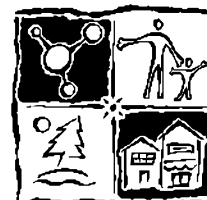


Integrated Environmental Management Systems

Implementation Guide



Design for the Environment Program
Economics, Exposure, and Technology Division
Office of Pollution Prevention and Toxics
U.S. Environmental Protection Agency



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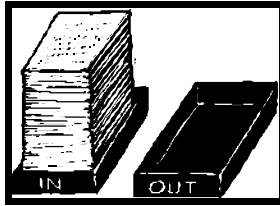
Acknowledgments

This Guide is part of an effort to show how Design for the Environment (DfE) technical work can be used to support development of an **Environmental Management System (EMS)**. This Guide is based primarily on EMS reference documents acknowledged in the references section, and on DfE guidance documents such as the Cleaner Technologies Substitutes Assessment Methodology. The Guide was prepared by Abt Associates Inc., Cambridge, MA, with Jean E. (Libby) Parker as lead author. The Abt Associates project team included Cheryl Keenan, Dennis Chang, Susan Altman, and Jonathan Greene.

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Foreword

EPA's Design for the Environment (DfE) Program has over eight years of experience building voluntary partnerships with industry, public interest groups, universities, research institutions, and other government agencies to develop cleaner, safer alternatives to existing products and processes and to manage change in the systems businesses use to address environmental concerns. The DfE Program has developed technical methodologies that provide businesses with environmental, economic, and performance information on traditional and alternative manufacturing methods and technologies. These approaches help businesses integrate environmental concerns into their daily business activities so they can reduce cross media impacts, use energy and other resources efficiently, better manage the risk associated with using hazardous chemicals, practice product and process responsibility, and integrate environmental and worker safety and health requirements. In addition, DfE has gained valuable experience in communicating with a wide variety of people with varying degrees of technical knowledge, and in establishing and maintaining diverse stakeholder groups. The DfE Program is offering this experience to support the development of **Integrated Environmental Management Systems** in companies.

An Environmental Management System (EMS) is a set of management tools and principles designed to guide the allocation of resources, assignment of responsibilities and ongoing evaluation of practices, **procedures**, and processes that a company needs to integrate environmental concerns into its daily business practices. The EMS developed and outlined by the International Standards Organization (ISO) in their standard

Tip

Words or phrases in **bold type** are defined in the Glossary (Appendix A).

Tip

The IEMS process described in this Guide will help you develop a results-oriented EMS, but it may not include all steps or core elements necessary for ISO **certification**.

Tip

An Environmental Management System provides a systematic way to review and improve operations for better **environmental performance** and improved profitability, by setting up **procedures** that ensure the work gets done. An EMS requires both administrative and

ISO14001 is one such example. The ISO 14001 EMS provides a widely recognized set of principles and standards for integrating environmental management into quality control and other business activities. Although the principles discussed in this document can apply to any EMS based on a plan-do-check-act approach, this document uses ISO14001 as a starting point. In addition to administrative procedures, steps to implement an EMS involve some technical work, such as identifying and prioritizing environmental concerns, evaluating options for addressing those concerns, and measuring the success of implementing those options. The ISO14001 standard does not specify *how* to carry out the technical work.

The DfE Program's approach to creating an EMS provides the DfE Program's technical methods to carry out the technical work of developing the EMS. The technical methods to integrate cleaner technology business methods with the management methods required for an EMS are presented in the DfE Program's Integrated Environmental Management System (IEMS). This approach emphasizes reducing **risk** to humans and the environment, pollution prevention, and wise resource management. The DfE Program principles follow this section. Those elements of the EMS that require strictly management or administrative expertise will be presented so as to demonstrate how the management and technical elements fit together. More detail on the management elements will be found in other referenced sources. This Guide takes you and your company through the IEMS creation process, step by step.

In January 1999, the DfE Program teamed with the Screenprinting and Graphic Imaging Association International (SGIA) to conduct a pilot project with seven screenprinting companies who wanted to develop IEMSs. The pilot project

Tip

There are many types of organizations that could make use of this Guide.

- A company could use it to develop a IEMS.
- A trade association could customize it and develop a sector-based approach to provide training for their members.
- A large company could use it to green their supply chain and their customer chain.
- Federal facilities can use it to fulfill requirements in the Executive Order: Greening of the Government Through Leadership in Environmental Management.
- Other government facilities could use it to comply with environmental regulations and to be more environmentally proactive.

was designed to enable both the DfE Program and SGIA to further develop these training materials. This Guide has undergone major revisions, and the *Company Manual Template* was developed in response to lessons learned during the pilot project.

DfE Program Principles

A goal of the DfE Program is to create healthier environments for workers, communities, and the ecosystem. The DfE Program accomplishes this goal by promoting system change in the way a company manages environmental concerns. The DfE Program principles and approaches are useful in meeting regulatory requirements and augmenting environmental protection beyond compliance. Using the DfE Program's approach can help a company integrate environmental protection by:

- ▶ managing the risk associated with using regulated and unregulated hazardous chemicals,
- ▶ considering cross-media impacts of activities and products,
- ▶ using energy and other resources efficiently,
- ▶ practicing extended product and process responsibility, and
- ▶ integrating environmental and health & safety requirements.

Approach

The DfE approach to creating an IEMS has six main steps:

- ▶ Identify and compare alternatives to evaluate trade-offs and information gaps.
- ▶ Use the DfE Substitutes Tree outline (see Figure A) to evaluate alternatives.
- ▶ Use the Pollution Prevention Hierarchy (Figure B) to evaluate and rank approaches.
- ▶ Integrate environmental considerations into daily business decision making that includes performance and cost to

provide environmental solutions that promote competitiveness.

- ▶ Recognize need for a commitment to continuous improvement.
- ▶ Work in partnership with **stakeholders**; engage participation and support of employees; encourage open communication.

Figure A: DfE Substitutes Tree

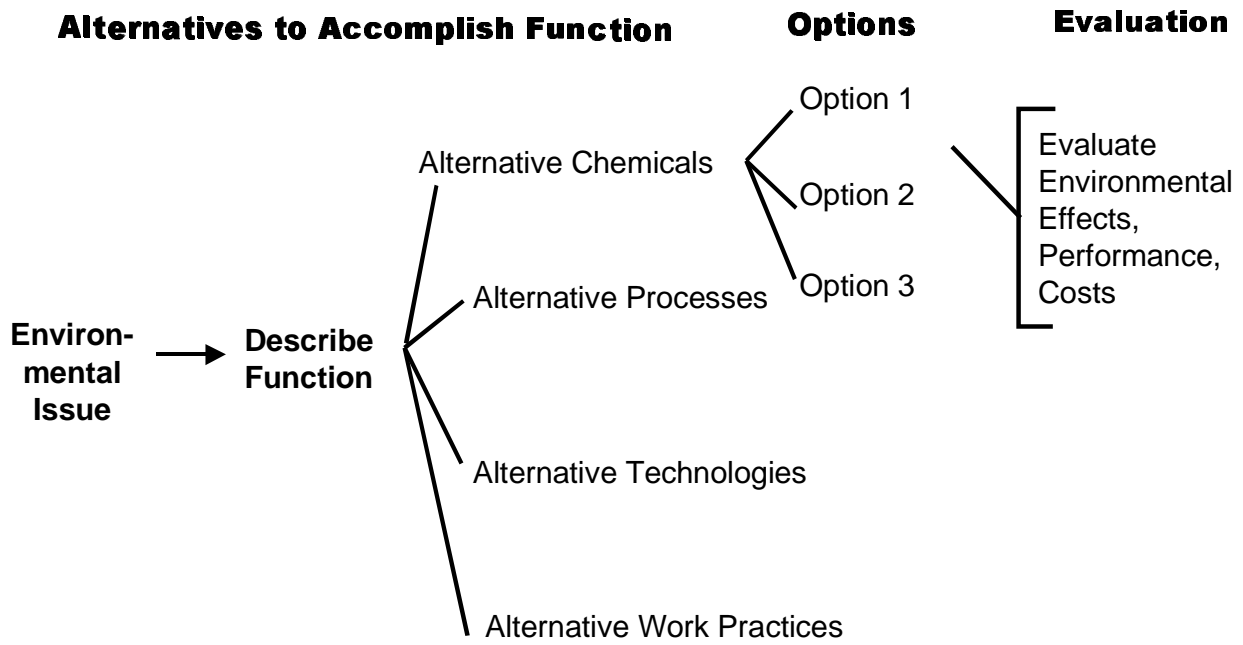
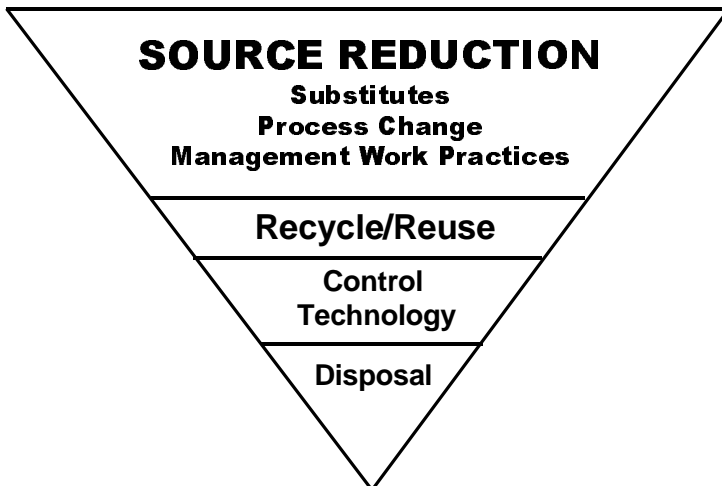


Figure B: Pollution Prevention Hierarchy



How to Use This Guide

This Guide has been designed to help companies integrate environmental concerns into business decision making using the DfE Program's Integrated Environmental Management System (IEMS). This Guide follows the guidelines of ISO14001, an international standard for EMSs, and it is designed to help businesses set up and implement a simple, straightforward EMS. This Guide does not intend to give guidance for ISO14001 certification.

This Guide is laid out in nine modules designed to be completed through group discussions with your IEMS team members and other managers and employees as appropriate. Most modules can be completed in several hours, but some may take longer. Sessions may be held once a week, once every other week, or once a month until the job is done. Use whatever time these modules require for your company. It is more important to complete each module than to finish in any particular time frame. Most companies find that it takes about a year to work through the EMS development process. And it generally takes up to three years for the EMS to be fully understood and implemented. Developing a company IEMS is a commitment to change, and change takes time.

Best results will be achieved by involving everyone in the company in some way. There are two benefits to involving all employees: first, they will be more likely to take ownership of managing environmental concerns; second, they often have valuable insight into how improvements can be made.

You should consider regular sessions as suits your schedule to complete the work in each module. You will need to appoint a

Tip

Every choice you and your employees make can affect the environment. Involving everyone helps produce cost-effective long-term results.

Tip

You should not try to perfect each step on your first attempt. Many of the steps will need to be revisited as you proceed with developing the IEMS.

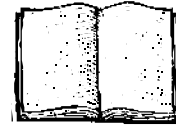
responsible person and a committee to lead the development of your IEMS. The committee members could also meet regularly with other employees to provide progress reports and solicit input. The importance of regular communication and involvement cannot be overemphasized. Getting people to think about environmental concerns in their daily work is as important a process as any step in setting up your IEMS.

Some of these modules will have to be revisited during the process. For example, it is useful to develop a communication plan in the beginning, but you will need to add to it as environmental concerns are identified and as other parts of the IEMS are developed. Some modules may not be completed at the outset, but may be revised as needed throughout the process.

Finally, you don't need to do everything at once. This Guide will help you identify possible projects and then help you prioritize these projects, given your resources and time. You may, for example, want to start out by developing the IEMS for only one part of your company or operation. You can expand later as your resources permit. It's important to start small with projects that will achieve success, so that you and your employees gain experience with the process and build confidence in your ability to make changes.

What are the Steps in Developing an IEMS?

Each module in this Guide explains a step in the IEMS development process. The modules contain worksheets to assist you in completing this work. Figure C is a flow chart showing the steps in the process. Figure D is a "roadmap" showing how the IEMS modules relate to the components of the ISO 14001 standard. The Appendices contain a Glossary, example questions to ask your suppliers about chemical risk, an



Tip

A companion document, *A Company Manual Template*, contains sample procedures and formats to help you document important components of your IEMS. Refer to this Guide frequently as you develop your IEMS. This document is available on the DfE website (www.epa.gov/dfe). See Appendix G for details about the Template.

alternatives evaluation worksheet and performance evaluation worksheet from the DfE Printing Project, resources for more information, and blank forms that correspond to the worksheets in each module. In addition to the Appendices, more tools and guidance can be found on the DfE's website at www.epa.gov/dfe. In particular, there is a more extensive Risk Guide and Cleaner Technology Substitutes Assessment Guide.

Module 1: Laying the Groundwork

This module provides a general discussion of what an IEMS contains. It will help you build understanding of and support for your IEMS among your company's managers and employees, about what an IEMS is and why the company is developing one. This module also will help you understand how your company currently impacts the environment by identifying environmental impacts of your company's products, processes and services.

Module 2: Creating an Environmental Policy

An early step in the process of developing a IEMS is reviewing your company's current methods for managing environmental concerns. Next you will write your company's environmental policy statement and decide on the scope of your IEMS. The environmental policy will be based on what is important to your company. This module contains some sample principles and policy statements.

Module 3: Determining Significant Environmental Aspects and Setting Objectives

You will need to determine which environmental aspects are significant, and prioritize them to determine what you want to address first. This module provides a method to estimate environmental risk to help you prioritize environmental aspects. The module then helps you to translate those priorities into objectives to reduce environmental impact.

Tip

Environmental aspects are elements of your business, such as air pollutants or hazardous **waste**, that can have negative impacts on people and/or the environment.

Figure C: IEMS Process

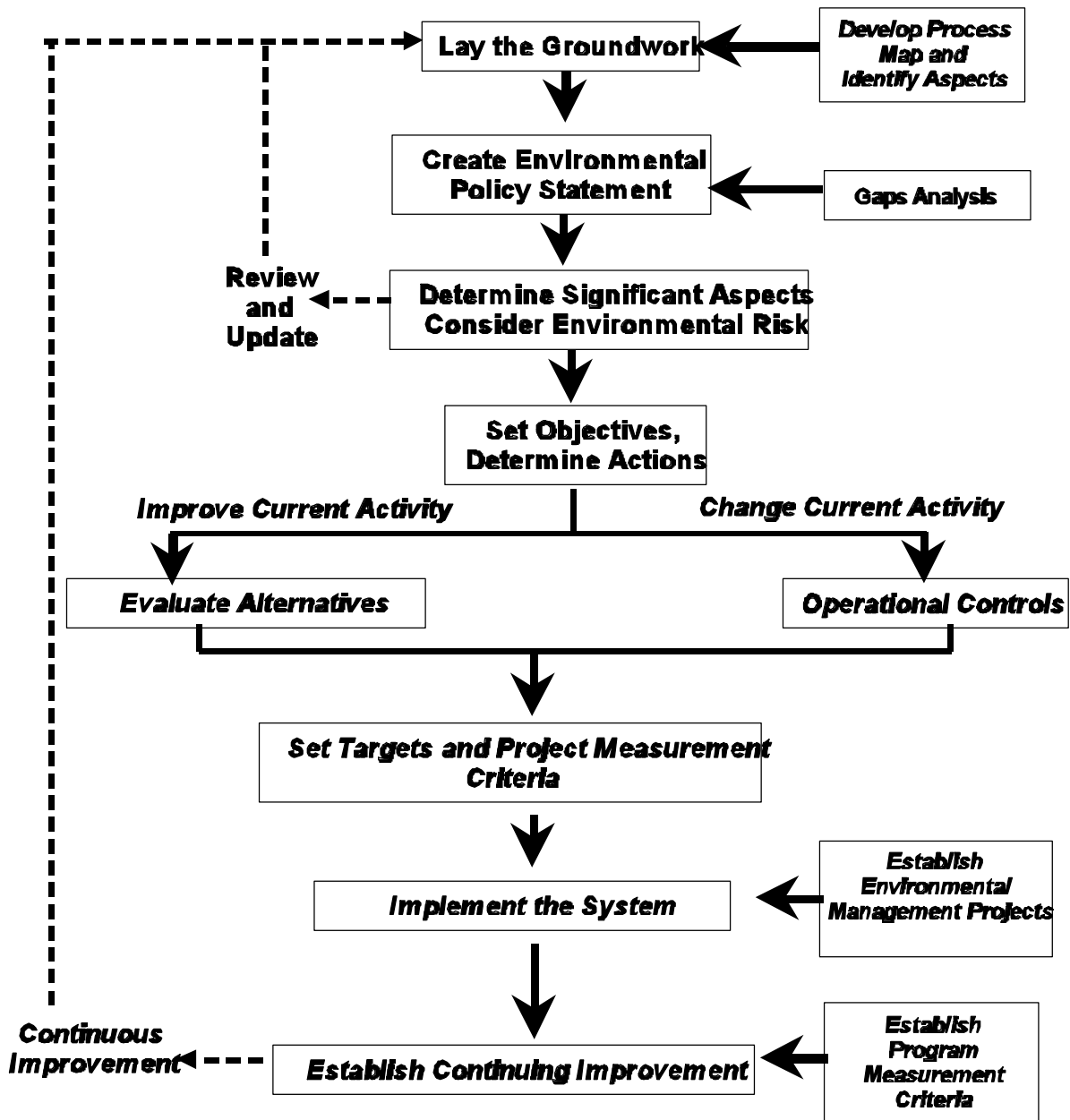


Figure D. Road Map between ISO 14001 and IEMS Approach

ISO14001 EMS COMPONENTS	IEMS GUIDE MODULES
Commitment and Policy	Module 1: Laying the Groundwork Module 2: Creating an Environmental Policy
Planning	Module 1: Laying the Groundwork Module 3: Determining Significant Environmental Aspects and Setting Objectives
Implementation	Module 4: Evaluating Alternatives Module 5: Setting Targets and Measuring Success Module 6: Developing Operational Controls Module 7: Implementing Your IEMS Module 8: Building Organizational Support
Evaluation	Module 5: Setting Targets and Measuring Success Module 8: Building Organizational Support
Review	Module 9: Establishing Continuing Improvement

Module 4: Evaluating Alternatives

Before deciding how you will meet your objectives, it is important to consider a wide array of approaches. This module shows how the IEMS methodology considers a hierarchy of alternatives, which include substitutes, pollution prevention, and wise resource management.

Module 5: Setting Targets and Measuring Success

For those significant environmental aspects where you have set an objective, you will need to develop specific targets that describe how you will achieve your goal and you need to develop ways of measuring that achievement.

Module 6: Developing Operational Controls

For some environmental aspects, you will need to write procedures to ensure that activities are performed in a way that reduces environmental impact. This module lays out how to develop operational controls, measure for success of those controls, and provide corrective action when necessary.

Module 7: Implementing Your IEMS

Effective implementation is essential to getting your IEMS off to a good start. This module helps you plan the IEMS development process and set up environmental management projects for your objectives.

Module 8: Building Organizational Support

The long-term success of your IEMS will depend on solid organizational support. Such support includes developing documentation, meeting training needs, and implementing effective communication and stakeholder involvement processes.

Module 9: Establishing Continuing Improvement

To ensure success and continuing improvement, regular reviews of your overall IEMS are needed. These reviews include progress made in communication, documentation and developing stakeholders as well as the specific environmental targets. The reviews provide critical information to ensure continuing improvement.

How much work each of the steps entails depends entirely on the scope of work that you decide to undertake. It is not necessary for your IEMS to include all your operations, especially for your first effort. As you gain experience in managing environmental concerns along with your daily operations, you will develop your IEMS further.