Chapter 9

Environmental Management System

1. Introduction

- The International Organization for Standards (ISO) completed the Quality Management System (ISO 9000) in 1987. Its worldwide success, along with increased emphasis on environmental issues, was instrumental in ISO's decision to develop environmental management standards.
- Standards for an environmental management system (EMS) were identified as ISO 14000 series.
- Experience with ISO 9000 made it easier to develop ISO 14000, and a subsequent revision of ISO 9000 capitalized on many of the improvements in ISO 14000.
- The EMS is part of a comprehensive management system that addresses how the overall business activities, including its products and services, impact the environment.
- The EMS maximizes company participation in environmental performance now and in the future.

2. Organizational Evaluation Standards

These standards consist of following categories:

- **ISO 14001- Environmental Management System (EMS)** gives the elements that organizations are required to conform to if they seek registration.
- **ISO 14004- Guidelines on Principles, Systems and Supporting Techniques,** provides supplementary material. It is for information only and is not to be used for registration.
- **ISO 19011:2002- Guidelines for system auditing**, which covers a range of audit related function.
- **ISO 14031- Environmental Performance Evaluation** presents information on recording information to track performance. It helps the organization meet the requirements of ISO 14001.

3. Product Evaluation Standards

These standards are under development and consist of three categories: Environmental Aspects in Product Standards (EAPS), Environmental Labeling (EL), and Life-Cycle Assessment (LCA).

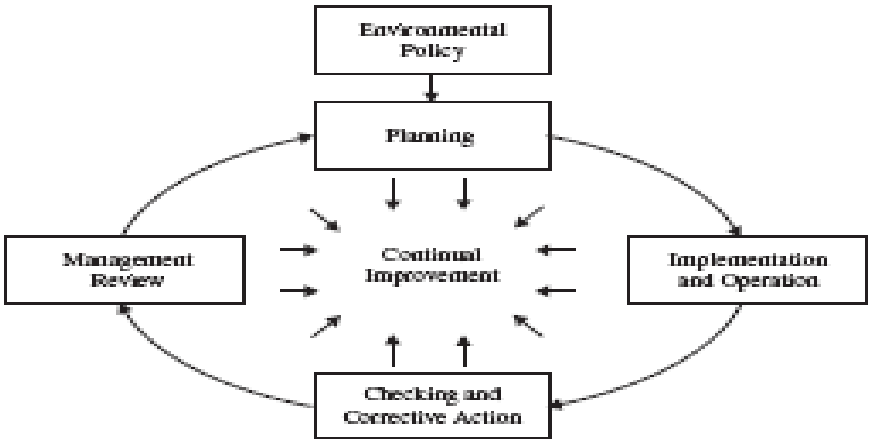
- **ISO Guide 64:2008** entitled, "Environmental Aspects in Product Standards," is designed to help writers develop product standards.

- **ISO 14020:2000**, entitled, "Environmental Labels and Declarations—General Principles for All Environmental Labeling," provides guidance on the goals and principles that should be used in development and use of environmental labels and declarations.
- **ISO 14021:1999** entitled, "Environmental Labeling—Self-Declaration of Environmental Claims: Terms and Definitions," applies to organizations that are declaring that their product has an environmental attribute such as being recyclable or energy efficient.
- **ISO 14024**, entitled, "Environmental Labeling—Practitioner Programs: Guiding Principles, Practices, and Certification Procedures for Multiple Criteria Programs," establishes criteria for third-party labeling or seal programs.
- **ISO 14025:2006**, entitled "Environmental labels and declarations- Type III declarations-principles and procedures. This standard establishes principles for use of environmental information, in addition to those given in ISO 14020:2000.
- **ISO 14040:2006**, entitled, "Life-Cycle Assessment (LCA) —Principles and Framework," provides an overview of the practice, applications, and limitations of LCA.
- **ISO 14044:2006**, entitled "Life-cycle assessment-Requirements and Guidelines" specifics requirements and provides guidelines for LCA and Life-Cycle Impact Assessment (LCIA).

4. Concepts of ISO 14001

- This standard provides organizations with the elements for an environmental management system (EMS), which can be integrated into other management systems to help to achieve environmental and economic goals. It describes the requirements for registration and/or self-declaration of the organization's EMS. There are four sections to the standard—scope, normative references, definitions, and EMS requirements and an informative annex.

The basic approach to EMS:



5. Requirements of ISO 14001

The standard is divided into six parts or clauses and has total of 18 requirements

- **General Requirements:** The organization shall establish, maintain and continually improve an environmental management system that includes policy, planning, implementation and operation, checking and corrective action, and management review
- **Environmental Policy:** policy statement should be based on organization's mission and values. It should show management commitment, leadership, and direction for the environmental activities
- **Planning:** This area contains four elements:
  - **Environmental aspects:** The relationship among the environmental aspects, environmental impacts, and the standard is necessary for successful implementation of the standard
  - **Legal and other requirements:** The standard requires the organization to have a procedure to identify and have access to all legal and other requirements to which it subscribes.
  - **Objectives and targets:** The organization shall establish and maintain these objectives and targets at each relevant function and level. They shall be consistent with the policy statement especially in regard to the prevention of pollution and shall be measurable.
  - **Environmental management program(s):** The organization shall establish and maintain a program(s) for achieving the objectives and targets. It shall include designation of the responsible function, team, or individual and a timeframe for achievement.
- **Implementation and Operation:** This area contains seven elements
  - **Resources, roles, responsibilities and authorities:** Roles, responsibilities, and authorities shall be defined, documented, and communicated for all personnel affecting the EMS.
  - **Training, awareness and competency:** Training needs should be evaluated on a regular basis, usually annually, to ensure their effectiveness
  - **Communication:** The standard requires that procedures shall be established and maintained for internal communication among all employees
  - **System Documentation:** The organization shall establish and maintain information, in paper or electronic form, to describe the core elements of the

system and their interaction and provide direction to applicable related documents.

- **Document Control:** This element requires that procedures be established and maintained to control all EMS documents
- **Operational Control:** This element aligns operations and activities including subcontractors with the identified significant environmental aspects, environmental policy, and environmental objectives and targets.
- **Emergency preparedness and response:** Procedures are required to identify and respond to potential accidents and emergency situations. In addition, the procedures should prevent or mitigate the environmental impact of these accidents and emergency situations.

- **Checking and Corrective Action:** This contains 4 elements:
  - **Monitoring and measuring:** The organization is required to monitor and measure the key characteristics of its objectives and activities in order to assess its performance in meeting environmental operations and targets
  - **Non-conformance & Corrective/ preventive action**: Procedures are required to define responsibility and authority (1) handling and investigating nonconformance,
    (2) taking action to mitigate any impacts, (3) initiating corrective and preventative action and (4) evaluating the need for action(s) to prevent non-conformities
  - **Records:** Procedures are required for the identification, maintenance, and disposition of environmental records
  - **EMS audits:** The purpose of this audit is to ensure that the EMS conforms to plans and is being properly implemented and maintained. Internal or self audit and external audit information should be distributed to senior management to assist in the management review process.
- **Management Review:** Management review and revision, if applicable, is required to ensure the continuing suitability, adequacy, and effectiveness of the EMS. The intent of this clause is to involve top management in the EMS continuous improvement process.

6. Benefits of EMS

- **Global:**
  - Facilitate trade and remove trade barriers
  - Improve environmental performance of planet earth
  - Build consensus that there is a need for environmental management and a common terminology for EMS.

- **Organizational:**
  - Assuring customers of a commitment to environmental management.
  - Meeting customer requirements, the primary reason for organizations to become certified.
  - Maintaining a good public/community relations image.
  - Satisfying investor criteria and improving access to capital.
  - Obtaining insurance at reasonable cost.
  - Increasing market share that results from a competitive advantage.
  - Reducing incidents that result in liability.
  - Improving defense posture in litigation.
  - Conserving input materials and energy.
  - Facilitating the attainment of permits and authorization.
  - Improving industry/government relations

7. Integrating ISO 14000 with ISO 9000

- EMS implementation can seem like a time-consuming and costly undertaking. However, organizations that have implemented ISO 9001 have a distinct advantage over those that are unfamiliar with the process.
- Depending on the company, 25 to 50% of the requirements may already be in place. Most registrars encourage organizations to integrate their EMS with their other management systems such as ISO 9001.
- By integrating the two systems, there will be less documentation and lower implementation cost.
- Presently, ISO has a committee studying the two standards for the purpose of minimizing differences.

8. Relationship to Health and Safety

- The ISO 14001 standard assumes that cultural transformation occurs through employee involvement and responsibility from the bottom up, not through dictates from the top.
- That assumption and other concepts present in the standard are applicable to health and safety. Therefore, it is reasonable to consider the use of the standard in an integrated approach that can bring about improvement for all three.
- For example, we can measure pollutants in employee's work environments to determine if it meets Occupational Health and Safety Assessment Specification (OHSAS)

permissible exposure level. Then we can monitor the occurrence of illnesses as recorded at the medical clinic and correlate those illnesses to measured airborne concentrations.

- In effect, we can measure progress in all three areas with a built-in efficiency and cost savings.