-2005, particularly with respect to the requirements for risk assessments, the application of a hierarchy of controls, design reviews, management of change, procurement and audits. ■

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## Impact of ANSI Z10

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on the ASSE website describing the differences between a voluntary consensus standard and a regulation.

The response was excellent. It did not seem to so much “scare” management as it made management aware of ways to protect the company. I am not saying the scare tactic is the best way, but in my situation, this standard has made some people pay attention who before could not have cared less. I think from that perspective the standard has been successful.

▶▶ I think most of our ANSI A10 committee would agree that Z10 fails to provide adequate guidance on the increasingly common issue of multiemployer workplaces, multi-tier subcontracting and non-standard employment relationships such as temporary agencies, employee leasing, self-employed consultants or contractors or contractor/vendor employees on your site. There is a strong resistance to any move toward responsibility for another employer’s employees on your site.

Although one section of Z10 addresses contractors, it provides inadequate guidance for these increasingly common work situations. This is not only a problem in construction (where multi-tier subcontracting has been the norm for many years), but across the industry spectrum where traditional employee relationships are less common.

Z10 also fails to adequately address procurement. It focuses on hazardous materials that are purchased at a time when many companies are outsourcing entire components or entire assembly lines and intermediate products. There are plenty of examples showing how SH&E performance within a company’s vendor/procurement web can affect a corporation (even if they are not really your employees). The developing corporate social responsibility standard (ISO 26000) may begin to address these issues, but its scope remains unclear and highly contested.

Effective risk anticipation and injury prevention is not simple. Using various contractual relationships to shift the legal burden of safety responsibility onto other parties on a multiemployer worksite or scattered around the globe does not make this task easier. More commonly, the result shifts responsibility for managing the highest-risk tasks (like construction or

tank entry) to small companies or individual workers with limited performance oversight and few resources who are often under economic pressures to ignore accepted safe work practices.

Any management system that assumes a company only needs to be concerned with “employees” has failed to understand the complexity of the modern workplace. When it comes down to it, if a safety professional recognizes a significant hazard that is not adequately controlled, you need to do something. (I cannot believe that ignoring it or not looking at it in the first place will reduce your company’s liability.) Any management system that has the effect of saying “do nothing because they are not an employee” should be criminal. A management system should direct action along appropriate pathways to prevent injuries rather than create artificial barriers that allow injuries or catastrophes to be blamed on someone else.

Experiences of large owners managing multiemployer construction projects (e.g., Construction Users Round Table and U.S. Army Corp of Engineers) have demonstrated that aggressive safety management systems can reduce injury rates to less than 20% of industry sector averages and in some cases to near zero. There is ample experience to draw on to develop a standard that addresses multiemployer issues in a more realistic and helpful manner.

### Positive Aspects

▶▶ I think the standard is long overdue and will have a tremendous impact on organizations that choose to adopt it fully and in its full spirit.

I was pleased to see the word “behavior” only once in the document, and it referred to the potential poor design of incentive programs. It is great to see the hierarchy of controls reemerge as the gold standard. The language on their applicability to OSH management systems was long overdue.

The risk assessment piece is excellent.

The comments regarding the rationale and application of the standard on the right side of the pages are outstanding.

### Constructive Comments

▶▶ Better guidance with regard to incident investigation rationale and processes is needed. The rationale provided on pp. 19-20 of the standard are adequate, but the form in Appendix H is too simplified and focuses too much on background data col-

lection rather than on seeking to identify and correct hazards and system deficiencies. The form in Appendix H should be named “incident data collection form” rather than “incident investigation form.”

The standard’s name should be Occupational Safety and Health Management Standard, switching safety and health. As soon as you put health before safety, the epidemiologists, health educators and other public health professionals lay claim to the profession in some manner. Occupational safety, as a true profession, is being eroded by these ancillary fields in my opinion.

CSPs should have been recognized with some sort of function and title identification within the standard. (Note this is NOT a comment on title protection in any way.)

▶▶ I do not think Z10 contains anything new. What is new is that a minimum standard has now been set for all safety programs. This sets a new standard of care for all businesses to which they will be held in litigation and probably by OSHA. Also, as has been already pointed out in some articles, it raises the bar and liability exposure for consultants.

ANSI Z10 addresses the necessary elements to ensure an efficient implementation of OHS activities and is similar enough to ISO 14000 and 9000 so that all three can be implemented with little overlap and redundancy.

The Z10 standard really shines in the distinctive elements that apply to safety and health management versus general management or financial management. Many organizations have disparate management philosophies with varying merit for any particular purpose. Z10 provides a very solid basis for safety and health management and this is particularly evident in Section 5, “Implementation and Operation.” In this section, the importance of building in safety and the clear presentation of the hierarchy of controls provide a great basis for guiding top management toward a solid safety philosophy.

I am a supporter of this voluntary standard. It focuses on management systems as the basis for improvement in organizational performance, which gets to the heart of the organization. Z10 states that these are minimum requirements and that there may be cases where employers would need to go beyond the Z10 requirements. The management systems

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## Impact of ANSI Z10

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in this standard fall in line with OSHA's Voluntary Safety Management Guidelines, which outline the basic elements of a successful safety and health program. I also like it because other recognized standards (some international) for safety, quality and environment were used to help in development. This standard should be the benchmark for safety and health management systems.

▶▶ Although the attempt was to write it for the "little guy" as well as the "big guy," the little guy will need help getting it off the runway, especially the planning and auditing sections.

The standard goes a long way toward introducing the concept of risk assessment into the mainline thinking of safety pros. This may seem like a small thing, but it starts us down the path of thinking more like business managers, with the result of sounding like others in the organization and less like zealots in search of the Holy Grail of zero accidents.

At the expense of offending some peers, we run our lives on the concept of acceptable risk, not zero risk. It is how businesses run. We need to get with the program and focus more on risks instead of hazards. In a time of limited resources, this leads to prioritization and maximum use of resources available instead of a shotgun, watered-down approach.

Sticking to the planning theme, once again it makes SH&E professionals look like just that—professionals. You attack problems the organization has in an organized and concise manner. It brings on the realization among operations managers that we are contributing directly to the financial success of the organization. They are our customers.

If followed properly, the Z10 approach not only will get commitment from top management, but it will also give them things they can do and measure to determine success. Unfortunately, Number 4 is an example of how you need people who understand how to prioritize issues, put them in the form of a plan and get management sign-off and involvement—not skills you are likely to find in a small organization or one without a safety culture.

A lurking danger is that the standard could be used as a "certification" standard. That was not the intent during the writing

of the standard, but there is certainly potential for this to occur. It still needs a primer on how to write a safety program from scratch. That could be handled with appendices, perhaps on the next rewrite.

▶▶ The Z10 hierarchy of controls clearly emphasizes elimination of the hazard or substitution of a less hazardous substance or process as the preferred choice.

To me, this still implies elimination of the hazard before it becomes a risk. Therefore, zero risk is still emphasized and preferred by this standard. Z10 recognizes that achieving zero risk of a hazard (by eliminating the hazard) may not be achievable for all substances or operations in an organization. However, elimination is certainly doable for a certain percentage of those hazards.

## An Update on ANSI Z10

In the year since ANSI/AIHA Z10 was approved, organizations nationwide have successfully integrated the standard into their overall business practices and as a result, have reduced workplace risks, injuries, illnesses and fatalities, and have also improved their bottom line.

Z10, a voluntary consensus standard, uses recognized management system principles and is compatible with quality and environmental management system standards such as the ISO 9000 and ISO 14000 series. It also draws from the International Labor Organization's guidelines on OHS management systems and from other systems used in the U.S. This compatibility allows the standard's requirements to be incorporated into other business management systems. However, organizations that choose to use the Z10 standard must determine how they will evaluate their conformance to it.

To eliminate the causes of deficiencies, the standard seeks a long-term solution, rather than a quick fix. It outlines an OHSMS cycle to show continuous improvement based on the concept of the plan-do-check-act. This cycle includes:

- an initial planning process;
- implementation of the management system;
- a process to check the performance of these activities and to take proper corrective actions;
- a management review of the system for suitability, adequacy and effectiveness against the policy and standard.

Repeating this cycle can lead to reduced hazards and risks and

improved productivity, financial performance and employee satisfaction.

Darryl Hill, ASSE's Vice President of Finance and North America safety and health officer for ABB Inc., appreciates the Z10 standard's implementation in his line of work. "ABB North American Operations has implemented the Z10 standard in conjunction with OHSAS 18001. Z10 is viewed as a 'best practice' that is more comprehensive than OHSAS 18001. The implementation has been successful because management and employees realized the productivity, safety performance and financial benefits in a short period of time."

He adds, "Risk assessments are a major component of ABB's safety process and the Z10 standard provides excellent guidance in this area. The standard also offers clear and concise interpretation throughout the document."

For Michael Thompson, ASSE's President-Elect and SH&E training and development advisor for BP, the Z10 standard as led to "an improved level of performance across our [BP's] business and within the workforce, management and labor."

During the next year, occupational health and safety management is expected to improve even more thanks to the Z10 standard. Don Jones, ASSE President and regulatory expertise leader for Dow Chemical Co.'s Global Environmental Health and Safety Regulatory Affairs Center, predicts that "more companies will become aware of the standard" and maintains that through education, employees will include it in their practices."

Hill believes that "the Z10 standard will positively impact safety and health during the next year and subsequent years because of its simplicity—it provides a solid roadmap for safety and health management success."

There are still small battles to be won by stressing the elimination of hazards where practicable for as many substances or processes that we can. Although defining acceptable risk(s) of hazards may apply in most instances, Z10 still requires that we first ask, "Can zero risk be achieved for a given hazard of a substance or process?"

Management must recognize hazard elimination as a viable choice. Commit-

Thompson expects that "continued progress will transform the traditional SH&E, management and labor roles and responsibilities." He adds, "Management will more fully understand its responsibilities as the 'owners' for SH&E performance, labor will more readily agree to implement elements of the management system, and SH&E personnel will take on more of an internal consulting role to management and labor."

Organizations that wish to incorporate the Z10 standard into their business practices but are not sure where to begin should "review the Z10 standard and develop a strategy to incorporate specific elements into their overall safety system," according to Hill. "Organizations can use the standard as a gap analysis to determine their safety and health management system status and to develop a framework for continuous improvement," he adds.

Jones suggests that organizations use the Z10 standard to build "a non-existent safety and health program" or to improve "an already good program."

Thompson recommends that "senior management consider its role" in incorporating the Z10 standard. "They should ask why they feel the standard is necessary and they should determine their goal for implementing a management system. The Z10 standard is a template that each business must tailor to its own system."

"They should also develop tools for performing a 'gap analysis' of current performance using Z10 and involve all levels of the workforce," Thompson concludes.

For more information or to purchase the Z10 standard, visit <https://www.asse.org/shonline/books/standards/3388.htm>.

ment from management to the Z10 approach to safety means commitment to the hierarchy of controls. If it is determined that elimination of the hazard is not possible or practicable, Z10 then helps us to determine or assess a level of acceptable risk for those remaining hazards within our organization.

Thinking like a business manager is necessary for a successful safety management program. It is important to show that safety contributes to the financial success of our organizations. Operations managers certainly are our clients. However, we cannot forget that the employees who may be injured or killed by acceptable risks are also our clients. Z10 provides a process that helps us assess, balance and communicate the necessity of organizational profitability with our obligation to provide a safe workplace.

▶▶ In 2005, the ANSI/AIHA Z10 standard was approved. There are various schools of thought about its impact. Some believe it will become the basis of OSHA citations for sites that have no or little developed safety and health management programs or systems. Part of their belief is based on the fact that OSHA was an active participant on the committee which developed the standard.

Others believe that OSHA citations based on this standard, while not impossible, are not likely. OSHA has a set of safety and health program guidelines that remain in effect. OSHA had an initiative on a safety health program standard in the mid-1990s. It ultimately was swallowed up in the push for an ergonomics standard. Its prospects were not good because it does not directly address a hazard or hazards

such as confined space entry, lockout/tagout, respiratory protection or HazCom.

I am a firm member of this second group. That said, I do see potential vulnerability here from Z10. Instead of from OSHA, it may come from lawsuits filed by injured or ill contractors or members of the public, if that is applicable for your site. Z10 may be used as a legal club to prove your site's SH&E program is deficient, then extract money from you.

Sites/companies are urged to adopt the provisions of the standard. My view is that this standard is excessively complex for most sites—it has good concepts, but it is overwhelming. I would not recommend dumping this on a management team, telling the team this is what has to be done. Instead, I suggest the following:

1) Obtain a copy of the standard. You can order it online from ASSE. It is a useful reference for your library.

2) Using your word processor, lay out the headings and subheadings, one to a page. Then describe on these pages how your site's current program meets the requirements under each of these headings and subheadings. Find something in your program that addresses the requirements under each heading and subheading, no matter how slim in conformance it may be.

3) File these pages should someone challenge your site's program on the basis of Z10.

4) Assess all of the standard's requirements. Identify the ones that can be implemented at your site and bring improvement. Bring them to the management team one by one over time in an evolutionary approach to get buy-in for improving the site's program. ■

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# Management Systems Vs. Specification Standards

## The Paradigm Shift in Standards Thinking

By *C. Gary Lopez, CSP*

As the SH&E field continues to mature, there is a growing movement toward using management systems approaches to SH&E programs that reflects the success companies have realized with similar approaches to quality programs. One significant effect of this shift has been new approaches in what we look at when managing SH&E issues to which an organization is exposed. The outcome has been a shift from managing regulations, hazards and pure “body count” to the implementation of managing risk. This shift is leading SH&E professionals to think less in terms of “zero accidents” and “safety first” and more in terms of “acceptable risk.” As a result, regulatory compliance is now viewed as a basic given, not the driving force for SH&E management.

Recognizing that specification standards are no longer a benchmark to use as guidance in safety management efforts, management systems and performance-type standards for SH&E issues have begun to spring up around the globe.

### Birth of a Standard

Most standards emerge as a reaction to an event rather than as a proactive measure. One can trace the history of standards (and most of the safety and health organizations) and find that they follow a series of serious accidents or single events so traumatic that a resulting standard is almost a given.

For example, after the Bhopal incident, process safety standards targeting the chemical industry were developed both voluntarily by the chemical industry through the Chemical Manufacturers Association (now the American Chemistry Council) and legislatively by OSHA.

This pattern is historical. Whether the sinking of the Titanic, the Triangle Shirt Factory fire or the Coconut Grove fire, standards to prevent similar incidents in the future quickly follow on the heels of these events. In some cases, the motivation is more chronic in nature. For example, after consistent losses in confined space incidents, the need for a standard to identify what the standard of care should be in entering confined spaces was evident.

The normal standard development process is as follows:

- Someone decides that a standard is needed to address a particular risk (normally in response to some incident).

- An advocacy group is asked to sponsor the standard. Typically, this will be organizations such as ASSE, AIHA, NSC or similar organizations.

- Once convinced of the need for the standard, the advocacy group will petition a standards organization such as ANSI for a project to create the standard.

- Once approved by the standards organization, the advocacy group becomes the secretariat to the proposed standard.

- Although there are different methods of approving a standard, the consensus approach is usually the most popular.

- Committee members are selected from various interest groups with the standards organization providing guidelines regarding what type of representation is required on the committee for a fair balance.

- The committee develops a standard.

- Once approved by the writing committee, the standard is distributed for public comment.

- After public comments have been addressed, the committee has a final vote on the standard and it is published.

- The standard becomes “live” and must be reviewed on a periodic basis specified by the standards organization to remain valid.

Although this progression sounds straightforward, depending on the standard and the makeup of the committee, the process can be long and acrimonious, and at times can reach a point where the committee cannot agree on a final standard. An example of this would be the NSC-sponsored ANSI committee that failed to reach agreement on an ergonomics standard. The project was finally abandoned.

### Voluntary versus Mandatory

In the U.S., only government (OSHA) standards are mandatory by law. However, OSHA and the states may incorporate voluntary standards by reference, giving these standards the force of law. Historically, however, ANSI, NFPA, ISO, ILO and

other such standards were written with the idea that they were to be used as voluntary consensus standards.

Increasingly, however, the line between voluntary and mandatory standards is blurring. In the case of incorporating voluntary standards by reference, OSHA has created the problem of the referenced standard being out of date—and in some cases, obsolete. For example, if OSHA references ANSI Z89.1-1989 and the most recent edition of the standard is ANSI Z89.1-2005, which is an organization to use? The problem arises in that OSHA does not reopen its standards every time an ANSI standard is updated (every 5 years under ANSI bylaws). The outcome is a quandary that all organizations face. In some instances, it makes literal compliance impossible.

A second and probably more serious issue is that due to the increasingly litigious nature of our society, the standard of care concept is creeping into the safety professional's lexicon.

### Standard of Care

The term “standard of care” defines a concept that a standard exists which has been agreed upon by peers in your field, organization, group and/or society in general that defines the type of behavior which would constitute acceptable risk regarding a particular issue.

This concept implies that if some voluntary standard addresses risks in your organization, yet you ignored or did not use it as a benchmark, you have left the company open to question regarding due diligence to risk mediation measures. Considering these factors, no organization will ignore the more recent standard and be satisfied complying with an older version. Doing so would set the table for a potential lawsuit.

As a result of this, many voluntary consensus standards have become anything but voluntary. No organization wants to find itself in a position of not complying with the latest standard of care in terms of SH&E regulations. No organization wants to find itself mounting a defense based on a 25-year-old standard or on the stance that “OSHA says so.” The result is that voluntary standards are fast becoming voluntary in name only.

## Safety Management Systems

As the SH&E field has matured, so has the way it is managed. Thirty years ago the approach was the 3 Es of safety—education, engineering and enforcement. This gave way to the “program approach,” in which the various elements of what constituted a good SH&E program were broken out and implemented.

The next wave was the “technocrat” approach in which it was thought that all ills could be cured with a specification standard for the topic. This was followed by the rebirth of the “human behavior” phase in which it was decided that since human factors were responsible for 80% to 90% of all incidents, if we could control people all would be well. Through this entire transition, the programmed, standards-driven approach was the main driver of the initiatives.

Then ISO 9000 was issued and the world went process improvement crazy. Naturally, this has spread to the SH&E field, making a management system standard based on the ISO 9001 process almost inevitable.

### Z10 Arrives

On July 25, 2005, ANSI did what OSHA had been unable to do in nearly two decades. Its version of a “safety programs” standard was published as ANSI Z10, Occupational Health and Safety Management Systems. In the author’s opinion, future safety and risk management students will study this as a seminal event in the field. For the first time, a standard was made available that covered how to manage safety and health efforts in an organization.

The first effect of this “systems” thinking is that through the planning stage of the

process an organization is forced to think beyond the simple concepts of zero accidents and “body count” type injuries and illnesses. The focus is on risk and what constitutes acceptable risk.

Nothing new was invented for this standard. In simple terms, ANS Z10 incorporates into one document many of the modern management approaches to managing risk in an organization. The focus and businesslike approach it promotes regarding risk assessment and management should result in dramatic lowering of catastrophic type losses and all loss in general. This new approach of reviewing risks, prioritizing these risks, developing measures to address them, then auditing success or failure with the intent of improving the management process is both beautifully simple and highly effective.

The irony of this approach is that it is bringing the SH&E field closer to a distant cousin that has used a similar approach for years—the insurance industry. Why the two fields have not merged years ago and pooled their resources is a subject for another time, but clearly they are working off the same page more and more.

What will change dramatically is that the current world of managing safety by compliance with specification standards and accident rates will change substantially to a world driven by risk assessment and measures taken to address the risks of an organization.

### Certification

The word certification can cause feelings from the sublime to the painful. No matter what side you support or how you view the value of certification, it is here and it affects the way we do business in some parts of the world. The term “certification” covers

much territory in the standards world that for the purposes of this discussion, it is limited to “certifying” a management standard such as ISO 9001 or ISO 14001.

Typically the way certification works is that an organization decides it wants to become “certified” to a standard and embarks on a program of putting the standard’s elements in place. This usually involves developing the management systems, the paper trail and other required measures. Once this is complete, the organization hires an outside certification agency to come in and pronounce the company “certified to” a given standard. The first step is usually a paper audit, followed by a real audit.

In some countries, certification to standards such as 14001 has become a requirement of doing business. In other cases, some businesses will not use a contractor or vendor that is not certified to some particular standard.

Certification carries some significant costs—in some cases approaching six figures to certify and maintain per location. As a result, many companies are concerned about where the certification mania is leading—especially as it begins to proliferate from quality to environmental and SH&E standards. The thinking is that a company will need an entire department which does nothing but walk around certifying the business’s activities.

### What’s in a Systems Standard?

Several safety-related systems standards are available, many similar in content. Most contain these elements:

- general requirements/policy;
- planning and organizing;
- implementation and operation;
- evaluation/corrective actions/audits;
- management review/improvement.

Anyone familiar with the ISO quality standard will see the obvious similarity in the outlines. As a matter of fact, anyone familiar with Business Administration 101 will see an obvious pattern. One could argue why it took so long for the

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**Table 1 Comparing Management Standards**

ANSI Z10	ILO-OSH 2001	OHSAS 18001	ISO 14001
Management leadership and employee participation	Policy	General requirements	General requirements
Planning	Organizing	Policy	Policy
Implement and operations	Planning and implementation	Planning	Planning
Eval/correct actions	Evaluation	Implement and operation	Implement and operation
Management Review	Action for improvement	Check and correct act.	Check and correct act.
		Management review	Management review

## Management Systems vs. Specification Standards

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obvious to be applied in SH&E, but a simple review of the profession's history explains this failure of logic. Complicating matters is the fact that the field is still searching for an identity.

Closer examination of the current standards reveals that the basic outline has little variance (Table 1). All are built along the plan-do-check-act concept, which is the basis of the ISO 9000 quality standards.

The beauty of these standards is that they are highly adaptable. The downside is that the standards are not self-explanatory—they require the presence of SH&E professionals to implement a meaningful plan. As with all “program” nonspecification-type standards, the upside is flexibility but the downside (if you view it as such) is the lack of direction to the novice.

ANSI Z10 started as a standard that was to address the needs of the small business. But as it matured, it became clear that what written was a model standard by which all large corporate SH&E programs were run. To expect “Ma & Pa Plumbing” to understand—and implement—the standard is wishful thinking.

### Is an ISO Standard Needed?

ISO is moving toward developing an international safety and health standard. It is too early to predict the final look of such a standard, but the logic behind the need for such a standard is irrefutable.

As noted, the predominant systems standards are remarkably similar. Part of this is because the writers did not want to veer too far from what was already in use. A greater part is that you can only make the wheel so round. By the nature of the process, the “performance” language will not allow too great of a level of detail. Consequently, the standard will essentially lead you down a trail to the goal of the exercise. How many different ways can you say plan, do, check, act? Considering the similarity, one must ask the obvious question, “Why do we need so many standards saying the same thing?”

### How Did We Get Here?

To find the enemy, simply look in the mirror. In a perfect world, when ISO 14001 was being written, instead of an environmental management system standard, it

should have been an SH&E system standard. This issue was broached when the committee that drafted ISO 14001 first met, but several factors weighed heavily against this approach.

In 1995, it became obvious that the committee drafting the ISO 14000 standards was not going to take on safety and health. To discuss this omission and the growing movement in Europe to recommend a project for an ISO safety and health standard, a meeting was held in Rosemont, IL. Many large U.S. corporations sent their best and brightest to discuss the topic of an international safety and health standard.

The outcome of the meeting was a rousing “there is no need for such a standard.” ANSI was instructed to vote “no” on a proposed project for an ISO safety and health standard. ANSI did so. A few viewed this as a “bury your head in the sand” approach to the direction of safety and health, but the ISO 14001 standard rewrite in 1998 was issued without a safety and health component, and the ISO project for a standard was voted down. All was settled—or so everyone thought.

Nature abhors a vacuum—meaning something will come along and fill it. Into the vacuum left by the Rosemont meetings jumped ILO, then OHSAS, then ANSI. So, instead of one international standard on the topic of how to structure and manage an SH&E program, we now have two international and one national standard (although the ILO and OHSAS documents are “guidelines” and “specifications,” respectively, they are, for all intents and purposes, used as standards). Adding to the avalanche of what was judged to be “unnecessary” standards is a resurgence of the movement for the ISO safety and health standard.

One can look back to the Rosemont meetings and ask how could we not have seen this coming. The truth is that the thinking was parochial in nature. From a U.S. standpoint, we had enough safety and health standards. Although the international marketplace was getting ready to boom, it had not launched to the level of today. But the greatest fear was likely the proliferation of certification standards.

One can also ask what members of ISO 14000 were thinking. Couldn't they simply have added the words “safety and health” in most of language of 14001 and saved us from this? Unfortunately, Technical

Advisory Group (TAG) 207, which was formed to write the ISO 14000 standards was, made up of mostly environmental folks. They clearly saw their mandate as to write an environmental standard only.

In defense of these original drafters, I am sure they believed going beyond this was not in their mission, nor did they want to complicate the writing of the standard by adding safety and health to the mix. Clearly, this was short-sighted thinking that resulted in two separate groups rationalizing why the ISO safety and health standard was not needed. In short, we set ourselves up for the obvious—a vacuum into which others would charge with international safety and health standards.

### What Now?

The logic for the standard is not as clear as it was before it had challengers, but ISO is the preeminent standards organization for international standards. In today's international marketplace, ISO is the perfect venue for the safety and health standard.

This case is furthered by the fact that many international corporations operating in various countries struggle with how to develop a world-class safety and health management system in which the playing field is level. The need is clear.

However the path for an ISO standard is far from clear despite this logic. An example of this is that one standards organization is objecting to a proposal for the ISO project. The argument is that “we already wrote an international standard, why do we need another one?”

This is not an inconsequential argument. One has to believe that when and if the ISO standard comes out, most of the other safety and health system standards will become no more than historical footnotes in the final act of this process.

What will the final act be? At some point, someone will ask, “Why don't we just combine the ISO 14001 EMS and whatever the new ISO safety and health standard will be?” Or it will play out as a separate committee. Whichever the case, we will have to endure more turf battles as we struggle down this evolutionary path. After all, you just can't rush Mother Nature or SH&E professionals fighting the obvious. ■

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