



QUALITY SYSTEMS

Management System Integration: Can It Be Done?

by **Mary McDonald, Terry A. Mors and Ann Phillips**

In October 1996, the International Organization for Standardization, known as ISO, issued the final version of ISO 14001, an international standard for environmental management systems (EMS). With the approval of this standard, the world of environmental management changed for-

ever, though not all organizations necessarily agree.

Some organizations say, "We have always done it this way." Other organizations say, "This standard brings little or no value added benefit to our organization. We do not affect the environment." Yet plenty of organizations say, "This standard is the best thing since sliced bread."

Each of these comments has merit, but the fact remains that ISO 14001 is being discussed globally by organizations that want to manage their environmental impact. At the end of 2001, there were more than 36,000 registrations worldwide and more than 1,600 in the United States.¹ As of June 2002, there were more than 40,000 ISO 14001 certifications internationally, with 2,040 in the United States.²

Many organizations implementing ISO 14001 likely have an existing quality management system (QMS) in place that meets the requirements of ISO 9001. In addition, many customers who require their suppliers to be registered to a quality standard such as ISO 9000 or QS-9000 are also likely requiring their suppliers to move toward ISO 14001. Luckily, there are many common processes in ISO 9000 and ISO 14001.

One other management system similar to ISO 14001 addresses an organization's occupational

In 50 Words Or Less

- **An organization with an existing quality management system can implement an operational health and safety system while addressing environmental issues, but it needs to consider several things prior to integration.**
- **The benefits of integration include simplified systems, optimized resources and a common framework for continual improvement.**

health and safety (OHS) issues. Though there is no international standard for OHS management, OHSAS 18001 is a specification developed by 13 cooperating organizations, some of which provide registration services to organizations that want to certify their QMS and EMS meet the requirements of international standards.

Organizations have several reasons for spending time and money on implementing management systems that meet the requirements of a standard, with some tied directly to the respective standard:

- **Customer requirements:** Some organizations require their suppliers and subcontractors to develop and implement ISO 9001 and ISO 14001, so many organizations obtain certification strictly because they want to retain their customers.
- **Trade barriers:** Some organizations expect to encounter trade barriers, much like those associated with ISO 9001. Some organizations have already encountered such barriers and have obtained ISO 14001 registration to refute allegations regarding the organization and any anti-environmental practices.
- **Insurance cost reductions:** Some insurance companies promise reduced premiums for organizations that have ISO 14001 EMSs. Organizations have also historically tried to reduce the occurrence of accidents to trim workers' compensation and other OHS insurance premiums.
- **The right thing to do:** Just as some organizations implement ISO 9001 to improve the effectiveness of their QMSs, some organizations implement ISO 14001 to demonstrate they are sensitive to environmental issues. Others implement OHSAS 18001 to demonstrate their commitment to establishing processes to protect their employees in the workplace.
- **The smart thing to do:** Some organizations implement OHSAS 18001 because they see its similarities to ISO 14001 and consider the additional top management support and organizational structure a valuable enhancement to their OHS programs.
- **Manufacturing and operating cost reductions:** Some organizations implement ISO 9001, ISO 14001 and OHSAS 18001 to reduce manufactur-

ing and operating costs. Any cost savings associated with manufacturing or with operating a business represent reduced expenses, which become pure profit that enhances the bottom line.

Overview of the Standards

The ultimate focus of ISO 9001:2000 is to improve customer satisfaction.³ This standard is based on the plan-do-check-act (PDCA) model. Customer requirements form the input to the product realization process, with the output being a product or service that will affect customer satisfaction. An organization must measure customer satisfaction and use this information when determining the need to improve the process.

ISO 14001 is also based on the PDCA cycle.⁴ Top management sets the vision for an organization in its environmental policy; the EMS is then designed to support the policy. An organization must develop procedures to identify the ways it affects the environment, identify relevant legal and other requirements, and set objectives and targets that will continually improve the management system and prevent pollution.

An organization uses the planning information to develop operations that manage the environmental impact of its activities, products or services. Then top management reviews the performance of the EMS to determine the need to change the system to ensure it supports the organization's environmental policy.

OHSAS 18001 was developed by registrars and organizations to fill a market demand to manage OHS issues.⁵ While it is not officially an international or national consensus standard, it is being adopted by many organizations as a logical and complementary approach. This specification recognizes the similarities between environmental and OHS issues and is patterned after ISO 14001. Though it is organized like ISO 14001, it has been modified to reflect the different parties associated with OHS issues.

An organization can get a high return on investment by taking advantage of the similarities between the three standards and integrating their quality, environmental and OHS management systems. Some organizations that have successfully integrated portions or all of their management sys-



tems include those in the chemical, automotive, technology, steel, service, pulp and paper, and medical products industries. Each has experienced significant returns from reduced operating costs, management system complexity and time required to manage the process. These organizations have also discovered employee satisfaction often improves once an integrated approach to job descriptions, work instructions and priority setting is implemented.

Why Integrate?

We are often asked, “Why should I integrate quality, environmental and OHS management systems? My organization has different personnel involved with each.” There are several benefits to integrating the systems, including:⁶

- **Similarities between the quality, environmental and OHS programs.** All three are philosophically aligned. Although they have different target audiences, their structures and approaches to regulatory compliance are similar.
- **Simplified systems.** Employees working for an organization with an integrated management system can perform their jobs using one set of work instructions rather than multiple, sometimes conflicting, documents from different management systems. Confusion is minimized when employees know when to use each document and under what circumstances.
The chance that documents from different systems conflict is also reduced. A single training process for new employees typically minimizes contradictions. An example of an integrated training checklist for a lab technician is shown in Figure 1.
- **Optimized resources.** One system that meets the requirements of all three standards minimizes the resources required to develop, implement and maintain separate systems. Maintaining single processes for employee training, document control, management review, and corrective and preventive action requires fewer resources than developing and maintaining multiple processes to accomplish similar goals.
- **Improved organizational performance.** A formal system that helps identify potential problems, risks or hazards can reduce or eliminate

Integrated System Processes

Processes covered in the integrated system may include:

- Management responsibilities.
- Definition and communication of the policy statement.
- Definition and communication of objectives, targets and goals.
- Definition of responsibilities and authorities.
- Provision of adequate resources.
- Management reviews.
- Control of documents.
- Control of records.
- Employee training.
- Definition and review of customer requirements.
- Identification of legal and regulatory requirements.
- Control of design and development.
- Control of manufacturing and service provisions.
- Identification of environmental aspects and impacts.
- Hazard identification and risk analysis.
- Emergency preparedness and response.
- Product monitoring and measurement.
- Instrument calibration.
- Purchasing.
- Internal audits.
- Control of nonconforming product.
- Measurement of customer satisfaction.
- Corrective and preventive actions.

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FIGURE 1 An Integrated Training Checklist¹

Position: Quality assurance lab technician
Job description number: QA-05
Sponsor: Mary Jones

Name: Bob Smith
Date of hire: Jan. 4, 2001

Trained by	Date		Trained by	Date	
_____	_____	1. Acme Co. business policy.	_____	_____	10. Use of ventilation hoods (LM-12).
_____	_____	2. Roles and responsibilities in achieving the policy (QA-05).	_____	_____	11. Proper labeling of samples and reagents (MP-03).
_____	_____	3. Quality assurance laboratory quality, environmental and OHS objectives and the roles and responsibilities of the quality assurance lab technician in achieving those objectives.	_____	_____	12. Inspection and test methods including maintenance and calibration of instruments:
_____	_____	4. Hazard assessment and risk analysis for laboratory functions.	_____	_____	a. pH (LM-01).
_____	_____	5. Hazard recognition training (training package three).	_____	_____	b. Viscosity (LM-02).
_____	_____	6. HazCom training (training package six).	_____	_____	c. Hydroxyl number (LM-03).
_____	_____	7. Hearing conservation training (training package two).	_____	_____	d. Infrared spectroscopy (LM-04).
_____	_____	8. Required personal protective equipment (safety glasses, gloves and hearing protection, where required).	_____	_____	e. UV analysis (LM-05).
_____	_____	9. Impact of laboratory wastes on the environment. Proper waste disposal methods (LM-13). (Significant environmental aspect).	_____	_____	f. Liquid chromatography (LM-06).
			_____	_____	g. Gas chromatography (LM-07).
			_____	_____	h. Intrinsic viscosity (LM-08).
			_____	_____	i. Melt point (LM-09).
			_____	_____	j. Color (LM-10).
			_____	_____	k. Visual inspection (LM-11)
			_____	_____	13. Records to be maintained by the quality assurance laboratory technician (MP-02).

Other important information:

- Never use an obsolete revision of a laboratory method, management procedure, training package or form. If in doubt, the current revision status of a document is available through the plant documentation system on Lotus Notes.
- Always check the calibration status label of calibrated equipment and never use an instrument that is out of calibration.
- If a document you are using needs revision, make the required changes in red ink, sign and date the changes, and turn it in to your supervisor. If it isn't right, change it. You are the most accurate input for changing documents.

I have been trained on each of the items listed above and can safely perform the tasks specified on my job description.

 Employee's signature

 Sponsor's signature

 Quality assurance supervisor's signature

REFERENCE

1. Mary McDonald, Terry Mors, Ann Phillips and Eddie Phillips, *Integrating Quality, Environmental, Safety and Health Systems*, Government Institutes, 2001.



customer complaints, product nonconformities, accidents, illnesses or environmental incidents in the workplace. In addition to reducing quality related risks, it can also reduce costs associated with environmental cleanups, workplace injuries, illnesses, fatalities and fines from regulatory compliance organizations.

- **Integration of quality, environmental and OHS objectives into the overall business strategy.** This eliminates the idea that quality, environment and safety are separate or nonessential parts of the business.
- **An established framework for continual improvement of quality, environmental and OHS systems.** Management not only establishes goals and objectives for quality, environmental and OHS systems, but it also reviews them at regular intervals to ensure progress is being made. Management also identifies opportunities for improvement. A formal corrective and preventive action system identifies ways to improve the system and ensures all actions are verified as being effective before they are closed out.

Why Not To Integrate?

There are also limitations to integration, including:

- **A tendency to develop overdocumented, bureaucratic processes.** This is true for single management systems and increases for systems intended to meet the requirements of multiple standards. Organizations tend to write lengthy, complex procedures and work instructions that gather dust because they are rarely used. This causes employees to grumble about “the bureaucratic management system that doesn’t let us do our business.”
- **Turf battles.** If a QMS already exists, environmental and OHS professionals often resist tacking their requirements onto the existing quality system. Likewise, quality professionals often resist “contaminating” the system with requirements that do not relate to the quality of the product.
- **Limits on degree of integration.** ISO 14001:1996 and OHSAS 18001:1999 are highly compatible and can be readily integrated. However, some OHS and EMS requirements do not easily

integrate with existing quality systems. For example, aspect identification and significance determination, as well as legal and other requirements, do not readily fit with an existing QMS.

Although organizations can integrate the systems, they will still need to consult a specialist to ensure regulatory requirements are identified, met and continually improved.

Potential for Integrated Processes

The degree to which an organization integrates its management system will vary depending upon its specific needs. Each organization should evalu-

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ate the management systems that apply to its industry and look at how the processes within those systems can best be integrated to meet business needs.

The following processes are common among quality, environmental and OHS systems and can likely be integrated into one process that meets business needs:

- Document control.
- Record control.
- Management review.
- Employee training.
- Design and development control.
- Operational controls.
- Measuring and monitoring device control.



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- Equipment maintenance.
- Purchasing.
- Corrective action.
- Preventive action.
- Internal audits.

Though any of these processes can be effectively integrated within an organization's management system, we will focus on the three processes that have the greatest similarities and are easiest for most organizations to integrate: management review, operational controls and internal audits.

Management Review

The purpose of a management review process is to evaluate the health of the business and take action where the data indicate a need. A good management review process may include a review of:

- The status of organizational targets, goals and objectives.
- The results of internal and external audits.
- The status of the corrective and preventive action processes.
- A summary of customer complaints.
- A summary of customer satisfaction data.
- Sales and profitability statistics.
- Lost time accident and illness data.
- Safety related near misses.
- Permit violations.
- Changing circumstances that could impact the management system, such as new product lines, new processes or reorganizations.
- Opportunities for continual improvement.
- Current applicability of organizational targets, goals and objectives.
- Current applicability of the organization's policy statement.

Each is critical to a company's business health and should be reviewed periodically with all management personnel. When the data indicate a need for action, management should initiate the appropriate action and develop a process to ensure the action is taken and is effective.

An organization that chooses to integrate the management review process should:

1. Build on existing management meetings that evaluate the health of the business. Most organizations have a meeting where management reviews key business objectives, such as sales and profitability. Expand the scope of these

meetings to include all indicators of the business's health.

2. Hold the meetings frequently enough to ensure the continued health of the business. We recommend monthly for relatively new management systems and quarterly for mature systems.
3. Develop an appropriate agenda for the review. The review should include any metric that shows management where its attention is needed.
4. Collect appropriate information for the review.
5. Conduct the review.
6. Keep the records.
7. Follow up on action items identified during the review.

Integrating management reviews allows the management team to fully evaluate the viability and health of the organization by reviewing all data that could impact its continued success. Business objectives are reviewed and evaluated, and appropriate action is initiated to ensure they are met. The primary objective of the review is to ensure the success of the organization, not to check a box on an audit checklist. It forces an organization to create a formal process to plan specific action items, monitor those items to ensure they are implemented and verify they are effective.

The greatest pitfall experienced by many organizations is developing the checklist mentality. Management review can quickly turn into a dry review of the items on the agenda, done only to show an auditor the review was held. The management team needs to understand this activity is the most vital in ensuring the organization's success.

Organizations that choose not to integrate this process typically do so because the management team cannot dedicate sufficient time to ensure all aspects of the business are reviewed. If this is the case, the organization is better off leaving the management review as three separate processes.

Operational Controls

Having three separate processes for operational controls in an organization can leave the workforce confused as to which process to follow.

An organization that chooses to integrate its



operational control process should:

- Identify those production activities that can impact quality, environmental or OHS performance.
- With the help of operations personnel, develop and provide documented procedures or work instructions, with defined operating criteria, to produce quality products in a safe manner and minimize environmental impact.
- Develop and control processes to ensure raw materials, in-process materials and final products are clearly identified.
- Develop and control processes for handling, storing, packaging and shipping product.

Organizations that integrate their operational control process find great support among their workforces. The confusion and conflicts caused by multiple sets of documentation are minimized, and training is less cumbersome. Perhaps the biggest benefit is the development of a management system that clearly describes how the business is run.

However, organizations still need to be mindful of these common integration pitfalls:

- Not involving the workforce in the development of processes and documentation.
- Creating lengthy, lofty instructions that are rarely read or used.
- Not holding all personnel, including supervisors and management, accountable.

Internal Audits

Quality, environmental and OHS management system standards require organizations to conduct system audits to ensure the applicable requirements have been met and the system has been effectively implemented. Just as the management review and operational control processes can be integrated into one system, so can the internal audit process.

Organizations that want to integrate their audit processes should develop an audit schedule based on their processes (see “Integrated System Processes”). Once these processes have been incorporated, an integrated audit can be performed on each single process. Parallel audits can still be performed on processes that have not been integrated.

Though integrating the internal audit process will reduce redundancy in audits, saving time and

resources, the biggest benefit to integration is in creating a process mentality throughout the organization. It facilitates continual improvement and enables the organization to see successes through its management system.

There are two common pitfalls to avoid when integrating internal audits. One is to force audit integration on processes that have not been integrated. The other is to use internal auditors who do not have the appropriate expertise in environmental or OHS processes.

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Benefits of Integration

There is no one right integrated management system; each organization needs to take its corporate culture and the nature of its business into consideration when deciding how far it wants to take the integration. However, every organization choosing to integrate can benefit from:

- Simplified systems resulting in less confusion, redundancy or conflicts in documentation.
- Optimized resources in maintaining a single system with a single goal vs. multiple systems with the same goals.
- Integrating quality, environmental and OHS objectives into the overall business strategy.
- Establishing a common framework for continual improvement of the quality, environmental and OHS systems, resulting in improved organization performance.

The specific benefits your organization will see depend on you, the quality professional.

REFERENCES

1. *ISO Survey of ISO 9000 and ISO 14000 Certificates—Eleventh Cycle*, International Organization for Standardization, 2002.
2. Reinhard Peglau, “The Number of ISO14001/EMAS

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Registrations of the World," *ISOWorld*, 2002, www.ecology.or.jp/isoworld/english/analy14k.htm.

3. *ANSI/ISO/ASQ Q9001-2000 Quality Management Systems—Requirements*, ASQ Quality Press, 2000.

4. *ANSI/ISO 14001-1996 Environmental Management Systems—Specification With the Guidance for Use*, ASQ Quality Press, 1996.

5. *Occupational Health and Safety Management Systems—Specification*, British Standards Institute, 1999.

6. Mary McDonald, Terry Mors, Ann Phillips and Eddie Phillips, *Integrating Quality, Environmental, Safety and Health Systems*, Government Institutes, 2001.

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