

# The Study And Implementation Of Environmental Management System

**1. Gangadhar Ramu Chavan** B.E,M.Tech  
Programmer,UGC-NET  
University of Mysore  
Mysore,Karnataka,India

**2. Prof. Nagaraja Naik** M.Sc, Ph.D  
DOS in Chemistry, University of Mysore  
Manasagangothri ,Mysore, Karnataka, India

## Abstract

An environmental management system (EMS) provides a framework for organizations or businesses that are interested in continually improving environmental performance. Through this framework, environmental stewardship becomes the responsibility of all employees—not just the environmental department—and is integrated into everyday business operations. EMS offers organizations a method and opportunity to systematically establish and achieve pollution prevention objectives for superior environmental performance. implementation of EMS are top management commitment towards the implementation, identification of environmental aspect, impact and legal compliance.

**Key words:** Environment Management, ISO, ISO14001

## 1. INTRODUCTION

ISO defined the environment as “the surroundings in which an organization operates, including air, water, land, natural resources, flora fauna, humans and their interrelation” (ISO, 1996). Environmental Management (EM) defined it as “management of an organization’s or company’s impact on the environment”. Therefore, in this study, EM is ‘the process of reducing the environmental impact of an organization or people’s activities through the control of all aspects of their operation that can cause or lead to an impact on the environment’. The ISO 14001 standard defines EMS as “that part of the overall management system which includes the organizational structure, planning activities, responsibilities, practices, procedures, processes and resources for developing implementing, achieving, reviewing and maintaining the environmental policy” (ISO, 1996).

The implementation and establishment of environmental management system (EMS) was first introduced following Rio de Janeiro Environment and Development Conference that resulted

implementation of Agenda 21 (ANSI, 1999). International Standard Organization (ISO) developed the environmental management standard series (ISO 14000) which expanded worldwide (ISO, 1996). During recent years, human activities on growth and development have threatened and have had negative impacts on the environment. Considering the close relationship between issues of the environment and development and their inherent linkage, existing problems is expected to be moderate and solved by applying a suitable environmental management system.

Nowadays, with continuous establishment of environmental management system and its related standards more attention is being paid on ISO 14000. The objectives of this standard are consistent of controlling urbanization and urban unsteadily unsustainable development, and also reducing the resulted environmental problems.

ISO 14000 is an international standard for environment management systems, based upon three main principles:

- Prevention of environmental pollution,
- Compliance with environmental regulations, and
- Continuous improvement of environmental performance.

All the requirements in this International Standard are intended to be incorporated any environmental management system. The extent of the application depends on factors such as the environmental policy of the organization, the nature of activities, products and services and the location where and the conditions in which functions.

### **1.1 Benefits of EMS**

- Improve environmental performance;
- Enhance compliance;
- Prevent pollution and conserve resources;
- Reduce/mitigate risks;
- Attract new customers and markets (or at least retain access to customers and markets
- With ems requirements);
- Increase efficiency/reduce costs;
- Enhance employee morale, enhance recruitment of new employees;
- Enhance image with public, regulators, lenders, investors;

- Achieve/improve employee awareness of environmental issues and responsibilities;  
and,
- Qualify for recognition/incentive programs.

## 1.2 Components of an EMS

EMS, according to ISO 14001 has four components. It is like a cycle of, plan, do, check, and act. If the cycle is adhered to constantly it leads to continuous improvement of the system. Figure 1. shows the EMS cycle which is an abstract description of the different components. The design and implementation of an EMS requires a considerable time and effort therefore requiring the commitment of management of the organization. Management needs to communicate their support to the system and emphasize that “they aim to improve their environmental performance”.

### Plan

Establish the objectives and processes necessary to deliver results in accordance with the organization’s environmental policy.

### Do

Implement the processes.

### Check

Monitor and measure processes against environmental policy, objectives, targets, legal and other requirements, and report the results.

### Act

Take actions to continually improve performance of the environmental management system.

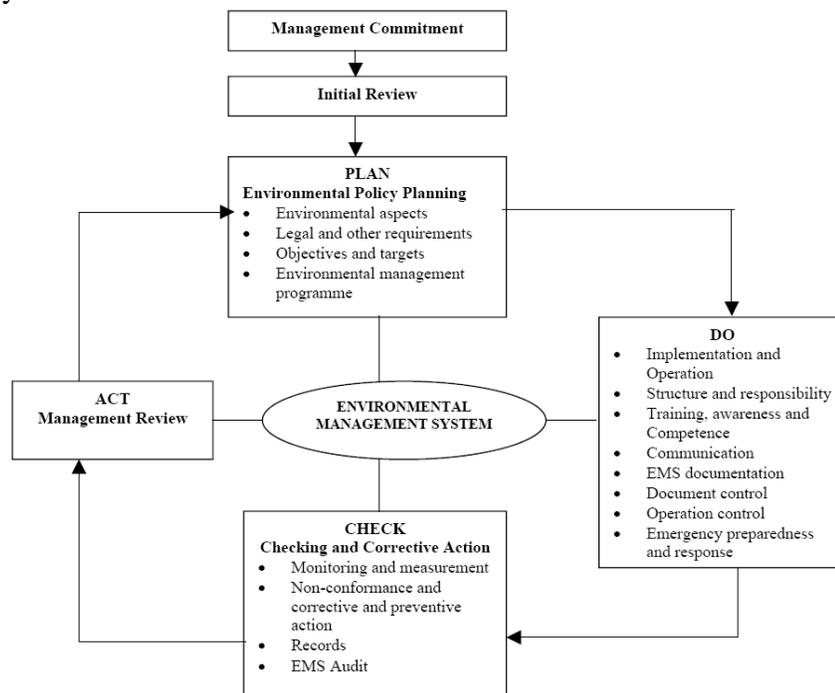


Figure 1

### 1.3 The ISO 14000 series

ISO 14000 is a series of international standards for environmental management. It is the first such series of standards that allows organizations all over the world to pursue environmental efforts and measure performance according to internationally accepted criteria. It lays out tools and systems for the management of various environmental obligations and the conduct of product evaluations, without prescribing the goals an organization must achieve. Table 1 shows the various elements in the series.

**Table 1**

<b>Title</b>	<b>Standard</b>
14001	Environmental Management System-Specification with Guidance for Use
14002	Environmental Management System-Guidelines on Special Considerations Affecting Small and Medium Scale Enterprises
14004	Environmental Management System-General Guidelines on Principles, Systems and Supporting Techniques
14010	Guidelines for Environmental Auditing- General Principles of Environmental Auditing
14011	Guidelines for Environmental Auditing-Audit Procedures Part 1: Auditing of Environmental Management Systems
14012	Guidelines for Environmental Auditing-Qualification Criteria for Environmental Auditors
14013/15	Guidelines for Environmental Auditing-Audit Programmes, Reviews and Assessments
14020	Environmental Labels and Declarations-General Principles
14021	Environmental Labels and Declarations-Environmental Labelling- Self Declaration of Environmental Claims-Terms and Definitions
14022	Environmental Labels and Declarations-Environmental Claims-Self Declaration of Environmental Claims - Symbols
14023	Environmental Labelling-Self Declaration of Environmental Claims-Testing and
14024	Environmental Labels and Declarations-Environmental Labelling-Type 1-Guiding Principles and Procedures
14031	Environmental Performance Evaluation-Guidelines
14032	Technical Report Type III –Environmental Management-Environmental Performance Evaluation-Case Studies Illustrating the Use of ISO 14031
14040	Life Cycle Assessment- Principles and Framework
14041	Life Cycle Assessment-Life Cycle Inventory Analysis
14042	Life Cycle Assessment-Impact Assessment
14043	Life Cycle Assessment-Interpretation
14049	Technical Report Type III-Environmental Management- Life Cycle Assessment-Examples for the Application of ISO 14041
14050	Environmental Management Terms and Definition
14061	Technical Report III-Guidance to Assist Forestry Organizations In the Use of ISO 14001 and ISO 14004

The series aims at providing guidance for developing a comprehensive approach to EM and for standardizing key environmental tools of analysis such as labeling, and life cycle analysis. ISO 14001 is the first in the 14000 series as shown in table 1. It is aimed at supplementing environmental protection and the prevention of pollution in accordance with socio-economic needs.

### 1.4 How is it Used?

Many EMS efforts begin with an examination of the existing management systems and compare them to the ISO 14001 requirements. The gaps identified in this comparison can indicate which elements/programs the organization needs to develop or improve. Often, EMS can be integrated with existing programs if the process begins with a compliance perspective moves towards goals that go beyond compliance. All the components of an EMS will be applied to the specific programs designed to meet the compliance requirements already recognized by the organization. In most cases, these programs also represent the best opportunities to go beyond compliance and prevent pollution. Through the application of EMS principles in these programs, the organization gains the opportunity to improve overall performance while minimizing the workloads of the personnel responsible for managing these programs.

### 1.5 Who Uses It ?

**Industry** — Large multinational corporations, as well as small businesses, have implemented EMS. In Canada, ISO 14001 certification is the most common EMS and is most prevalent in the following sectors: chemical, automotive parts manufacturing, electronics and telecommunications, mining, metals and forestry.

**Government** — Some government bodies, particularly local governments, have chosen to implement their own internal EMS.

**Institutions** — Institutions such as universities are also implementing EMSs.

## 2. Environmental Management in India

In part, the desire for an international environmental management standard emerged in response to a proliferation of eco-labels, green certification programs, and voluntary industrial initiatives during the 1980s. Indeed, participants at both the 1992 United Nations Conference

on Environment and Development and the 1994 Uruguay round of discussions on the General Agreement on Trade and Tariffs the predecessor of the World Trade Organization—articulated concern that the proliferation of such certification programs, each with their own expectations, could serve as a barrier to trade. They encouraged, instead, a single international certification program for verifying that a firm's environmental performance was satisfactory.

Institutionally, ISO stood as the most appropriate organization to undertake the task of creating this standard. Not only did ISO have a long tradition of facilitating the creation of technical standards through a committee-based process, but in 1987 it had released the ISO 9000 series of international standards for managing product quality, which could serve as a model for the environmental standard. In response to this broad interest in an international environmental standard, in 1991 ISO established a Strategic Advisory Group on Environment ~better known as SAGE! to determine whether an EMS standard was required and what ISO's approach should be in developing such a standard International Organization for Standardization, 2002. Following the recommendations of SAGE, ISO established a technical committee (TC-207) in 1993 to create the standard. After much debate over issues such as the appropriate level of public disclosure required for firms seeking certification, the first version of ISO 14001 was released in 1996, with a revised version released in 2004. As of December 2005, over 110,000 organizations worldwide had been certified to ISO 14001. Of these, approximately 1,600 were in India (Table 2).

Year	ISO 14001 certificates worldwide	ISO 14001 certificates in India
1996	1,491	2
1997	4,433	28
1998	7,887	40
1999	14,106	111
2000	22,897	257
2001	36,464	400
2002	49,440	605
2003	64,966	879
2004	89,937	1,250
2005	111,162	1,698

Table 2

### 3. Environment and Industries in India

Over the past few decades, India's rising population and rapid industrial growth has focused attention on the country's environmental concerns. In 1974, the central government passed legislation that created State Water Pollution Control Boards responsible for establishing and

enforcing pollution control standards (Divan and Rosencranz, 2001; Planning Commission, 2000). In 1981, the government expanded the powers of the state boards to include air pollution control. The Bhopal disaster of 1984 brought renewed attention to environmental concerns, especially those related to toxic releases and industrial hazards, and resulted in the passage of the national Environment Act of 1986. This act delegated wider powers to the executive branch of the central government, enabling it to frame rules and issue regulations, but enforcement generally remained with the states.

Several factors, however, prevent the State Pollution Control Boards from effectively enforcing environmental regulations. These boards do not have the power to impose fines on violators (Planning Commission, 2000). They have the authority to shut down egregious polluters, but political pressures place serious limitations on the exercise of this authority. In practice, the State Pollution Control Boards must either wait for an industrial facility to comply with regulations or initiate litigation. Many states' boards are also understaffed and underfinanced; most do not even have a complete list of all the factories located in their respective states. As a result, compliance with applicable laws is low, and air and water quality monitoring is infrequent and inconsistent.

Furthermore, over the last two decades, the structure of many industries has changed. Until the 1990s, most Indian industrial sectors, including steel, oil and gas, and coal, were primarily under the control of the government, and import restrictions kept the Indian market relatively protected from international competition. Since then, however, successive governments have followed a policy of economic liberalization, under which many industrial operations have been sold to private enterprises, and foreign investment in Indian industry is actively being sought. As a result, many industries are being exposed to greater scrutiny from investors who seek assurances that their investments are protected from environmental liabilities. In this scenario of weak regulatory enforcement and economic liberalization, the ISO 14001 standard has begun to receive attention from industry, non-governmental organizations, and even regulatory agencies.

#### **4. Conclusion**

In this study, it can be concluded that ISO 14001 EMS implementation has a positive and significant relationship with Enterprises performance (i.e. operation performance and business

performance).and stakeholders also generally agree that an ISO 14001 certified EMS does increase a firm's capacity to manage the environmental aspects of its business. Second, the environmental goals that firms set typically do not go beyond compliance; they generally revolve around efforts to achieve compliance and manage resources more efficiently. Third, while the benefits of an effective EMS are clear, the factors encouraging firms to pursue certification are not. The potential advantage that certification provides in the marketplace, especially international trade, appears to be an important factor, but for many companies that advantage appears to be anticipatory. Finally, in India, the weakest link in the entire system appears to be the certification process, and organizations with little commitment to implementing an effective EMS can generally take advantage of that weakness.

### References

1. **Ambika Zutshi, Amrik S. Sohal, and Carol Adams**, ' Environmental management system adoption by government departments/agencies,International Journal of Public Sector Management,Vol 21 (5) 2008,Page 525 -539
2. **Anjani KUMAR, Dipak Ranjan JANA and Amresh KUMAR**, ' Environmental Management System (E M S) and Sustainable Development'. Arab Research Institute in Sciences & Engineering Vol. 4 No. 4 (2008) 195-204 <http://www.arabrise.org>
3. **HABIB M. ALSHUWAIKHAT & ISMAILA ABUBAKAR**, " Towards a Sustainable Urban Environmental Management Approach (SUEMA): Incorporating Environmental Management with Strategic Environmental Assessment (SEA), Journal of Environmental Planning and Management, Vol. 50, No. 2, 257 – 270, March 2007
4. **Hari Srinivas and Makiko Yashiro** "Cities, Environmental Management Systems and ISO 14001: A View from Japan. United Nations University 1999, 5-53-70, Jingu-mae, Shibuya-ku, Tokyo – 150-8925, Japan. Web: <http://www.unu.edu>
5. **Haslinda, Abdullah & Chan Chin Fuong** "The Implementation of ISO 14001 Environmental Management System in Manufacturing Firms in Malaysia" Asian Social Science, Vol. 6, No.3, March 2010.Web: <http://www.ccsenet.org/ass>
6. **Jana Selih** " Environmental Management Systems And Construction SMEs: A Case Study For Slovenia , JOURNAL OF CIVIL ENGINEERING AND MANAGEMENT,University of Ljubljana,, 2007, Vol XIII, No 3, 217–226
7. **KA-YEE CHAN & XIANG-DONG LI** 'A Study of the Implementation of ISO 14001 Environmental Management Systems in Hong Kong'. Journal of Environmental Planning and Management, 44(5), Page 589–601, 2001

8. **Kharbanda V. P.** 'Facilitating innovation in Indian small and medium enterprises – The role of clusters'. CURRENT SCIENCE, VOL. 80, NO. 3, Page 343-348 ,10 FEBRUARY 2001,
9. **Mohammadrezaie, Sh. and Eskafi, F.** ,” Environmental Performance Evaluation (EPE) of Iran Khodro Co. (IKCO), Int. J. Environ. Res.1 (1): 49-57, Winter 2007
10. **MOHAMMED MATOUQ** “ A Case-study of ISO 14001-based Environmental Management System Implementation in the People’s Republic of China, Local Environment, Vol. 5, No. 4, Page 415–433, 2000
11. **Nouri .J and S. Toutouchian** ,” Application of environmental management system – ISO 14001: 1996, in urban environment and municipalities, International Journal of Environmental Science & Technology, Vol. 1, No. 2, pp. 109-117, Summer 2004
12. **Philip J. Stapleton, Margaret A. Glover, and S. Petie Davis**, “ Environmental Management Systems: An Implementation Guide for Small and Medium-Sized Organizations, Glover-Stapleton Associates, Inc. and NSF ISR, Web: www.nsf-isr.org
13. **Samir A. Qadir, Hugh S. Gorman** “The Use of ISO 14001 in India: More Than a Certificate on the Wall?” 2008 National Association of Environmental Professionals.
14. **SANJAY K. SOLOMON**, ‘Environmental Pollution and Sugar Industry in India its Management in : An Appraisal’ , Suger Tech 7(1)(2005) : 77-81, Society for sugar research and promotion.
15. **Serena Botta, Claudio Comoglio**, “ Environmental Management Systems in Local Authorities: The Case Study of the Cesana Torinese Municipality, a Turin 2006 Olympic Site, American Journal of Environmental Sciences 3 (3): 126-134, 2007
16. **SURENDER KUMAR and D.N. RAO**,” Valuing The Beneficts of Air Pollution Abatement Using a Health Production Function A Case Study of Panipat Thermal Power Station, India, Environmental and Resource Economics **20**: 91–102, 2001. © 2001 Kluwer Academic Publishers.