

CONTRACTORS GUIDE TO DEVELOPING AN ENVIRONMENTAL PROGRAM

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AGC of America
THE ASSOCIATED GENERAL CONTRACTORS OF AMERICA

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This document has been developed to provide construction companies with a resource for developing an environmental program that supports environmental compliance and achievement of company objectives. This document contains a general overview and recognizes that different organizations have different needs depending on the environmental requirements of the work they perform and the nature of the organization. It is intended to be informative and streamline the process of developing an environmental program. This document does not in any way establish an industry standard or make specific recommendations.

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If professional advice or expert assistance is required, the services of a competent professional or expert should be sought.

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Thank you.

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A Introduction

This guide lays out a basic framework for contractors to use in developing an environmental program for their organization. It is centered on the concept of an Environmental Management System (EMS) which is a defined management structure and set of processes intended to address the impacts of an organization's activities, products, and services on the environment as well as the organization's environmental compliance responsibilities. For the purpose of this guidance document, the terms "environmental program" and "Environmental Management System" are used interchangeably.

This guide acknowledges that different organizations have varying needs depending on their size, the nature of the work they perform, and environmental risk associated with the work. However, almost all contractors in heavy civil engineering construction must comply with various environmental requirements and have some processes and systems in place to meet those requirements. A program can be scalable depending on an organizations needs and range from a simple EMS with basic components to a robust and well documented EMS that conforms to a standard.

This guide breaks down an environmental program into seventeen program elements (see Section B Program Outline). Seven of those are considered core elements (see Table 1, Section B) and discussed in detail in this document. An additional ten elements listed in Table 2, Section B can be developed by the contractor as they expand their program.

Defined levels (or stages) of development of each program element are established as the Foundation Level, Value Added level and Sustainability level. The different levels represent the thoroughness or robustness of the system. Organizations managing fairly simple environmental requirements may meet their needs with program elements at the Foundation Level, while companies managing complex environmental requirements over geographically dispersed areas may benefit from a system at the Value Added or Sustainability Level. These guidelines are intended to provide a flexible framework that can satisfy different organizational needs.

The program elements can be implemented separately and in phases based on the priorities of the organization. The program can be developed over time and eventually lead the organization to a system that conforms to ISO 14001, International Standard for Environmental Management Systems (the sister to ISO 9000). ISO 14001 is a widely recognized standard for Environmental Managements Systems and provides organizations a high degree of flexibility in implementing it.

Although the program elements in this guide can be implemented separately, they work together to form a system. As an example, Figure 2 shows a simplified flow chart of how four of the elements work together. The first step in the example is to identify activities that can interact with the environment (environmental aspect). This is followed by determining what activities and environmental aspects are subject to legal or other requirements. From there an organization can determine what needs to be done, who is going to do it, and what training needs to be conducted. This is an example of one sub-system in a large system. Although the example may seem straightforward to the point of being common sense, doing it consistently across all operations and without compliance failures can be a challenge.

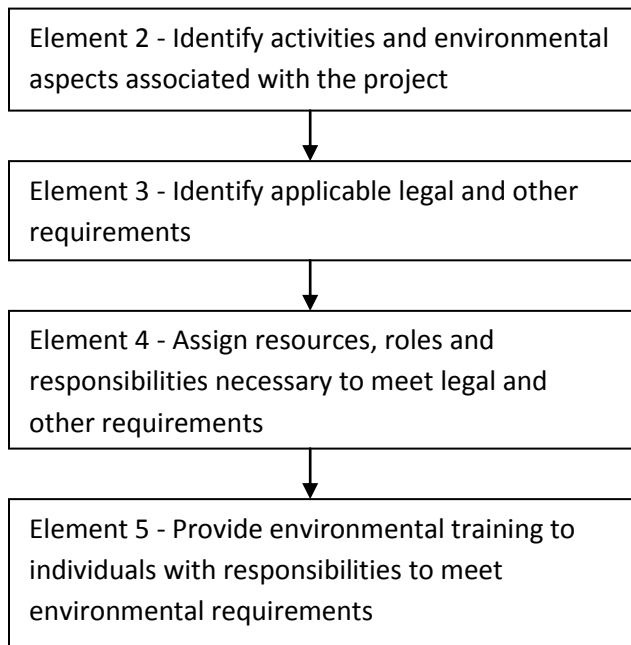


Figure 1: Program Elements Work Together

Organizations that take a systems approach to managing their environmental obligations will be equipped to consistently manage complex requirements over multiple operations and maintain compliance. An analogy is managing quality requirements and achieving no non-conformities.

B Program Outline

This guide breaks down an EMS into the program elements in Table 1. The breakdown is consistent with ISO 14001 and once Level 3 is reached, the program elements will conform to ISO 14001 (refer to the ISO 14001 standard when conforming an EMS to ISO). Each program element in Table 1 is discussed in more detail in Section D.

Table 1: Program Elements of an Environmental Management System

Program Element		Foundation Level 1	Value Added Level 2	Sustainability Level 3
1	Environmental Policy	Written policy primarily focused on compliance	Add additional environmental goals of the organization	Add commitment to continual improvement, pollution prevention and sustainability objectives
2	Environmental Aspects	Environmental aspects identified on projects through undocumented environmental review	Add documented procedure for conducting an environmental review	Add written procedure that conforms to ISO 14001
3	Legal & Other Requirements	Legal & Other Requirements identified on projects through undocumented environmental review	Add documented procedure for conducting a pre-job environmental review and corporate environmental manager expertise available	Add written procedure that conforms to ISO 14001
4	Resources, Roles and Responsibilities	Project level assignment of responsibilities and use of external expertise	Add internal environmental structure with corporate environmental manager	Add written procedure that conforms to ISO 14001
5	Competence Training and Awareness	Training coordinated at the project level	Add training coordinated at the corporate level	Add comprehensive training in line with the environmental goals of the organization
6	Control of Documents	Documents controlled according to project document control procedures	Add documents controlled according to standard project document control procedures	Add written document control procedure that conforms to ISO 14001
7	Evaluation of Compliance	Field inspections conducted at the project level	Add independent compliance evaluation using standard practices	Add written procedure that conforms to ISO 14001
	Internal Audit	None	Informal review of management process by corporate environmental manager	Add system audits that conform to ISO 14001

Table 2 shows additional program elements that can be considered in developing an EMS.

Table 2: Additional Program Elements of an Environmental Management System

Program Element	Foundation	Value Added	Sustainability
Communication	Informal communication channels following organizational reporting structure. Citations reported to corporate office	Add significant environmental issues reported to the corporate environmental manager	Add written communication protocol that conforms to ISO 14001
Management Review	Management reviews significant events	Add corporate environmental manager to provide input to management teams	Add written procedure for conducting a formal management review that conforms to ISO 14001
Operational Controls	Project level environmental control procedures	Add company standard operating procedure and guidance	Add written procedure that conforms to ISO 14001
Objectives, Targets, and Programs	Objective is compliance	Add environmental goals for the organization	Add written procedure for establishing Objectives, Targets, and Programs that conforms to ISO 14001
Monitoring and Measurement	Project level procedures for monitoring environmental parameters	Add company procedures for monitoring parameters related to company goals	Add written procedure that conforms to ISO 14001
Documentation (of environmental program)	None	Add general description of environmental management program	Add documented Environmental Management System that conforms to ISO 14001
Emergency Preparedness and Response	Project level emergency response procedures	Add standard company procedures	Add written procedure that conforms to ISO 14001
Nonconformity and Corrective Actions	Project level review of nonconformity/noncompliance and follow-up actions	Add review by corporate environmental manager to ensure prevention at other locations	Add written procedure that conforms to ISO 14001
Control of Records	Records controlled according to project document control procedures	Add records controlled according to standard project document control procedures	Add written record control procedure that conforms to ISO 14001

C Guidelines for Development and Implementation

1 - Environmental Policy

Introduction

The environmental policy is the foundation of a company's commitment to managing resources and conducting infrastructure development in an environmentally responsible and compliant manner. The policy brings to life an organization's environmental plans and commitments.

The environmental policy is management's declaration of commitment to the environment. The policy should serve as the foundation of the organization's environmental program and provide a unifying vision of environmental interest by the entire organization. As such, upper management should provide vocal support and commitment to the policy of the organization.

The benefit of developing and implementing an environmental policy results in an entire organization recognizing and committing to environmental goals and objectives. Other benefits of having a formal environmental policy include a greater degree of confidence with employees, project owners and stakeholders, as well as market credibility and image.

The following sections describe levels of an environmental policy. The first level, the foundation level, involves policy creation that is primarily coordinated at the project level. Next, in the value added level, creating policy and administration is coordinated at a corporate level to ensure consistency and thoroughness of the policy and its components. Finally, in the sustainability level, finalizing and expanding upon the policy includes all aspects of the previous levels, as well as incorporation of specific environmental goals, measurements, and objectives that the company may have beyond basic regulatory compliance.

Foundation Level

Environmental policies at the foundation level:

- Sets out the company's basic commitment to the environment and environmental compliance.
- Should be simple and understandable. During policy development, ask:
 - What are we trying to achieve?
 - How can we best communicate this to the rest of the organization?
 - Will we do what we said we would?
- Should be incorporated into the overall company policy statement. Should be clearly communicated. Options for communicating your policy internally include:
 - Posting the policy around the organization

- Incorporating it into training classes and materials
- References to the policy at staff or hands-on meetings
- Internal company website or Intranet

When creating your environmental policy, consider who should be involved in development and best process for implementation. Input from a range of people in the organization will increase commitment and ownership.

Value Added Level

Environmental policies at the value added level:

- Incorporate policy amendment to more accurately reflect improvements to their environmental program.

For example, at the foundation level an organization may feel that their environmental program can only realistically commit to complying with laws and regulations. This way, they avoid non-compliance with environmental issues such as disputes, violations, litigation, liability, and risk. As the organization experiences beneficial results from their foundation level environmental program, they may want to consider increasing their environmental goals and expectations by adding additional components to their environmental policy.

Examples of additional components include:

- The organization's commitment to continually improve environmental performance, backed by specific goals or measurements
- Stating intended improvements to pollution levels during operations

Sustainability Level

Environmental policies at the sustainability level:

- Make further commitments to achieving sustainable operational results (i.e. specific examples of minimizing environmental impacts, running projects with sustainable goals and objectives).
- Should reflect improvements in their program thereby documenting and memorializing continual improvements in their environmental performance.
- Should serve as the framework for setting environmental objectives and targets during creation of an organization's environmental management system (EMS).
- Will contain three key commitments, as required by ISO 14001 EMS requirements:
 - Continuous improvement
 - Pollution prevention
 - Compliance with relevant laws and regulations

2 - Environmental Aspects

Introduction

Environmental aspects are described by the International Standards Organization (ISO) as “elements of an organization’s activities, products or services that can interact with the environment.” ISO further notes that significant aspects are those that have significant impacts on the environment. Generally speaking, for construction work, the environmental interaction of concern is any adverse impact that might occur to the project or surrounding environments by construction operations. In contrast to safety and health efforts, which are largely focused within the jobsite, environmental concerns must address areas both inside and outside the work or project perimeter.

In order for an organization to manage environmental impact, all environmental aspects must be identified and evaluated. While some aspects may be obvious, others may not. For instance, dust generated on a construction site might be quickly identified as an environmental aspect, while diesel particulates and exhaust gases from idling equipment might be initially overlooked. Again, aspects are all the activities, products and services of a business which interact with the environment.

To facilitate effective identification of environmental aspects, many organizations choose to categorize aspects according to specific environmental media impacted. For example, a good starting point might be to compile a list of all emissions to air generated by project operations. Dusts, mists, and gases, might constitute the first list. A separate list for releases to water or waterways might follow. Still another list of aspects could be all spills or releases of hazardous materials to land.

The process of identifying subject aspects to regulations will generally progress from those that are obvious and to those that are not-so-obvious and impact the environment over a longer period of time.

Foundation Level

Identification of environmental aspects at this level would:

- Focus on obvious and immediate impacts
- Follow obvious categories of environmental media (air, land, water)
- Generally have observable impacts on environmental media
- Be associated with impacts that can be controlled 100% by a business entity (spills to land or water, observable emissions)
- Be associated with errors or deviations in existing business processes

Value Added Level

Identification of environmental aspects at this level would:

- Be associated with more long-term impacts to the environment
- Include analyzing existing processes from the perspective of reducing environmental impacts
- Initiate best practices to prevent or eliminate errors and process deviations

Sustainability Level

Identification of environmental aspects at this level would:

- Include a broader consideration of environmental aspects adversely (for example, clearing trees in land development)
- Include aspects that impact the environment on a global scale (for example, global warming)
- Consider aspects in light of conservation of natural resources (for example, energy use)

3 - Legal and Other Requirements

Introduction

One of the main benefits of an EMS is improved compliance with environmental requirements that results from the planning process. “Legal requirements” refers to laws, regulations, rules and permit requirements. “Other requirements” refers to requirements the organization subscribes to or customer requirements.

The Legal and Other Requirements section of an EMS is directed at answering these questions:

What requirements apply to us?

How do I know if they change?

Where do I find them?

What are we specifically required to do?

The first step in answering these questions is to determine which of the organizations activities and environmental aspects associated with a project or industrial activity could be subject to legal or contract requirements. It is important that an organization is thorough in identifying Legal and Other Requirements and understands how those requirements apply to its activities. In many cases this requires specialized training and knowledge.

Many sources may be used to identify Legal and Other Requirements including contract terms and conditions, commercial databases, the internet, company meetings, information from trade associations, direct communication with federal, regional, state and local environmental regulatory agencies, training classes, consultants, and attorneys.

Timely access to environmental laws, regulations, and permits/permit conditions must be provided to employees who are responsible for implementation of environmental requirements. E-mail notifications, periodic meetings, guidance documents, memos, or other means of communication can be used to inform appropriate staff of laws, regulations, and policy changes that affect operations.

Understanding the complex regulatory landscape businesses operate in is one of the challenges that organizations face in performing various types of work in multiple regulatory jurisdictions. An EMS establishes a process for ensuring requirements are not missed or overlooked.

Foundation Level

In the Foundation Level, Legal and Other Requirements are identified at the project level by project personnel. The project personnel use their own experience and available resources (e.g. consultants) to adequately identify and understand all of the environmental requirements they must adhere to.

To be successful at the Foundation Level organizations must ensure that project personnel have the necessary experience or training to ensure no requirements are missed or incorrectly interpreted.

Value Added Level

At the Value Added Level project personnel still identify Legal and Other Requirements and there is also a corporate environmental professional to support the project and provide expertise. There is also a documented project startup process to identify all applicable requirements. Documentation includes checklists and regulatory guidance materials. The project kickoff process may also include a company environmental professional depending on the nature of the project and experience of the project management team.

Sustainability Level

At the Sustainability Level the organization also has and follows a written procedure that conforms to ISO 14001 which requires that an organization has procedures to:

1. Identify and have access to the legal and other requirements applicable to the organization
2. Determine how these requirements apply to its activities

Documentation is maintained of Legal and Other Requirements which includes company policies, guidance documents, permits, plans, compliance software, and checklists. The organization's process for identifying and communicating Legal and Other Requirements is rigorous and can be verified through a systems audit.

4 - Resources, Roles and Responsibilities

When defining Resources, Roles and Responsibilities, it's important to understand the actual meaning of each term within the context of the work environment. For the intent and purpose of this document, please use the following meanings:

“Resources” implies the infrastructure, information systems, training, technology, financial, and human resources allotted to an organization.

“Responsibilities” pertain to identifying roles within the organization, and the structure of the performance of the environmental department.

“Roles” cover the actual performance of the duties, i.e. carrying out the responsibilities, and the structure of responsibilities and duties.

Foundation Level

Resources are assigned and allocated at the project level. At this level, resources are minimal, typically consisting of a cross-trained project employee assigned to environmental compliance part-time. Design-Build work is usually out of the scope of a company at this level without the influence of a key environmental consultant.

Roles and Responsibilities of environmental duties generally focus on basic environmental compliance with contract requirements and regulations. The staff environmental employee capabilities might be supplemented by a consultant, depending on needs such as wetland issues that are more involved than simply avoidance. The environmental focus is on basic topics such as compliance stormwater management, dust control, material storage, housekeeping and waste management. At this level senior management's involvement is minimal.

Value Added Level

Resources

At Value Added Level include a corporate level position to support the project level environmental staff. There is now corporate expertise to draw from instead of relying solely on consultants or outside experts. The corporate person acts as liaison between corporate executives and project level employees. At Level 2, an information system for tracking the project and overall corporate environmental compliance, as well as deliverables of the environmental department is introduced.

Roles and Responsibility

The focus is broader than just project compliance and moved into setting corporate policy and standards as well. Corporate standards include performing and tracking training at several levels, compliance monitoring (tracking violations), providing assistance in addressing violations,

and avoiding violations. Senior management is supportive and provides resources to perform the defined tasks.

Sustainability Level

At Sustainability Level a company will have more than one dedicated corporate staff member with specialized expertise. For example, expertise pertaining to hazardous material management, biology, water quality, or cultural resources might be available through corporate staff. In addition, the project level staff responsible for environmental duties is properly trained, and as a result has more knowledge and confidence in their position. There is an increased emphasis on pro-active environmental risk management, including proper planning and start-up and auditing of projects, trainings, and seminars. Consultants are relied upon to a lesser degree. Resources are more – training, seminars, specialists, regulations, and compliance are a part of the job description not the only focus. There are tangible mechanisms in place to measure compliance and success of program execution.

Roles and Responsibilities

At the sustainability level the entire company has a raised awareness of the environmental program and its components, as well as their individual roles and responsibilities within the program. There is an emphasis on not only “environmental” people being involved but also other disciplines or departments within the company being aware of and taking part in environmental topics. The focus of the environmental program has evolved from merely regulation/contract compliance and is now on training and education, increasing the “presence” in the industry as the leader in environmental stewardship, and being involved with legislation and regulation writing. At this level, management commitment is obvious and perhaps even a senior management level position is created.

There is now a written procedure in place, likely an EMS, and it will conform to ISO and likely be ISO certified.

5 - Environmental Training

Employee training on environmental requirements is a critical element of any environmental program. Environmental requirements can be very complex, can change from jurisdiction to jurisdiction and sometimes are not obvious from a common sense perspective.

Training can take place at different levels in an organization, anywhere from field labor to the executive level. The type of training program a company needs is dependent upon the type and complexity of the work it performs, the potential environmental impact of the work as well as the objectives of the organization. Training is essential to ensure regulations are complied with and appropriate environmental protection measures are maintained on projects.

The following sections describe levels of an environmental training program. The first level, the foundation level, involves informal training that is primarily coordinated at the project level and tailored to specific needs. Next, in the value added level, training is formalized and coordinated at a corporate level to ensure consistency, completeness and penetration throughout the company. Finally, in the sustainability level, training includes all aspects of the previous levels, as well as incorporation of environmental stewardship and environmental objectives that the company may have beyond basic regulatory compliance.

Foundation Level

Environmental training at the foundation level:

- Occurs at the project level.
- Is informal and reactive in nature.
- Is focused on individual project compliance needs.
- Requires a member of the project management team to be accountable for environmental affairs and to oversee training requirements.
- Maintains training records at the project level.
 - Typically the training records are sign-in sheets for training held for a regulatory or owner-mandated requirement.
- Is comprised of three components:

Basic training:

- New employee training to meet owner requirements or regulatory compliance
- The project team is given training that is project specific, based on regulatory issues.
- Typical training would include spill training and reporting procedures, as well as site specific conditions that are addressed either by project specification or project permit conditions.

Specialized training:

- The person(s) responsible for environmental duties such as storm water inspections, and air monitoring, receive in-depth training.

Reminder training:

- Periodic training, such as toolbox or weekly meetings, would include typical dos and don'ts for the project.

Value Added Level

Environmental training at the value added level:

- Is sponsored at the corporate level.
- Is proactive in nature.
- Occurs at the corporate and project level.
- Requires a corporate environmental person on staff.
- Covers overall culture while still addressing compliance issues.
- Includes training management personnel on key environmental topics (i.e. high risk, high exposure).
- Incorporates not only project specific items, but also Standard Operating Procedures and company policy into orientation/new employee training.

The corporate environmental staff member leads development of a formalized training program and coordinates proactive training activities. Training is still primarily focused on compliance efforts. The role of the corporate environmental staff member in training in the value added level has five basic components:

- Lead project training efforts
- Develop, monitor and review training modules
- Train the trainers at the project levels
- Supply tools for or assist with development of issue-specific project training sessions
- Further awareness in current regulations
- Enrich project training programs by being involved in development and updating of standards and regulations

Sustainability Level

Environmental training at the sustainability level:

- Is defined by commitment to the environmental stewardship that was established in the foundation and value added levels while striving to meet sustainability.
- Includes all training in the value added level.

- Requires additional employee training to increase awareness amongst the workforce of the importance of environmental stewardship.
- Focuses on areas where the company has specific sustainability goals (i.e. waste reduction).

To embrace the goal of sustainability, the training program must meet several standards:

- Implement the training procedures of the environmental management system (EMS), which provides a framework for all training.
- Conduct an assessment of training needs for both projects and company-wide operation.
- Provide training of the EMS to appropriate individuals.
- Provide training on how to audit and how to be audited (internally and externally).
- Provide training for preparation for regulatory inspections.
- Provide specific and detailed training on sustainability topics such as waste reduction and idle time restrictions.
- Provide training focused on the meaning of the metrics we deliver to the corporation and how to improve numbers and trends.
- Incorporate trend analysis – data on environmental incidents – into training.

The corporate environmental staff member gathers training records and maintains a corporate database of training received. Training metric examples, such as percentage of individuals trained, number of management team trained in what areas, is readily available.

6 - Document Control

Introduction

As with any effort, documents are a part of all aspects of an Environmental Program and there needs to be a procedure to organize and manage them. Documents can be part of generic environmental programs (air, water, land) and/or those in a formal Environmental Management System (EMS). For example, documents that fall into the document control regime could include copies of permit authorizations, internal audit documentation, training agendas, or records from an incident. In general documents should be:

- Easily located,
- Periodically reviewed, revised as necessary and approved for use,
- Available (current versions) at all locations where they are applicable,
- Removed when they are obsolete and assured from unintentional use, and
- Reviewed for legal retention requirements.

Foundation Level

- Documents involved pertain to the aspects on a project
- Documents are used and managed by project personnel
- Documents are kept at the project
- Distribution of the documents is not generally addressed and is inconsistent
- Basic, best management practices such as assigning responsibility, storage medium and location, and an update process are established
- Additional best management practices include legibility, dates, and retention practices

Value Added Level

- There is a formal system for managing documents.
- The system addresses all points shown in Foundation Level
- In addition it covers distribution, revision tracking and storage issues
- The system originates from the corporate office and applies to all operations and project locations
- Applicable documents are kept at corporate and the project

Sustainability Level

- The system addresses all points covered in foundation and value added levels

- In addition there is an Environmental Management System conforming to ISO 14001 in place
- Document control covers all documents required in the EMS
- The document control system is adequate to withstand an audit without major deficiencies

7 - Environmental Auditing & Evaluation of Compliance

Environmental systems auditing and compliance evaluations are tools used to identify the full extent of a company's environmental impacts, serve as a gap analysis and determine whether a company is in compliance with applicable laws, regulations, and the expectations of its stakeholders. Through this process a company may also gain an understanding of how it can sustain and continually improve its environmental performance going forward.

Other major benefits of conducting environmental systems audits and compliance evaluations include mitigating a company's legal and reputation risks, reducing operational inefficiencies and achieving certification requirements. During criminal prosecution, the Department of Justice and the Environmental Protection Agency consider the existence and scope of environmental compliance programs, which may include an environmental compliance or system audit.

The following sections describe levels of an environmental auditing program. The first level, the foundation level, involves compliance initiatives that are primarily coordinated at the project level. Next, in the value added level, compliance efforts are coordinated at a corporate level to ensure consistency and thoroughness. Finally, in the sustainability level, auditing and compliance includes all aspects of the previous levels, as well as potential incorporation of environmental program certifications beyond basic regulatory compliance. At all levels, auditing will give an organization a means to control itself versus being controlled by others. Being in control allows changes to be made within normal budgetary, operational and resource allocation processes.

Types of auditing:

- **Environmental compliance evaluations** are a process of examinations to determine the status of a facility or project with respect to environmental regulations that apply to it.
- **Environmental system auditing** is a process of determining whether the environmental management system (EMS) conforms to the standard and has been properly and effectively implemented.

Audit programs should be reviewed with legal counsel to assess potential risk of the audits being used against the organization and measures to mitigate those risks.

Components of an environmental compliance audit program can consist of the following:

- Objectives
- Responsibilities
- Audit documentation
- Implementation (individuals conducting audit, communication, review of information, meetings, site visit, reports)
- Closure of findings (there is a procedure to ensure correction of any deficiencies)

- Training
- Systemic review/root cause analyses

Foundation Level

Compliance evaluations at the foundation level:

- Take place at the project in order to meet project-specific requirements.
- Are performed by project personnel that have been trained and understand environmental regulations.
- Consist of reviewing project permits and determining if permit conditions and recordkeeping are in compliance.
- Include field inspections and observations.
- Track and document results to ensure follow-through.
- Are not communicated beyond the project.

Value Added Level

Compliance evaluations at the value added level:

- Build on foundation level evaluations and are still compliance-based.
- Are performed by a staff environmental position in addition to project personnel.
- Consist of a formal compliance evaluation program (can be part of an EMS)
 - Compliance evaluations can be based on recognized formats such as: ASTM E2107 (www.astm.org) or EPA Audit Protocols (www.epa.gov/compliance/incentives/auditing/protocol.html)
- Require that auditors have audit training.
- Track and document results to ensure follow-through and compliance, and are analyzed for patterns.
- Include summaries that are passed on to upper management.
- Entail sharing of general summaries throughout the organization for the good of the company.

Sustainability Level

Compliance evaluations at the sustainability level:

- Still include the compliance evaluations at the foundation and value added levels.
- Introduce environmental system auditing.
- Via environmental systems auditing, look at the management process used to achieve environmental compliance and other company objectives.

- Would include auditing the company's environmental program in addition to compliance auditing.
 - Auditing may be done by third party auditors as a cross-check on in-house auditing or in a program certification (ISO 14000)
- Go beyond agency requirements to those of the organization that may not be regulatory.
 - May include: energy and water use restrictions and carbon footprint reduction.
- Are shared with executive management for periodic review of audit compliance and follow-through.

D EMS Design Considerations

An EMS supports an organization in meeting the environmental requirements of its operations, mitigating environmental risks and preparing for changes to environmental laws and regulations. Organizations that are subject to environmental requirements typically have some programs in place to manage the requirements. The program could range from a simple EMS (even if it is not called that) to a very robust, documented EMS.

There are many factors an organization should consider in designing an EMS for its operations such as the size of the organization, the type and complexity of work performed, the geographic area that is covered, the environmental risks associated with the work, the applicable legal and regulatory requirements and customer requirements.

The following steps can be used to guide an organization in designing and developing a structured EMS.

Step 1 - Evaluate the current state of the organizations' environmental program

Step 2 - Evaluate the organizational needs for an EMS

Step 3 - Evaluate the internal benefits of a documented EMS

Step 4 - Consider customer and project pre-qualification requirements for an EMS

Step 5 - Determine resource needs for an EMS

Step 6 - Evaluate the costs associated with implementing an EMS

Step 7 - Determine a rough schedule of expectations for implementing the EMS

Step 1 - Evaluate the current state of the organization's environmental program

Evaluate where the organization is now and the current state of its environmental program. Attachment 1 provides a self assessment tool that can be used to assist an organization with this evaluation. Points are assigned based on the level of each program element. The self assessment tool is not intended in any way to evaluate if the program is "good" or "bad". The number of points achieved should only be used to place an organization on Foundation to Sustainability scale (see Step 2 below).

17 points = Foundation Level

34 points = Value Added Level

51 points = Sustainability Level

At the **Foundation Level** an organization has the foundation of an environmental program in place. It is run primarily at the project level and is focused on regulatory compliance. At the Foundation Level the organization does not have a formal EMS in place.

At the **Value Added Level** the organization has components of a formal EMS in place. If an organization is successfully operating at the Value Added Level, the environmental management system is productive and pro-active.

The **Sustainability Level** is where the organization has a robust EMS in place, and is introducing ideas that go beyond basic compliance. At the Sustainability Level an organization would likely be able to obtain ISO 14001 certification.

Step 2 - Evaluate the organizational needs for an EMS

This step is a critical factor in the decision making process. What are the organizational needs for long-term success? Organizations that have fairly simple environmental requirements that are easily managed may be successful at the Foundation Level; however, an organization with very complex requirements that are challenging to manage and high owner expectations may need a Sustainability Level program to be successful. Figure 2 below illustrates the how an environmental program needs to align with organization needs as the environmental requirements on an organization become more complex and difficult to manage consistently.

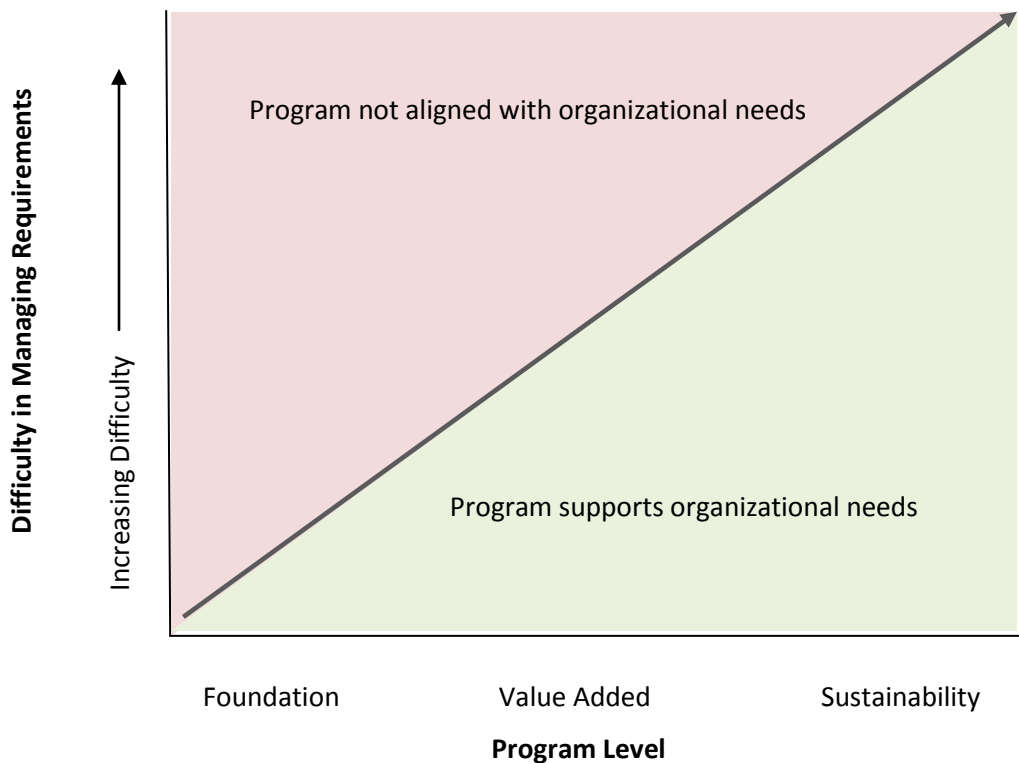


Figure 2: Environmental programs must be aligned with organizational needs

In evaluating its needs an organization can ask itself the following questions:

- How large is the organization?
- How many projects is it working on at any one time?
- Are the projects geographically dispersed?
- Is the organization working in multiple regulatory jurisdictions?
- How complex are the regulatory requirements?
- What are the environmental risks of the organization?
- What are the organization's customer requirements?
- How challenging is it to monitor the environmental performance of the organization?

There is no exact science in determining the needs of an organization; however, answering these questions will stimulate a thought process.

Step 3 - Evaluate the internal benefits

Doing business in the construction industry is shifting to require more from contractors in terms of environmental stewardship. From regulations changing to put more responsibility on the contractor, to project owners requiring environmental policies and/or programs, there is a distinct trend towards stronger environmental stewardship in construction.

Organizations should consider:

- Operational efficiency
- Benefits related to risk mitigation
- Employee moral
- Attraction of potential employees

Step 4 - Consider customer and project pre-qualification requirements for an EMS

An Environmental Management System can have a positive effect on both marketing and pre-qualification competitiveness. Public clients who previously have been more concerned with the low bid "rip and read" contracts are becoming more sophisticated and educated with regards to environmental management. They are now asking more from the organizations that perform work on their behalf. Some clients are even requiring organizations to possess not only an EMS, but a registered ISO 14001 Environmental Management System.

Step 5 - Determine resource needs of the environmental program

The system will require individuals to assume the coordinator role at the project and corporate levels to manage the program. An EMS generally dictates an environmental manager or director to oversee the EMS implementation and the project actions. The oversight can only be effective with top-down commitment and support. While a dedicated employee might be an addition, so too is the visible and tangible backing of executive level employees.

Step 6 - Evaluate the associated costs

Most of the costs of an environmental program are related to environmental staff necessary to coordinate and support the program. It is important to note that the costs associated with the environmental staff maybe offset by a reduction in costs due to increased efficiency and reduced burden on operations personnel. A proactive system can support smoother running of operations and reduced distraction by environmental problems. Additionally, environmental experts can reduce the learning curve of operations personnel and eliminate the “re-invent the wheel” syndrome.

Step 7 - Determine a rough schedule for implementing the environmental program

The timeline for implementing an EMS is largely dependent on the level at which the organization is operating at now, what staffing resources are available and where the company desires to be. Every organization may approach program development and implementation differently. Some may develop the program gradually while others may choose to fast track a full ISO 14001 compliance EMS. There is no right answer; however, it is important to have a deliberate plan.

E Summary

This guidance document identifies the process of developing an environmental program for a construction company and recognizes the varying needs of different organizations. As such, it provides a flexible framework that can be adapted for different circumstances. The approach presented allows the user to pick and choose from different program elements and levels. It follows the breakdown of an Environmental Management System found in ISO 14001, International Standard for Environmental Management Systems.

Additional Source of Information

The Associated General Constructors of America: <http://www.agc.org/cs/environment>

The Construction Industry Compliance Assistance Center: <http://www.cicacenter.org/>

Managing Your Environmental responsibilities: A Planning Guide for Construction and Development, USEPA, 2005:

<http://www.epa.gov/compliance/resources/publications/assistance/sectors/constructmyer/>

Attachment 1 - Self Assessment Tool

This tool can be used to help an organization evaluate the current state of its environmental program. It is not intended in any way to evaluate if the program is “good” or “bad”. The number of points achieved should only be used to place an organization on Foundation to Sustainability scale (see Figure 2).

Review each Program Element and determine if the best fit is Foundation, Value Added or Sustainability. Assign the corresponding number of points and then total all the points.

17 points = Foundation of a program firmly in place

34 points = Value added program with compliance assurance

51 points = Supports complex requirements over multiple operations and sustainable business practices

Program Element	Foundation	Value Added	Sustainability	Points 0 = Not addressed 1 = Foundation 2 = Value Added 3 = Sustainability
Environmental Policy	Written policy primarily focused on compliance	Add additional environmental goals of the organization	Add commitment to continual improvement, pollution prevention and sustainability objectives	
Environmental Aspects	Environmental aspects identified on projects through undocumented environmental review	Add documented procedure for conducting an environmental review	Add written procedure that conforms to ISO 14001	
Legal & Other Requirements	Legal & Other Requirements identified on projects through undocumented environmental review	Add documented procedure for conducting a pre-job environmental review and corporate environmental manager expertise available	Add written procedure that conforms to ISO 14001	
Resources, Roles and Responsibilities	Project level assignment of responsibilities and use of external expertise	Add internal environmental structure with corporate environmental manager	Add written procedure for that conforms to ISO 14001	
Competence Training and Awareness	Training coordinated at the project level	Add training coordinated at the corporate level	Add comprehensive training in line with the environmental goals of the organization	
Control of Documents	Documents controlled according to project document control procedures	Add documents controlled according to standard project document control procedures	Add written document control procedure that conforms to ISO 14001	

Evaluation of Compliance	Field inspection conducted at the project level	Add independent compliance evaluation using standard practices	Add written procedure that conforms to ISO 14001	
Internal Audit	None	Informal review of management process by corporate environmental manager	Add system audits that conform to ISO 14001	
Communication	Informal communication channels following organizational reporting structure. Citation reported to corporate office.	Add significant environmental issues reported to the corporate environmental manager	Add written communication protocol that conforms to ISO 14001	
Management Review	Management reviews significant events	Add corporate environmental manager who provides input to management teams	Add written procedure for conducting a formal management review that conforms to ISO 14001	
Operational Controls	Project level environmental control procedures	Add company standard operating procedure and guidance	Add written procedure that conforms to ISO 14001	
Objectives, Targets, and Programs	Objective is compliance	Add environmental goals for the organization	Add written procedure for establishing Objectives, Targets, and Programs that conforms to ISO 14001	
Monitoring and Measurement	Project level procedures for monitoring environmental parameters	Add company procedures for monitoring parameters related to company goals	Add written procedure that conforms to ISO 14001	
Documentation (of environmental program)	None	Add general description of environmental management program	Add documented Environmental Management System that conform to ISO 14001	
Emergency Preparedness and Response	Project level emergency response procedures	Add standard company procedures	Add written procedure that conforms to ISO 14001	
Nonconformity and Corrective Actions	Project level review of nonconformity/noncompliance and follow-up actions	Add review by corporate environmental manager to ensure prevention at other locations	Add written procedure that conforms to ISO 14001	
Control of Records	Records controlled according to project document control procedures	Add records controlled according to standard project document control procedures	Add written record control procedure that conforms to ISO 14001	
Total				