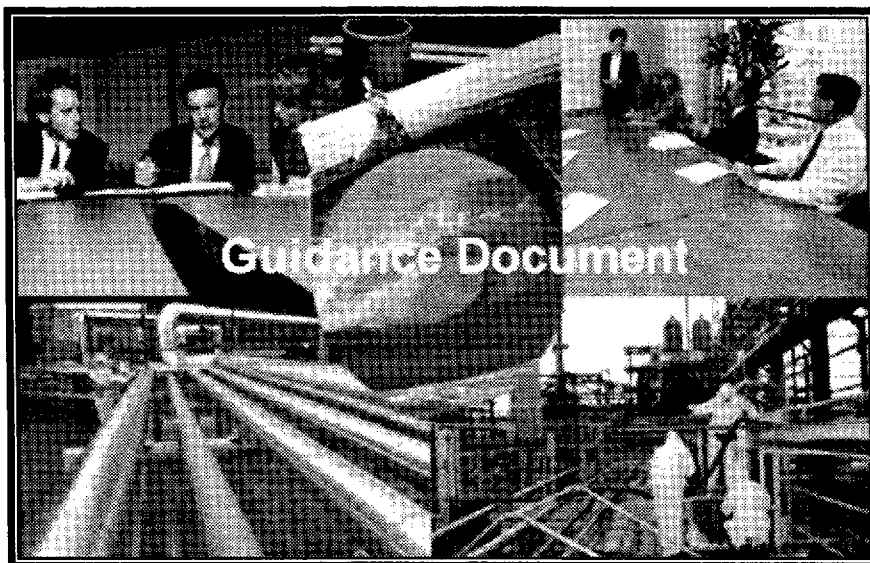




Guidance Document for Model EHS Management System

**A Manual to Assist Companies Interested in Developing an EHS
Management System or Enhancing an Existing System**

**API Publication 9100B
October 1998**



American
Petroleum
Institute



American Petroleum Institute

Environmental, Health and Safety Mission and Guiding Principles



MISSION

The members of the American Petroleum Institute are dedicated to continuous efforts to improve the compatibility of our operations with the environment while economically developing energy resources and supplying high quality products and services to consumers. We recognize our responsibility to work with the public, the government, and others to develop and to use natural resources in an environmentally sound manner while protecting the health and safety of our employees and the public. To meet these responsibilities, API members pledge to manage our businesses according to the following principles using sound science to prioritize risks and to implement cost-effective management practices:

PRINCIPLES

- To recognize and to respond to community concerns about our raw materials, products and operations.
- To operate our plants and facilities, and to handle our raw materials and products in a manner that protects the environment, and the safety and health of our employees and the public.
- To make safety, health and environmental considerations a priority in our planning, and our development of new products and processes.
- To advise promptly, appropriate officials, employees, customers and the public of information on significant industry-related safety, health and environmental hazards, and to recommend protective measures.
- To counsel customers, transporters and others in the safe use, transportation and disposal of our raw materials, products and waste materials.
- To economically develop and produce natural resources and to conserve those resources by using energy efficiently.
- To extend knowledge by conducting or supporting research on the safety, health and environmental effects of our raw materials, products, processes and waste materials.
- To commit to reduce overall emission and waste generation.
- To work with others to resolve problems created by handling and disposal of hazardous substances from our operations.
- To participate with government and others in creating responsible laws, regulations and standards to safeguard the community, workplace and environment.
- To promote these principles and practices by sharing experiences and offering assistance to others who produce, handle, use, transport or dispose of similar raw materials, petroleum products and wastes.

Rev. November 1996



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API Publication 9100A, *Model Environmental, Health and Safety (EHS) Management System*, was developed as a voluntary tool or template to assist companies interested in developing an EHS management system or enhancing an existing system. The model, which applies a quality systems approach to managing EHS activities, focuses on people and procedures by pulling together company EHS policies, legal requirements, and business strategies into a set of company or facility expectations or requirements to achieve continual improvement in overall EHS performance consistent with company policies. It is intended to be flexible and adaptable to fit the size and complexity of a company's or facility's operations. Those who use this model should refer to the companion document, API Publ. 9100B, *Guidance Document for Model EHS Management System*, for additional information.

API Publication 9100B, *Guidance Document for Model EHS Management System*, provides assistance to corporate and operating organization employees who are developing, implementing and assessing environmental, health and safety management systems. The guidance document serves as self-study source material, explains the basic purpose and scope of management systems, enhances efficiency of interchange among employees by use of common terminology, clarifies relationships between operating and other systems, describes how to evaluate effectiveness of an EHS management system and its elements, and facilitates system continuity over time. Those who use this guidance document should be familiar with API Publ. 9100A, *Model Environmental, Health and Safety (EHS) Management System*.

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GUIDANCE DOCUMENT FOR MODEL EHS MANAGEMENT SYSTEM

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OVERVIEW

Purpose of Guidance Document for Model EHS Management System

The purpose of this guidance document is to assist employees who are developing, implementing and working with environmental, health and safety management systems. The guidance document is intended to:

- serve as self-study source material, which can be used for other related training;
- enhance efficiency of interchange (between individuals, operating organizations, and companies) through the use of common definitions and terminology; and
- provide continuity of an EHS management system over time.

Objectives

The objectives of this document are to provide information that will enable you to:

- more easily implement an EHS management system at a company or facility;
- understand the basic purpose and scope of EHS management systems (EHS MS);
- be familiar with the definition of a management system;
- clarify the relationship between operating and other systems and an EHS management system;
- understand and describe the characteristics of an effective management system; and
- understand and describe how to evaluate an EHS management system and its elements.

Target Audience

This guidance document may be used by any operating organizations involved in the development, implementation, or assessment of EHS management systems. Persons who carry out their work within the framework of operational management systems may also benefit from this information.

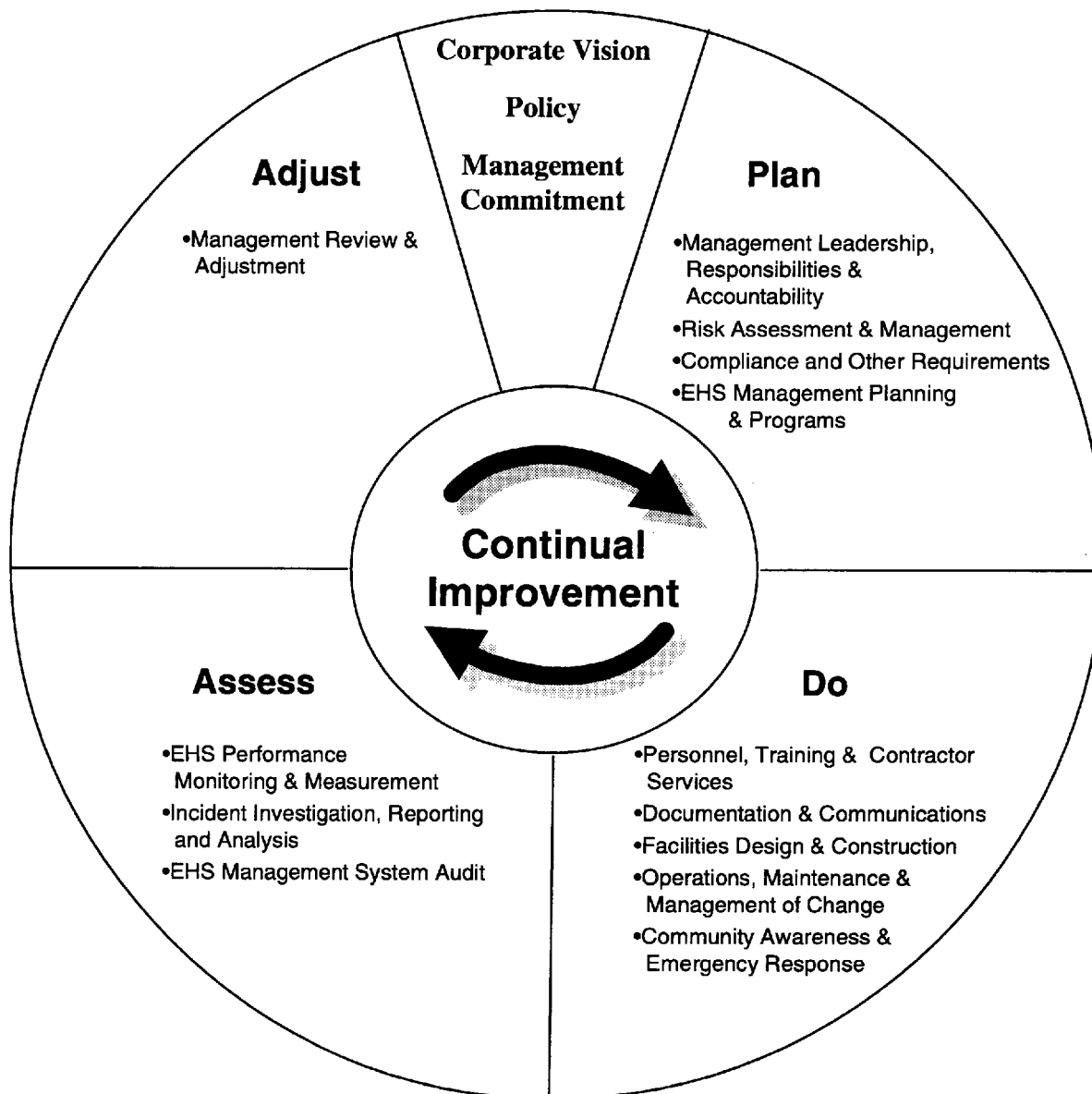
Prerequisite Knowledge

Those who use this guidance document should be familiar with the Model EHS Management System, Publication 9100A, and existing company EHS policies, procedures, programs, and operating and management systems. Figure 1 summarizes the overall scope of the Model EHS Management System.

How to Use This Document

You should go through the document at your own pace. Sections 1, 2 and 3 can be completed in about 15 to 30 minutes. Section 4, Glossary, and Section 5, Appendixes, provide additional reference materials that some companies may find useful.

Figure 1
API MODEL EHS MANAGEMENT SYSTEM



1.0 DEFINITION AND CHARACTERISTICS OF EHS MANAGEMENT SYSTEM

Key terms must be defined so that the management system can be applied and discussed in a consistent manner throughout organizations and among companies. This also prevents misapplication of terminology or definitions from other sources, such as ISO 14001 or 14004. Although definitions from other sources may be perfectly adequate, the following definitions are used in the Model EHS Management System. As companies or organizations adapt this model system or comparable systems to their particular operations, modified definitions of some terms may be necessary to reflect particular company practices.

1.1 Management System Definition

For purposes of the Model EHS Management System, a **system** is defined as:

A series of steps taken to ensure that stated objectives are achieved. Typical steps or elements of an EHS management system are shown in Table 1.

A typical system includes consideration of four key characteristics: scope and objectives, documented procedures and resources for implementation and execution, a verification or measurement process to determine if results are being achieved, and a feedback mechanism to provide for continual improvement. These key characteristics provide the basic structure for a quality systems approach, which is often referred to as: "plan, do, assess, and adjust" (see Figure 1)."

Table 1 **KEY ELEMENTS OF API MODEL EHS MANAGEMENT SYSTEM**

- **POLICY & PLANNING [PLAN]**
 1. Management Leadership, Responsibilities & Accountability
 2. Risk Assessment & Management
 3. Compliance and Other Requirements
 4. EHS Management Planning & Programs
- **IMPLEMENTATION & OPERATIONS [DO]**
 5. Personnel, Training & Contractor Services
 6. Documentation & Communications
 7. Facilities Design & Construction
 8. Operations, Maintenance & Management of Change
 9. Community Awareness & Emergency Response
- **MEASUREMENT & CHECKING [ASSESS]**
 10. EHS Performance Monitoring & Measurement
 11. Incident Investigation, Reporting and Analysis
 12. EHS Management System Audit
- **MANAGEMENT REVIEW & CONTINUAL IMPROVEMENT [ADJUST]**
 13. Management Review & Adjustment

Throughout this document, the terms system and management system are used interchangeably. The key characteristics of the system are described in Section 1.2.

Thus, an **EHS management system** is defined as:

A continual improvement process that applies a quality systems approach to managing environmental, health and safety activities. It consists of responsibilities, procedures,

processes, and resources that need to be in place to fully integrate safety, health, and environmental issues into business operations.

1.1.1 *Differences Between System and Other Terms*

To ensure consistent interpretation by those using the API model, several key terms, such as element, objective, organization, procedure, practices, program, process, and target are defined as follows:

Element: A key component of a safe, healthy, and environmentally sound operation. The Model EHS Management System has 13 elements.

Objective: A desired endpoint that helps achieve compliance with an organization's policies or otherwise improves performance.

Organization: The group that is implementing the management system. This term may be applied to an individual facility, business unit, operating sector, company, corporation, or any combination thereof.

Practice: Methods or means of accomplishing stated tasks.

Procedure: A step or series of steps to be carried out in logical order in a given situation.

Process: A series of actions, changes or functions that bring about an end or result.

Program: A plan of action that includes scheduled events or activities.

Target: Milestones that must be achieved, or actions completed, within a specified time to meet an objective.

Other terms, which are used less frequently in the model, are defined in Section 4 - Glossary.

1.2 Key System Characteristics

A complete management system, as defined above, has four key characteristics: (1) scope and objectives, which define the boundaries of the system; (2) documented procedures, and responsible and accountable resources; (3) measurement and verification; and (4) feedback or review mechanisms leading to continual improvement of the management system.

The Model EHS Management System (EHS MS) is a tool or template to help members, industry sectors, and others develop or enhance an EHS MS. It is not expected that this particular system necessarily be used. Companies may choose to organize their management systems differently depending upon other existing systems and/or procedures that are to be incorporated into their own management systems, or emphasis that company management may want placed on certain system elements. The Model EHS MS is intended to be flexible and adaptable by scaling up or down to fit the size and complexity of a company's or facility's operations.

Management system documentation is important. The reasons for documenting a system are:

- It describes the function and form of the system and gives it substance;
- It has longevity and will continue to survive personnel changes (i.e., transfer, retire, etc.); and
- People associated with the system have a common understanding of the system.

1.2.1 *Scope and Objectives* [PLAN]

Characteristic components of the scope and objectives portion of the EHS management system are:

- A clearly defined purpose with specific objectives for the system;
- System scope, including boundaries, explaining what the system does and does not cover;
- Operating requirements that the system is designed to satisfy; and
- Expected results or outcomes of the system.

In the Model EHS management system, the “**PLAN**” portion of the system includes the following four elements (expectations for each element are included in the appropriate box):

1. Management Leadership, Responsibilities & Accountability

- Policies established & communicated
- Management active & visible at all levels
- Operations management sets scope
- EHS responsibilities clearly defined
- EHS performance recognized and included in appraisal process
- Employees actively involved
- Clear goals & objectives set and communicated

2. Risk Assessment and Management

- Identify EHS hazards & assess consequences & probabilities
- Conduct assessments periodically
- Prioritize hazards & document decisions
- Update as changes occur
- Part of acquisition and divestiture of assets
- Product safety information is accurate & available

3. Compliance and Other Requirements

- Requirements are known
- Procedures exist to periodically assess compliance
- Non-compliance incidents are analyzed & learnings shared
- Participates in development of new requirements where appropriate
- Emerging compliance issues are monitored
- Emerging requirements are communicated

4. EHS Management Planning & Programs

- EHS objectives and targets align with company EHS policies
- Programs, standards & procedures are established & maintained
- Process are in place to amend as needed

1.2.2 Procedures and Resources [DO]

Procedures, and responsible and accountable personnel and resources to carry out the procedures, are core characteristics of any management system. There needs to be clear documentation; and, individuals involved with the system need to understand their roles and responsibilities in ensuring effective application of the management system throughout a company's operations. The amount of documentation that is necessary depends on the system's complexity.

The **"DO"** portion of the Model EHS management system includes the following five elements (expectations for each element are included in the appropriate box):

5. Personnel, Training & Contractor Services

- Process to assess qualifications, abilities and competencies
- Initial, ongoing & refresher training
- Process to manage personnel changes
- Procedures focused on practices to prevent injuries & illnesses
- Employee performance evaluation linked to EHS performance
- Selection criteria for contractor services
- Contractor performance requirements defined & communicated
- Periodic assessment of contractor performance

6. Documentation & Communications

- Operation & maintenance documentation identified, accessible & current
- Information on material & process hazards communicated
- Potential material hazards for safe handling and disposal communicated and documented
- Records for operations, maintenance, inspections, facility changes, training, audits and reviews maintained and protected
- Procedures for records retention, review and updating are documented
- Open communication on EHS matters is encouraged

7. Facilities Design & Construction

- EHS personnel involved in all stages
- Practices & standards meet or exceed regulatory and/or policy requirements
- Quality control & inspections systems
- Deviations are reviewed, approved & documented
- Pre-startup reviews
- EHS risk assessments made at specified project stages

8. Operations, Maintenance & Management of Change

- Operating, maintenance & inspection procedures
- Work permit system & operating procedures in place to manage hazards
- Alarm, control & shutdown equipment and procedures
- Waste & emissions monitoring, control & prevention practices
- Facility design, operation & maintenance to minimize wastes & emissions
- Procedures to manage all operational facility changes
- Expectations & procedures in place for off-site work activities

9. Community Awareness & Emergency Response

- Ongoing dialogue to address community concerns and expectations
- Comprehensive emergency response & crisis management plans in place
- Equipment, facilities, trained personnel defined, available & tested
- Simulations & drills held to verify response capabilities

1.2.2.1 Procedures for Process Steps and System Tasks

Two types of procedures are integral to a system, both of which need to be documented. The first type of procedure addresses the process steps of the management system itself. A flow chart or similar type of diagram may be useful in documenting these process steps.

The second type of procedure lists the various steps for key system tasks. These procedures should be clear, easy to follow, and kept current. Properly written procedures will address safety precautions to be observed, and facility operations during normal and abnormal (i.e., emergency) situations. These types of procedures are not normally kept with the overall management system documentation, but typically are contained in safety or operating manuals. Examples of written procedures for system tasks could include forms, and instructions for their completion, and elaboration of steps to be performed to complete various actions.

1.2.2.2 Responsible and Accountable Resources

In addition to the procedures mentioned above, it is equally important to establish clear roles, responsibilities and approval authorities for a system. Communication of the management system requirements and responsibilities is necessary to ensure that all individuals involved understand the objectives of the system and their specific responsibilities related to the system.