

A tool for improvement: Environmental management systems

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Abstract:

An environmental management system (EMS) is a set of management processes and procedures that allow an organization to analyze, control, and reduce the environmental impact of its operations and services to achieve cost savings, greater efficiency and oversight, and streamlined regulatory compliance. The advantages of having an EMS in place by local governments are outlined, and the ISO 14001 environmental standard developed by the International Organization for Standardization is discussed.

Full Text:

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The economic boom of the past decade has led to explosive growth and has strengthened local tax bases in communities. Though the growth has benefited local governments in many ways, some old challenges have remained while new challenges have emerged.

Exponential growth has required new construction and often new and expanded local government services and operations like wastewater collection and treatment, solid waste management, pesticides storage and use, management lubricants and fluids associated with garage or fleet operations, and regulatory and land use oversight.

Through these examples, one can see the extent to which local government operations and activities impact the environment and public health, thus creating immense liability exposure. Few tools like an environmental management system (EMS) provide local administrators with effective methodologies for practically and systematically managing the health, financial, and regulatory risks associated with their responsibility as stewards of the environment.

An EMS is a set of management processes and procedures that allow an organization to analyze, control, and reduce the environmental impact of its operations and services to achieve cost savings, greater efficiency and oversight, and streamlined regulatory compliance.

Local governments seek innovations that improve performance in public health and environmental protection, risk and liability reduction, and service efficiency and effectiveness. Programs must be implemented without a reduction in a community's quality of life or significant impact on limited budgets. Over the long term, an effective EMS can achieve these objectives.

An EMS, for example, offers accurate tracking of regulatory compliance, a reduced public health risk and liability, improved public understanding of management decisions, streamlined organizational processes, better relations with community stakeholders (citizens, businesses, and special-interest groups), and environmental leadership.

EMS Advantages

Gains realized by a local government through an EMS may include:

- * Increased operational and administrative efficiencies.
- * Cost savings, including economic and environmental ones.
- * Improved public health and environmental protection.
- * Reductions in risk and liability.
- * Improved tracking of all types of permits (health, water, fire, building).
- * Streamlined processes for regulatory compliance.
- * Enhanced interaction with community stakeholders.
- * Improved internal and external communication and education.
- * Higher levels of employee participation and stewardship.
- * Innovations in environmental solutions.
- * Better public relations.

Self-Audit Policies and Immunity

One of the early steps of an EMS is an effort to identify and comply with an organization's regulatory requirements. A local government might be hesitant to audit its operations for fear of finding a regulatory violation, consequently facing legal and financial liabilities.

The U.S. Environmental Protection Agency (EPA) and a number of states have developed self-audit policies in an effort to dispel the fears and encourage local governments to promptly disclose and correct violations that are discovered through a self-audit process. This statement has been copied from EPA's self-audit policy:

"Under the final Audit/Self Policing Policy, EPA will not seek gravity-based penalties and will not recommend criminal prosecutions for companies that meet the requirements of the Policy. Gravity-based penalties represent the 'seriousness' or punitive portion of penalties over and above the portion representing the economic gain from non-compliance. The policy requires companies:

- * To promptly disclose and correct violations.
- * To prevent recurrence of the violation.
- * To remedy environmental harm.

The policy excludes:

- * Repeated violations.
- * Violations that result in serious actual harm.

* Violations that may present imminent and substantial endangerment."¹

EPA's audit policy is designed to protect human health and the environment, while providing an incentive for entities to voluntarily discover, disclose, and correct violations of federal environmental requirements regardless of how they were detected.²

States often have their own self-audit policies that may provide protection to disclosing entities through application of an "audit privilege and immunity" law.³ State audit policies typically only protect entities that are in violation of state requirements. Some states are working with EPA to gain federal immunity benefits for entities that have been granted immunity under the state audit policy.

A successful EMS must reflect recognition and compliance with federal and state statutes as well as other requirements that may impact a local government. Managers first should check with state regulatory officials to determine if a audit policy exists, and if so, they should further determine if a grant of immunity under the state policy also protects that entity from federal prosecution.

What Is ISO 14001?

ISO 14001 isn't the name of new software package! It is an environmental standard developed by the International Organization for Standardization to meet the need of both governmental and private sector organizations and to monitor their environmental performance and their impacts on natural and finite resources like water, air, soil, and raw materials. The elements of ISO 14001 thoroughly integrate environmental thinking into all levels and processes of an organization and enable environmental concerns to become integral to overall performance.⁴

It is important to clarify that ISO 14001 is just one model of an EMS, although many organizations choose to initiate a more modest level of EMS implementation. The primary concern is that if an organization aims to achieve ISO 14001, third-party environmental audits must be completed to receive ISO 14001 certification. Many organizations, however, set up and implement an EMS without seeking ISO 14001 certification. This approach allows greater flexibility in EMS design and execution.

ISO 14001 is recognized in the domestic marketplace, in both the private and the public sectors. Many companies mandate that their suppliers and service providers are certified under the ISO 14001 standards. Application and use of ISO 14001 by European and Asian companies and public sector organizations are somewhat advanced.⁶ In recent years, ISO 14001 and other EMSs have become increasingly common in both the public and private sectors of the United States. Using ISO 14001

Specifications

ISO 14001 outlines specifications for five steps that should be taken in the process of EMS development. These steps are generally applied by organizations even if they are not seeking certification. Here are the essential elements of an EMS as set forth in ISO 14001.⁷

1. Environmental policy. Develop a statement of the organization's commitment to the environment. This policy should be used as a guide for planning and action.

2. Planning. A detailed analysis of existing functions, processes and policies, including regulatory requirements, should be completed; establish objectives and targets that are aligned

with the environmental policy.

3. EMS implementation. Roles and responsibilities should be designated and resources, including training, should be provided to employees who are involved in the EMS.

4. Oversight and improvements of the EMS. A consistent flow of information on the EMS should be collected and maintained to monitor key activities and to track performance improvements.

5. Annual assessment of EMS performance and value. Records should be kept to periodically verify that the EMS is operating as intended and to ensure compliance and continual performance improvement.

These five steps are the broad-stroke guidelines for developing and managing an EMS. As long as the five are included, the detailed process of implementation varies based on the organization's demographics, culture, commitment, service, or product.

Added considerations. Based on the experiences of local governments that have implemented EMSs, several critical elements should be noted: stakeholder participation is fundamental to maximizing the potential for continual improvement within the organization (and is even more so within the community). Not only is management buy-in requisite to an EMS, but also employees must be engaged from the earliest stages to ensure that the EMS is integrated into the organizational culture.

A useful EMS also should strive to build upon and enhance the existing organizational machine and its processes, not to replace it. And an EMS should be promoted beyond its environmental benefits. It should encompass employee empowerment, improved communication, stronger accountability, streamlined operations, cost savings, and performance improvements.

A local government can focus an EMS on a single function or service (wastewater treatment) or on a single department (public works), or it can implement one that encompasses the entire organization. The scope of an EMS often is referred to as the "fence line."

Basic EMS criteria. The basic elements of a standard EMS are detailed in Figure 1. Although the methodology of an EMS varies, the criteria are standard and provide the foundation for the EMS. How the criteria are applied and how the EMS evolves are determined by the types of services offered by the local government, the scope of EMS application, and the management resources available for the execution of an EMS.

Costs at Implementation

If a local government elects to implement a comprehensive EMS (as, countywide), the cost will be more substantial than if it elects to implement an EMS in a single department (as, in public works). Cost of development and implementation also depends on the size of the organization or fence line and the number and complexity of the operations that impact the environment.

[Chart]

Caption: Figure 1.

This is why a strong starting point for an organization would be to identify the functions,

policies, or programs somewhere in the organization where success is most likely to be achieved. Starting with a small fence line to establish credibility for an EMS can lead to successful cost savings and to subsequent application on a broader level within the local government. It also creates momentum and further buy-in.

EMS cost checklist. A small community that typically has smaller operations and fewer resources can rely on current staffing to develop and implement a basic EMS. For resources that assist in the establishment of an EMS, see page 14.

Here is a checklist of the essential items needed for development and implementation. All items, of course, are contingent on the scope of an EMS, but these items can be used as key categories for developing direct and indirect cost estimates.

1. Management. Representation from top-level management, as well as elected and appointed officials is critical to provide the necessary leadership, motivation, and oversight. Costs here are primarily related to time expended by management and elected and appointed officials.
2. Core team. The core team is composed of vertical representation from all relevant departments, to ensure program integration from all levels of the organization; members are to be appointed as dedicated staff to provide EMS implementation, maintenance, and identification of gaps needing continual improvement. In a small community, the core team can consist of a councilmember or mayor, manager, and facility managers. Small communities must develop their core teams with a high degree of flexibility given their diverse nature of governance.
3. Policy. This item refers to the development of an initial environmental policy or enhancement of an existing policy. Possibly, amendments should be made to the appropriate existing ordinances and policies. An environmental policy is a statement that articulates the philosophy of the community regarding the protection of its environment and public health. As in the steps above, the major costs are related to staff time associated with policy development.
4. External services. Subcontracted services for technical guidance on EMS, particularly in the initial development and implementation stages, often is required for localities with many and/or complex operations. The services may consist of federal and state regulatory audits and process and operations reviews to determine pollution prevention opportunities and cost savings, or implementation of process changes.
5. Materials. Costs for materials, which are generally minimal. Usually, there is no need for capital expenditures. Larger fence lines, however, may choose to implement significant education programs that may require an investment in the development of signs, brochures, maps (used to provide directions on the appropriate way to store or dispose on product.), training pamphlets, and the like.
6. External auditor. If an organization is seeking ISO 14001 certification, third-party auditors must be hired to complete the EMS audit, as during the annual financial audit process.

A general guideline for assessing initial start-up costs for an EMS is the "18-month rule." Generally, cost savings begin 18 months after EMS implementation. They comprise savings both in direct costs (manpower, insurance, energy savings) and in indirect costs (natural resources, community and employee relations, streamlining of operations). Important savings are liability claims that will not be sought because there is a systematic process in place to reduce and eventually eliminate those risks.

The value of an EMS can and should be quantified through performance measures. By streamlining operations, improving employee morale, and increasing accountability within the organization, an EMS extends beyond the environmental focus and has measurable positive impacts on nonenvironmental functions within an organization. A local government can substantiate the value of an EMS with real numbers by tracking and quantifying selected criteria.

[Chart]

Caption: Figure 2.

Local Experience

In 1998, EPA established a two-year project to assess the effectiveness of ISO 14001 EMSs in local governments. Nine local governments in the 1998 U.S. EPA Municipal Environmental Management System Implementation initiative reported the overall effort to be successful. Benefits cited by the participants included:⁹

- * Improved efficiency and reduced costs.
- * Increased internal communication and education through demonstrated environmental stewardship.
- * Positive effects on environmental compliance and performance.
- * Better relationships with regulators.
- * Improved environmental awareness and competency throughout the organization.

The EPA initiative described was successful enough to merit a follow-up. In April 2000, EPA selected 14 public sector organizations to participate in its second EMS study. Though this program does not provide direct funding support, it does provide on-going training and technical assistance.

ICMA has started the Local Government Environmental Assistance Network (LGEAN) to give local governments clear, concise, and relevant information on environmental management, planning, and regulatory issues of concern at no cost to local governments. LGEAN also serves as a resource to answer the technical questions that local officials have in developing EMSs and other environmental concerns.

Through the Environmental Liability Outreach project, LGEAN has partnered with the International Municipal Lawyers Association (IMLA) to respond to local government inquiries on environmental risk and liability. This effort is funded by the nonprofit Public Entity Risk Institute, Fairfax, Virginia.

It is essential to be creative in seeking funding and technical support for an EMS initiative. For sources of environmental funding support, see information on page 14.

Assistance

Federal agencies have initiated programs that offer both technical assistance and in some cases funding to support EMS initiatives in local government. Among the agencies that offer assistance are the U.S. Department of Transportation's Community and Systems Preservation

Program, EPA's Livable Communities program, and the U.S. Department of Commerce. Some programs also offer assistance administered and supported by joint agreements between several federal agencies.

Private foundations should be considered possible sources of funding for EMS-related initiatives. The strength of the stock market in the past five years has sent foundation portfolios to enormous levels, increasing the amounts they are required to give annually to retain nonprofit status.

Corporate sponsorships also are possible funding sources, particularly at the local level. Community stakeholders should be encouraged to generate initiatives in partnership with local businesses and industry to strengthen their participation in an EMS process.

A Tangible Solution

As the realities of growth and resource management, as well as the lag in infrastructure capacity, continue to challenge local governments, an EMS can offer a dynamic management tool both for environmental protection and for cost savings. In an era when economic development pressures, community infrastructure problems, and environmental concerns are leading priorities and challenges for local governments, an EMS can offer solid and practical solutions. An EMS has the potential to take a local government to a new level of environmental stewardship. The value of being proactive, rather than reactive, is the freedom to innovate and to strengthen local controls.

[Sidebar]

An EMS has the potential

[Sidebar]

to take local governments to a new level of environmental stewardship.

[Sidebar]

SO 14001 thoroughly integrate environmental thinking into all levels and processes of an organization.

[Footnote]

¹Protocol for Conducting Environmental Compliance Audits under the Comprehensive Environmental Response, Compensation, and Liability Act, EPA Office of Enforcement and Compliance, EPA-305-B-98-009, December 1998, page iii.

²"Incentives for Self-Policing: Discovery, Disclosure, Correction and Prevention of Violations," 65 Federal Register, Part VII (April 11, 2000), at 19, 619.

³EPA addresses its opposition to state audit privileges and immunity laws, 65 Federal Register, at 19, 623-19, 624. Discussion of these differences, and strategies to address conflicts, is beyond the scope of this article.

⁴Schaarsmith, James H., "The ISO 14001 Environmental Management System Specification." May 1999.

⁵In 1999, three of the largest automobile manufacturers mandated their suppliers have ISO 14001 certification.

⁶The European Union promulgated an EMS system known as the Environmental Management and Audit Scheme

[Footnote]

(EMAS) that extends beyond ISO 14001 in its specifications for certification.

⁷Based on the most commonly used framework for an EMS, the ISO 14001 standard developed by the International Organization for Standardization. ANSI/ISO 14001-1996.

⁸Ibid.

⁹U.S. Environmental Protection Agency, Final Report. The U.S. EPA Environmental Management System Pilot Program for Local Government Entities. Spring 2000.

[Author note]

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Figure 1. Basic Elements in an Environmental Management System⁸

Initial Task	<ul style="list-style-type: none"> • Establish an environmental policy for the organization.
Design and Development	<ul style="list-style-type: none"> • Identify operations, functions, permits, and policies of the organization that impact the environment. • Review legal and regulatory compliance requirements and current status. • Set environmental objectives and targets that aim to improve environmental performance and lessen environmental impacts.
Implementation and Action	<ul style="list-style-type: none"> • Develop an EMS framework, including the five basic elements. • Establish an EMS team and designate management and staff responsibility. • Designate an external stakeholder group comprised of citizens, business and industry, school districts, and non-profits. • Provide training and education of EMS team and external stakeholder group. • Disseminate marketing materials internally and externally to promote the EMS; educate and demonstrate the organization's commitment to the environment.
Tracking and Adjustments	<ul style="list-style-type: none"> • Set performance measures to assess and monitor EMS performance. • Establish process for reporting and audit system. • Develop and maintain records for external and internal reporting.
Continual Performance	<ul style="list-style-type: none"> • Complete periodic management reviews.

Figure 2. Sampling of Participants' Focuses in the 1998 EPA Initiative

Participant	EMS Focus
Wayne County, Michigan	Wastewater Treatment Facility
Scottsdale, Arizona	Municipal Government
Lowell, Massachusetts	Wastewater Treatment Facility
Gaithersburg, Maryland	Public Works
Lansing Board of Water and Light, Michigan	Electric Generating Facility

Source: U.S. Environmental Protection Agency, Final Report. "The U.S. EPA Environmental Management System Pilot Program for Local Government Entities." Spring 2000.