Using a Unified Risk Management Approach for EH&S and Security: Results of a Pilot Project

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Integrating EH&S and security management systems can promote efficiency and lower costs

Several emerging trends are leading organizations to develop new policies, procedures, and approaches to manage their environmental, health, safety, security, and related business risks. These trends include the rapidly increasing use of management system standards (such as ISO 9001, ISO 14001, and OHSAS 18001), the emerging recognition that new standards need to be developed to address security management, and (at many organizations) the addition of security responsibilities to the list of tasks assigned to environmental, health, and safety (EH&S) managers.

These added responsibilities have come at a time when increased global competitive pressures have caused many companies to reduce costs, often hitting the EH&S function hard. One way that EH&S managers can address these pressures is by taking a leadership role in creating a unified risk management approach.

A previous article in this journal (on which two authors of this article were contributors) conceptualized such an integrated management system (Milliman, Grosskopf, Paez, & Ayen, 2004). A unified approach could address the major risks and threats facing organizations in a comprehensive and unified fashion, rather than through separate functional programs and systems, as is often done today.

About This Article

This article reports the results of a pilot project demonstration sponsored by the U.S.-Israeli Science and Technology Foundation (USISTF). The project tested the effectiveness and efficiency of a unified risk management approach to security, environmental, health, and safety (SEH&S) issues in two manufacturing organizations. It also sought to validate the viability of a security management system standard based on

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existing quality and environmental management system principles.

In this article, we first discuss the rationale for a unified risk management approach and explain why such an approach can be based on the same continual improvement cycle that forms the foundation of widely used management system standards such as ISO 9001 and ISO 14001. We then describe the methodology, process, and tools utilized in the pilot project.

Next, we analyze the advantages of the unified risk-based approach and explain what organizational characteristics are needed to effectively implement a unified system. Based on this assessment, we describe the implications for industry practitioners who wish to utilize a unified risk management approach. Finally, we discuss the contribution that integrated management systems can make toward creating pathways to sustainability within organizations.

Why a Unified Risk Management Approach?

A unified approach to security and EH&S management can improve both overall organizational risk management and conformance with international standards (see **Exhibit 1**).

In recent years, organizations have placed increasing emphasis on using and conforming to management system standards developed by the International Organization for Standardization (ISO) and other standard-setting bodies. The most widely used standards include ISO 9001 (quality management), ISO 14001 (environmental management), and, more recently, OHSAS 18001, an occupational safety and health management system standard arrived at through a consensus effort.

Use of these standards is quickly becoming a "best practice" within industry and the norm for larger companies (especially multinationals), as evidenced by the large and rapidly increasing number of registrations to these standards worldwide.

Need for Security Management Standards

With the increasing acceptance of international management system standards, and the growing threat of security risks (both manmade and naturally occurring), a consensus is emerging that standards should be developed to address matters relating to security, business continuity, and emergency preparedness and response. The threats posed by terrorism and natural disasters

Exhibit 1. Rationale for a Unified Risk Management Approach

Attribute	Relationship to Risk Management	Resulting Unification Improvements
Increasing use of multiple international standards (e.g., ISO 9001, ISO 14001)	QMS processes and practices for standards conformance are increasingly used to address multiple risks	Combines risk identification, assessment, analysis, and prioritization efforts
Emerging consensus for security/ business continuity management system standards	Adds "security" on a more in-depth basis to organizational risk management approaches	Addresses risks often overlooked, undervalued, or inadequately assessed with current standards
Cross-functional approaches	Provides for multidisciplinary risk/functional specialists in risk assessments	Reduces risk, improves performance, and enhances conformance to multiple standards
Multiple-standards conformance	Provides further incentive for a unified approach to managing organizational issues and risks	Creates an integrated organizational approach to conformance activities and reduces redundancies
Organizational streamlining efforts	Combines assessments, training, audits, and other activities; one improvement project can now address multiple risks	Provides for cost reductions, improved mitigation, and simplified systems activities

have increased awareness among executives that they must take steps to better protect their organizations against threats that could disrupt, damage, or otherwise harm their business.

Unfortunately, the reality appears to be that while awareness of the business need for security has increased, many organizations have not taken steps to adequately protect themselves. As a result, many systems experts believe there is a need for some type of impetus—even if voluntary—to provide organizations with the incentive and the means to implement effective security management system approaches.

Organizations that have developed security-related management system standards include the USISTF; the U.S. National Fire Protection Agency (NFPA), which has created an emergency preparedness and response standard (NFPA 1600); and the American Chemistry Council, which includes security matters and performance within its Responsible Care® program. In addition, the Standards Institution of Israel (SII) recently ratified its standard for security and business continuity management systems (SII 24001), which is based largely on the draft USISTF security management system (SMS) standard.

Security Standards Can Use EMS and QMS Principles

We suggest that security management system standards can be based on the principles used in environmental management system (EMS) standards, such as ISO 14001, and quality management system (QMS) standards, such as ISO 9001. Developing security management systems based on these established standards can help promote the trend toward integration and unification of standards-based systems.

EMS and SMS: Differences and Similarities

Despite the similarities, it is important to recognize that there are fundamental differences between environmental management systems and security management systems.

In the case of an EMS, the organization deals primarily with actual, expected, or potential environmental impacts, and the goal is to prevent harm or damage to the environment. With a SMS, the emphasis is on preventing business interruption, harm, or damage to the organization, minimizing any harm or damage that does occur, and creating a means for quick rehabilitation of the organization's capabilities (i.e., business resumption/continuity planning).

An EMS helps practitioners understand the nature and significance of the environmental impacts (including risks) that result (or are likely to result) from an organization's activities, products, and services. These impacts (risks) typically can be understood with a reasonable degree of certainty.

A SMS can help the organization assess whether certain measures might help reduce the potential for an attack or natural disaster, just as an EMS can help reduce the potential for environmental damage.

By contrast, a SMS seeks to assess factors such as hostile parties' intent to harm or threaten the organization, and the potential effects that major natural disasters can have on its operations. These factors often involve highly speculative elements. Thus, SMS plans for prevention, damage minimization, and rehabilitation must be based on "scenarios" (possible actions or events), rather than on actual events.

Despite these uncertainties, a SMS can help the organization assess whether certain measures might help reduce the potential for an attack or natural disaster, just as an EMS can help reduce the potential for environmental damage. In addition, a SMS can help the organization work toward lessening the impact of any attack or natural disaster that does occur, and delineate what business continuity steps are to be taken in the event of such a disruption.

A Unified All-Risks Approach

We assert that the same plan-do-check-act (PDCA) continuous improvement cycle that is used so effectively in the various existing ISO management system standards (such as ISO 14001 and ISO 9001) can enable organizations to address constantly changing security threats. This is in fact one of the underlying premises of the USISTF SMS project.

In other words, it is important to recognize that existing environmental and quality management approaches provide the fundamental principles that organizations can use to address security risks. Quality, EH&S, and security simply represent different aspects of business risk, all of which can be addressed with similar processes and methodologies based on assessment, planning, and continuous improvement.

We believe that a unified QMS-based approach can create synergies in addressing multiple international management standards, including security management.

Furthermore, as Robert Pojasek has observed in his "Quality Toolbox" column in this journal (Pojasek, 2006), each of the key management system standards (ISO 14001, OHSAS 18001, and, to a lesser extent, ISO 9001) are based on PDCA and the continuous improvement cycle; they also utilize almost identical frameworks and share QMS concepts, tools, terminology, and certification schemes.

We believe that a unified QMS-based approach can create synergies in addressing multiple international management standards, including security management.

A Unified Approach Can More Effectively Identify Risks

At present, most organizations that employ management system standards do so largely on a functional and single-focus basis. In other words, the activities related to ISO 9001 typically are undertaken and/or led by operational and quality personnel, those related to ISO 14001 by environmental managers, and those related to OHSAS 18001 by health and safety professionals.

The results of a previous pilot project, involving two authors of this article (Milliman, Grosskopf, Paez, & Ayen, 2005), suggest that a total-risk assessment process and a cross-functional team approach can achieve more comprehensive and thorough identification, assessment, and prioritization of EH&S and security risks than can traditional, single-focus efforts. The improved results arise largely from interactions and synergies among experts from different functional areas.

Our view is supported by Pojasek (2006), who observes that health and safety projects may offer insights into environmental issues—and vice versa. Likewise, a security expert may discover new facts about a particular asset or process's vulnerability to terrorism based on inputs from personnel working in the environmental function. And it naturally follows that an expert in quality may have knowledge about facility operations or insights into management systems that could improve management of both the EH&S and security functions.

As an example of how these synergies might work in practice, consider findings made in the previous pilot study by Milliman et al. (2005), which involved a water/wastewater management district. The authors found that unlocked freshwater well caps created easy targets for both intentional and nonintentional acts that could lead to systemwide environmental contamination and render water supplies unsafe, with possible public health, safety, and environmental impacts. Examples such as this demonstrate a direct relationship between security and EH&S impacts.

Unified Risk Management Offers a More Efficient Approach

Unified risk management can potentially streamline the process of identifying, assessing, managing, and mitigating a variety of business risks. Compared to the traditional approach (involving multiple and separate tasking efforts), unified risk management may require fewer staff members and less extensive resources for activities such as assessment, training, and auditing, thus achieving the same level of risk reduction in each individual area at a lower overall cost. Again, our views are echoed by Pojasek (2006), who notes that utilizing common software can lead to cost savings.

Thus, a unified approach can help EH&S managers meet important organizational efficiency objectives while achieving superior risk assessment.

What Does "Unified" Really Mean for Organizational Management?

The authors of this article have observed an increased use of—and confusion about—terms such as "integrated," "unified," "combined," and "harmonized" in connection with organizational efforts to concurrently address multiple management system standards and business risks. In part, the confusion arises because these terms have not been formally defined within the context of the relevant national, international, and sector-based management standards.

It is important to recognize that risks faced by organizations arise out of organizational processes, products, or services. All risks, regardless of their origin, can be analyzed and addressed using fundamentally the same procedures. This means that each risk faced by the organization can be normalized and compared against any other risk to produce a comparative risk analysis. The unified risk management approach that we discuss here involves using a single, comprehensive methodology to identify, assess, analyze, and prioritize all risks—including security, EH&S, and other business risks.

What is important to top management is the relative ranking of each risk. Knowing these rankings is necessary to ensure that management effectively and efficiently allocates resources to control, manage, or eliminate the range of risks faced by the organization.

With respect to management system standards, the unified risk management approach allows the organization to use a single matrix instead of separate matrices for the risks associated with each of the various management standards. Utilizing a single matrix allows the organization to simultaneously assess the risks associated with multiple standards.

Contrast this with the traditional approach, where an auditor examines only the particular system that he/she is contracted to assess—that is, an auditor who is asked to examine ISO 14001 will assess only environmental risks, while an auditor who is asked to review OHSAS 18001 will concentrate solely on health and safety risks.

The unified risk management approach that we discuss here involves using a single, comprehensive methodology to identify, assess, analyze, and prioritize all risks—including security, EH&S, and other business risks.

The "What" and the "How" of Managing Organizational Risks

The process envisioned in this article utilizes an integrated management systems methodology to implement a unified risk management approach. The integrated management systems methodology relies on existing quality management principles, tools, and processes, and uses methods such as cross-functional teams. The methodology is described in more detail below, in our discussion about how the pilot project was conducted.

"Unified risk management approach" refers to the strategic aspects (the "what") involved in comprehensively managing all organizational risks. "Integrated management systems methodology" refers to the actual process (the "how") that is used to implement the unified risk management approach.

Discussion: The Pilot Project

In the sections that follow, we explain how the pilot project was conducted. We first describe the pilot sites and outline how the project principals interacted with the pilot facilities' top management. We then describe the tools and methodologies that were developed and used in the project.

Initially, the project principals conducted comprehensive baseline assessments of all the pilot-site facilities, products, services, and major assets.

Pilot-Project Participant Sites

The pilot project described in this article was carried out at two facilities, one in the United States and the other in Israel.

The American site is a small specialty plastics and metals manufacturing facility located in the northeastern United States. The company conducts research and development and produces advanced production parts for high-technology applications in the aerospace, medical, and military sectors.

The firm employs approximately 105 people, and its operations are housed in a single building that measures about 143,000 square feet. The company's quality programs meet MIL Q 9858A and MIL-STD-45662 (military specifications and standards). The firm currently is undergoing AS9100/ISO 9001:2000 program development and implementation, with ISO/AS certification expected sometime in 2007.

This article focuses primarily on activities at the U.S. pilot site because that site's top management decided at the outset of the project to develop an integrated management approach based chiefly on its AS9100/ISO 9001 quality management system. The Israeli pilot site intends to do the same but has chosen to do so more gradually, in a phased integration approach. Descriptions of experiences at both sites are included in this article, but the majority of the results reported here occurred at the U.S. site.

Engaging Top Management

At the start of the pilot project, coauthors Grosskopf and Lando (as project principals) briefed the top-management teams at the pilot sites about the project's goals, approach, and expected outcomes, and about top management's responsibilities. Top management from both sites committed to the project, and each site assigned a top-management representative to assist in all its stages.

Process Mapping and Information Acquisition

Initially, the project principals conducted comprehensive baseline assessments of all the pilot-site facilities, products, services, and major assets. They developed an Excel-based template spreadsheet (a process-mapping tool) that aided in determining qualitative and quantitative elements for the entire facility (see **Exhibit 2**). This management tool can be used to identify, quantify, and illustrate relationships among all material, human, and energy inputs and outputs at the macro-facility level and down to the process level.

The spreadsheet was used on a conceptual level to determine all inputs (materials, energy, and human resources) and all outputs (such as products, wastes, and intermediate assemblies) for each process, asset, and activity undertaken at the pilot sites.

Exhibit 2. Simplified Excerpt from the Process and Information Mapping Tool

Department	Process or Activity	Process Equipment	Process Inputs: Materials or Energy and Quantity	Process Outputs: What and Where To?	Process Outputs: Quantity	Criticality of Process (Considering EH&S or Security)
Maintenance	Parts Cleaning	Safety Kleen Parts Cleaner	Dirty parts, cleaning solution, electricity, operator actions. Quantities to be determined (TBD)	Clean parts to requesting department, dirty solvent, sludge	As issued. Quantities of solvent recycling, sludge disposal TBD	Low
Production Floor	Molding Machine	HPM 650 ton	Production molds, electricity, lubricants, operator actions. Quantities TBD	Heat, completed molds, waste oils and air emissions	Per production rates. Quantities of each output TBD	High (due to cost and criticality of equipment)

The process mapping tool was structured to capture, in separate columns, any known or potential EH&S and security risks. This "first capture" point in the assessment process focused on initial risk identification. Information for these assessments was collected through site surveys, interviews with managers and facility personnel, scenario development exercises, and examination of existing organizational processes.

The mapping process involved the simultaneous assessment of EH&S and security risks, with consideration of business continuity planning in the event of a disaster or emergency. At the U.S. pilot site, the process produced 18 pages of assessment information.

The information about facility processes, activities, products, and services obtained via the process mapping tool enabled management at the pilot facilities to determine which processes and activities are regulated and what risks are associated with each. It also allowed for the preliminary ranking of those risks.

The process mapping tool thus helped the pilot sites complete the environmental baseline survey that is an important element of ISO 14001, as well as the health, safety, and security vulnerability surveys that are required by OHSAS 18001 and by the draft USISTF SMS standard.

A simple but effective visual aid was built into the process-mapping spreadsheet: High risks (both known and expected) were color-coded in red, medium risks in yellow, and low risks in green.

Initial Departmental Risk Assessment

This simple color-coded risk identification scheme helped to further assess and prioritize the risks associated with each asset and process on a departmental basis. These analyses highlighted the relationships among the pilot facility's chief activities and the criticality of each activity to its overall success. Even more important, it allowed the project participants to simultaneously assess not only current EH&S and security risks, but also those aspects of facility activities that represented potential risks.

The color-coding scheme helped identify some key risks at the pilot sites. For example, one important production process was coded "fire-engine red" because it had the potential to expose employees to full-strength acids on a daily basis. Once identified, this process was immediately analyzed in more depth using an integrated risk assessment/prioritization tool (discussed in the next section). This analysis led to the first process improvement implemented within the pilot project.

Total Organizational Risk Assessment/Prioritization

- ***Integrated Risk Assessment/ Prioritization Tool***

Our integrated risk assessment/prioritization tool was derived from a well-documented risk-based model of probability, with probability of occurrence multiplied by severity to determine risk levels. The tool utilizes the analysis described above (which assigns low-, middle-, and high-risk rankings) and provides a simple numeric scheme for determining more specific risk levels for each process, asset, product, or service.

The specific rankings were based on a progressive 1-to-5 numbering system, with numeric values assigned to both probability and severity: 1 for lowest risk probability and 5 for highest probability; 1 for lowest risk severity and 5 for highest severity.

The limited time available for this pilot project did not allow for the complete assessment and analysis of all organizational risks.

Various business factors were incorporated into the tool to help tailor the specific prioritization of all risks associated with the organization. These business factors included (among others) costs of mitigation, impacts on insurance premiums, and the importance the organization placed on avoiding poor relations with the public, customers, and regulatory entities.

- ***Scenario Risk Tool***

The next step involved using a scenario risk tool. This tool primarily addresses security risks associated with external influences that can impact the organization and is based on scenarios or "what-if" situations. Example scenarios include power outages, interruptions of crucial supplies, loss of key personnel, and attempts to hack into company databases.

Creating a Total Risk Management Profile

When used together, the various tools developed during this pilot project can create a total risk management assessment (or profile) for a facility. These tools can help facility management answer the following vital questions with respect to processes, activities, and assets:

- Is this process or activity regulated by EPA, OSHA, or other regulatory authorities?
- What are the environmental, health, and safety or security risks associated with this process, activity, or asset?
- How critical is this process, activity, or asset to my company?
- What can my company do to protect its vital processes and assets?

The limited time available for this pilot project did not allow for the complete assessment and analysis of all organizational risks. That comprehensive task was left to the pilot organization to complete at its earliest opportunity, using the tools developed for this project.

Integrated Management System Documentation

A vital part of the pilot project involved preparation of a complete integrated management system document set (for quality, EH&S, and security) conforming to each of the four relevant standards (ISO 9001, ISO 14001, OHSAS 18001, and the draft USISTF SMS standard).

At the U.S. site, top management chose from the outset of the project to use their existing AS9100/ISO 9001 quality management system as the base with which the other three systems would be integrated or unified. The pilot project team then modified and added documents as

necessary to ensure conformance with all four management system standards.

The facility's documentation scheme contained several levels. We began with an integrated policy document (level 1 in the organization's scheme) and then moved on to systems-level documents (level 2), work procedures (level 3), and finally records preparation (level 4).

In all, during the pilot project over 50 systems documents were either modified or newly prepared in order to ensure conformance with each of the four management standards. As implementation progresses at the U.S. site, many additional existing procedures will require modification, and some new ones may have to be added.

Integrated Policy Statement

Exhibit 3 sets out part of the integrated policy document (addressing quality, security, and EH&S) that was developed and approved by executive management at the U.S. pilot site. This policy integrated EH&S and security matters into the organization's existing quality policy, which is part of its ISO 9000/AS9100-based QMS. The policy document was written to conform to the requirements of ISO 9000/AS9100, ISO 14001, OHSAS 18001, and the draft USISTF SMS standard.

Continual Improvement and Compliance/ Conformance Assurance Procedures

A systems-level procedure was developed for ongoing continual improvement in SEH&S management. This "continual improvement procedure" was written to conform to Section 4.5.2 of ISO 14001 and corresponding sections of the OHSAS 18001 and draft USISTF SMS standards. It was broadly written in order to address quality and SEH&S improvement at the systems level (level 2 documentation).

The continual improvement procedure was applied very broadly and systemically in the pilot project. For example, it included all aspects of addressing nonconformance, from evaluating root causes through assessing the effectiveness of solutions.

This continual improvement methodology can be applied to the whole range of issues covered by all the relevant management standards, including concerns such as quality problems (ISO 9001), high levels of pollutants in the air or wastewater (ISO 14001), ergonomics (OHSAS 18001), or deficiencies in employee background checks (draft USISTF SMS standard). Thus, once the methodology is adopted, it can reduce the overall level of risk faced by the organization.

An equally important companion methodology, the compliance and conformance assurance

Exhibit 3. Excerpt from an Integrated Quality and SEH&S Policy

Firm X is committed to providing products and services at those levels of quality performance and reliability that will ensure full customer satisfaction and compliance with contractual terms, considerations, and specifications.

Firm X is further committed to complying with all applicable legal and other requirements. Whereby Firm X produces and operates in ways that are not detrimental to the environment, health, and safety of our employees, customers, stakeholders, and the public. Firm X shall also address security threats, hazards, and associated risks that affect our business.

We will achieve this through:

Our People, Services/Products, Processes, Customers, and Suppliers.

Adopting and maintaining an integrated quality, security, environmental, health, and safety management system based on continual improvement and pollution prevention.

Providing a framework for setting, achieving, and reviewing quality, security, environmental, health, and safety goals and objectives.

procedure, details how a firm's legal and other obligations are determined (e.g., which laws, rules, standards, and regulations must be addressed) and how these obligations are to be kept current. It also includes a policy statement setting out the firm's responsibilities regarding its compliance and conformance obligations.

The compliance and conformance assurance procedure specifies a process leader who is responsible for compliance, provides a policy for ensuring that all contract activities will be in compliance, and presents a summary matrix setting out significant legal, regulatory, and management system standard requirements. It also defines a methodology that the facility can use to periodically evaluate and document conformance and/or compliance with all identified legal and other requirements.

The continual improvement and compliance/conformance assurance procedures are key instruments for achieving company compliance and improvement objectives.

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Additional Training, Education, and Coaching Activities

In addition to the procedures discussed above, the pilot project developed a number of training, education, and coaching activities for employees and managers at all organizational levels. These activities can serve as important additional tools that help institutionalize the integrated management system within a firm.

Standards Conformance Activities

We examined the U.S. pilot firm's SEH&S functions and systems early on in the project and again at the final stage in order to assure conformance with the relevant management standards.

We produced a multistandard gap analysis and created a road map for attaining conformance to ISO 9001, ISO 14001, OHSAS 18001, and the draft USISTF SMS standard. We also closely examined these four standards to identify elements of intersection and commonality that would lend themselves to system integration and unification.

Exhibit 4 shows part of a table listing the critical systems procedures and documents required for conformance with the four standards. This table, which was prepared for the pilot project, was quite valuable since it showed the minimum number of systems-level procedures needed to conform to each of the relevant standards.

A companion matrix clearly illustrated the intersections and commonalities existing among the four standards and indicated where synergy could be attained through a unified approach to conformance with all the standards. Experienced users of management system standards will recognize that this matrix is similar to Annex B of ISO 14001 and corresponding annexes contained in the ISO management systems and OHSAS standards.

Advantages of the Unified Risk Management Approach

Lower Costs and More Streamlining

The first and third coauthors of this article (Grosskopf and Lando), who have extensive corporate and consulting experience in EH&S and quality management systems, believe the pilot project provides a strong indication that an integrated management system approach can be implemented at a business or facility for a relatively modest investment of resources.

We expect that lower costs can be achieved through improved integration of the SEH&S functional areas. In addition, firms can attain en-

Exhibit 4. Partial Table of Systems Procedures Required for ISO 14001, Draft USISTF SMS, and OHSAS 18001 Standards Conformance

Clause ISO 14001:2004	EMS Procedure Required?	Clause SMS (USISTF December 2004)	SMS Procedure Required?	Clause OHSAS 18001	OHSAS Procedure Required?
4.2 Environmental policy	**No** but must be documented	**4.2** Security management policy	**No** but must be documented	**4.2** OH&S policy	**No** but must be documented
4.3.1 Environmental aspects	**Yes**	**4.3.1** Security threats and risk assessment	**Yes**	**4.3.1** Planning for hazard identification, risk assessment, and risk control	**Yes**
4.3.3 Objectives, targets and programs	**No** but must be documented	**4.3.3** Security objectives and targets	**No** but must be documented	**4.3.3** Objectives	**No** but must be documented
4.4.7 Emergency preparedness and response	**Yes**	**4.4.7** Emergency preparedness and response	**Yes**	**4.4.7** Emergency preparedness and response	**Yes** plus written plans
4.5.5 Internal audit	**Yes**	**4.5.5** Internal audit	**Yes**	**4.5.4** Audit	**Yes**
4.6 Management review	**No** but must be documented	**4.6** Management review	**No** but must be documented	**4.6** Management review	**No** but must be documented

hanced efficiency when they integrate activities that previously were handled separately and redundantly—for instance, by integrating management reviews instead of conducting one management review for environmental functions and another for health and safety functions.

In addition, the results of this pilot project indicate that a unified approach has the potential to further streamline training and audit functions by enabling firms to implement a single, integrated program rather than multiple initiatives.

More Comprehensive Risk Profiles and Enhanced Synergies

As noted above, the pilot project employed a comprehensive information-gathering (or process-mapping) methodology that was based on the ISO 14001 environmental baseline survey, with adaptations to incorporate other risk areas. Our findings indicate that this methodology can provide a sound basis for simultaneously assessing organizational security and EH&S aspects and impacts, risks/threats, and vulnerabilities.

Exhibits 2, 3, and 4 provide examples showing how an integrated management system approach can bring together different perspectives, resulting in more comprehensive risk profiles and greater synergies in conformance as compared to traditional approaches that look at each standard individually.

Increased Management and Employee Awareness

We believe that the integrated risk management approach also resulted in some intangible, but important, benefits involving increased awareness and understanding of security and EH&S issues, laws, and regulations among both management and employees at the U.S. pilot site.

Planning is an essential aspect of any management system—and especially so in the case of an integrated management system. One beneficial result of the pilot project was that it spurred the U.S. pilot organization to more effectively plan for SEH&S risks, rather than simply reacting to them, as they largely had done in the past.

As an example, the integrated management system brought managers' attention to one "high-risk" production process (discussed above) involving potential employee exposure to full-strength acids. Managers at the pilot site had previously underestimated this risk but have now decided to address it on a prioritized basis.

In addition, once the pilot project helped managers at the site achieve greater recognition regarding the firm's exposure to EH&S threats and risks, executive management responded by giving a senior manager responsibility for EH&S matters (whereas in the past no senior manager had been assigned these responsibilities).

The organization's personnel must be well versed in the principles of quality management systems (e.g., ISO 9001) and must have experience in meeting the conformance requirements of the other standards that they wish to integrate into their unified risk management system.

Finally, based on feedback from the pilot organization's top managers, it appears that the integration project has led to a more strategic SEH&S management approach at the executive level and has helped initiate meaningful communication among different departments at the firm concerning the need for continual improvement and a more proactive approach to assessing potential SEH&S threats, risks, and exposures.

What Organizational Characteristics Are Required to Implement a Unified Approach?

Before a unified risk management approach can be effectively implemented, managers must recognize some important issues and make sure that the organization fulfills several key requirements.

Well-Informed and Experienced Personnel

The organization's personnel must be well versed in the principles of quality management systems (e.g., ISO 9001) and must have experience in meeting the conformance requirements of the other standards that they wish to integrate into their unified risk management system. In addition, they need to understand traditional risk assessment methodologies and how to apply them to a variety of risks.

Management Commitment and Staff Cooperation

The organization's top management must be fully committed to the integration process and the unified risk management approach. They must also provide the resources necessary for the implementation effort and the guidance required to ensure cooperation and teamwork from the various departmental areas involved.

Significant up-front planning and coordination is required to simultaneously engage all the involved parties in one joint effort—although this should of course be measured against the greater ongoing effort ultimately required if the organization continues to engage in redundant and uncoordinated "single-focus" management activities.

Personnel and managers who typically focus only on risk assessment and management-standard compliance related to their own organizational areas must be educated about the rationale for the integrated approach, and the techniques associated with it, so that they recognize its advantages and buy into the new approach.

Engaging Security Personnel

A particularly important challenge involves engaging security personnel in the integrated SEH&S approach. Many security professionals resist sharing information on security issues and vulnerabilities, which traditionally have been addressed in tightly guarded circles based on the "need to know" philosophy.

The authors appreciate this traditional view and recognize that integrating security into a uni-

fied risk management system requires in-depth explanations of the system's benefits so that everyone involved understands the approach and supports its objectives. We also recognize that implementing a unified approach necessitates judgment calls and the balancing of different priorities by executive management.

We would argue, however, that the more closed approach of traditional security programs inherently limits the depth and breadth of their vulnerability assessments.

Proactive organizations need to consider how to implement a cross-functional, quality system-based approach that addresses traditional SEH&S needs, while at the same time allowing for the preservation of relevant proprietary secrets on particular vulnerabilities and issues.

In coming years, organizations will face a major challenge in weighing the openness required to operate in a globally competitive business environment against the need to manage security risks, which traditionally have been handled within closed systems. Synergy and careful balance will be needed if organizations are to develop more effective and efficient risk management approaches.

Integration and Unification: The Next Extension of Quality Management

Many business issues involve multiple organizational systems, processes, and work areas. The emergence of multiple national, international, and sector-based management system standards has given rise to significant organizational confusion as managers ask, "Which standard (or standards) should we adopt and implement?"

Based on the results of the pilot project described here, the authors conclude that existing quality management systems can be used effectively as the basis for integration with international and national management system standards. The preeminence of quality management standards, and their widespread use around the world, support this conclusion.

It also makes sense for organizations to use a cross-functional approach, which marshals the expertise of experts from different functional areas and facilitates knowledge sharing. This approach allows firms to more effectively tackle complex organizational problems and issues, including those involving a range of business risks.

We believe that unified risk management is an important extension of quality management systems' increased emphasis on a process-level approach, as reflected in updates to the ISO quality management standard (ISO 9001:2000). The same focus can also be found in ISO 14001, OHSAS 18001, SII 24001, and other management system standards.

Synergy and careful balance will be needed if organizations are to develop more effective and efficient risk management approaches.

The authors would assert that management system integration and unification can be expected to grow in popularity as more organizations learn about its numerous advantages.

The Leadership Role of EH&S Managers

EH&S managers can play an important leadership role in articulating to top management the need for, and the advantages of, a unified approach to risk management. The potential benefits of a unified approach include improved risk assessment, enhanced conformance with relevant management standards, improved regulatory compliance, greater efficiency and streamlining, and an opportunity to improve organizational productivity over the long term.

It is important to note here that an integrated approach can increase the value-added contribution of the EH&S function, thereby enhancing the function's influence within the organization

and helping to ensure that it will continue to receive adequate resources.

A Pathway to Sustainability

EH&S managers who adopt a unified risk management approach can also more effectively address the emergence of sustainability as a business issue. Sustainability is fundamentally about interconnectedness and balance among environmental, economic, and social issues (the "triple bottom line").

While some organizations now seek to hire new "sustainability managers," EH&S professionals who develop backgrounds in integrated risk management through implementation of unified systems are well suited to lead sustainability initiatives.

Organizations with strategic, systematic, and robust quality and environmental management systems often reap significant economic and environmental benefits from their long-term application. These firms are already beginning to address, in a substantial way, the economic and environmental "legs" of the sustainability triad, and may also be addressing social issues as well through their existing systems. We suggest that taking existing management systems to the next level through a unified risk management approach is a viable pathway to sustainability.

A unified risk management approach is not only better suited to addressing multiple organizational risks, but can also be expected to create greater opportunities for achieving sustainability goals more effectively, more efficiently, and at lower cost.

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