

**ISO
14001**

ENVIRONMENTAL
MANAGEMENT
SYSTEM

**IMPLEMENTATION PROCESS &
TECHNIQUES**

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What is ISO 14000?

- A series of international standards on environmental management.
- It provides a framework for the development of an EMS and the supporting audit programme.

The main thrust for its development came as a result of the Rio Summit on the Environment held in 1992.

The History of ISO 14000

As a number of national standards emerged (BS 7750 being the first), the International Organization for Standardization (ISO) created a group to investigate how such standards might benefit business and industry. As a result this group recommended that an ISO committee be created to create an international standard.

What is ISO 14001?

- ISO 14001 is the auditable standard of the ISO 14000 series.
- It specifies a framework of control for an EMS
- An organization can be certified by a third party against this standard

Other ISO14000 Series Standards

Other standards in the series are actually guidelines, many to help achieve registration to ISO 14001. These include the following:

- **ISO 14004** provides guidance on the development and implementation of environmental management systems
- **ISO 14010** provides general principles of environmental auditing (now superseded by ISO 19011)
- **ISO 14011** provides specific guidance on audit an environmental management system (now superseded by ISO 19011)
- **ISO 14012** provides guidance on qualification criteria for environmental auditors and lead auditors (now superseded by ISO 19011)
- **ISO 14013/5** provides audit program review and assessment material.
- **ISO 14020+** labeling issues
- **ISO 14030+** provides guidance on performance targets and monitoring within an Environmental Management System
- **ISO 14040+** covers life cycle issues

HOW TO DEVELOP AN ENVIRONMENTAL MANAGEMENT SYSTEM

- ISO 14001 Standard provides a set of management tools that helps organizations to develop and construct an Environmental management System.
- Conduct a Gap Analysis of an organization's existing environmental systems and controls and comparing with the requirements set out in the ISO 14001 standard.
- The gap analysis will compare & pinpoint the areas that fall short of the new standard.

REQUIREMENTS OF ISO 14001 STANDARD

1. A supporting policy manual to interpret the requirements of ISO 14001 and organization's scope of operations and activities (Level-1 Document)
2. An Environmental policy describing organization's commitment towards environment and a set of documented procedures as required by the ISO 14001 standard (Level-2 Documents)

REQUIREMENTS OF ISO 14001 STANDARD

3. Planning

- System for identification of environmental aspects and the related impacts.
- A procedure to identify and maintain the legal and other requirements applicable to an organization's scope of activity e.g. compliance to the NEQS standards of liquid effluent, gaseous emissions and vehicular exhaust emissions etc.
- Documented Environmental objectives and targets at each relevant function within an organization
- A program to achieve the environmental objectives and targets.

REQUIREMENTS OF ISO 14001 STANDARD

4. Implementation and Operation

- **Defining specific roles and responsibilities along with communication in order to facilitate effective EMS.**
- **Organization to provide resources essential to the implementation & control of EMS. Appoint a management representative for EMS.**
- **Identify training needs and provide appropriate training to the personnel performing tasks which can cause significant environmental impact .**
- **Ensure competencies of the personnel on the basis of appropriate education, training/skill and experience.**
- **Establish and maintain control on Documentation required by EMS.**

REQUIREMENTS OF ISO 14001 STANDARD

Implementation and Operation (contd..)

- Establish and maintain control on Documentation required by EMS.
- Establish operating procedures and communicate to the relevant personnel handling any identified significant aspect of goods and services used by the organization.
- Establish procedure for emergency preparedness and response.

REQUIREMENTS OF ISO 14001 STANDARD

5. Checking & Corrective Action

- Establish procedures for monitoring & measurement of key characteristics of organization's operations and activities that can have a significant impact on the environment. This will include the calibration of monitoring equipments and their records of calibration.
- Establish procedure for defining the responsibilities and authorities for handling and investigation of nonconformance and root cause. Corrective and preventive actions should be appropriate to the magnitude of problems.
- Establish procedure for identification, maintenance and disposal of environmental records. Records include training record, result of audit and reviews
- Establish a procedure to define the frequency of periodic audits of EMS.

REQUIREMENTS OF ISO 14001 STANDARD

6. Management Reviews

- Organization to carry out a periodic review of the EMS to ensure its suitability, adequacy and effectiveness.

ISO 14001: IMPLEMENTATION PROCESS & TECHNIQUES

ENVIRONMENTAL ASPECT

- **DEFINITION** : Element of an Organization's activities, product and/or services which can interact with the environment.

Environmental aspects include:

- **Air Emissions** (Fumes, dust, gaseous emissions from combustion processes such as NO_x, SO_x and CO_x , use of ozone depleting substances etc.)
- **Effluent / Waste water discharge** (process effluent, sanitary sewer discharges, chemical spills etc)

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- **Liquid & Solid Waste** (hazardous & non-hazardous waste like, spent chemicals, catalysts, cartridge oil filters, waste oil, sludge, kitchen waste, office waste including paper, debris and printer cartridges etc.)
- **Use of Energy** (Electricity, gasoline etc.)
- **Emergency Releases** (leakages, spills etc)
- **Others** (Noise, Heat, vibration generation, use of radioactive and nuclear material etc)

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SIGNIFICANT ENVIRONMENTAL ASPECTS

- **DEFINITION** : “An environmental aspect which has or can have a significant environmental impact”.

ENVIRONMENTAL IMPACT

- **DEFINITION** : “Any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organization’s activities, products and/or services”.

The environmental aspects of an organization’s activities create environmental impacts.

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ENVIRONMENTAL ASPECT IDENTIFICATION

● **Criteria/Basis for Aspect Identification**

For evaluating the significance of environmental aspects, a suitable rating should be assigned to each of the following criteria :

- **Likelihood of occurrence (L)**
- **Severity of impact (S)**
- **Consequence (C)**
- **Operating controls (O)**

● **Significance of an Environmental Aspect = L x S x C x O**

The product of above 4 criterion will determine the significance of an aspect.

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- ENVIRONMENTAL ASPECT RATING

1. Likelihood of Occurrence

RATING	LIKELIHOOD OF OCCURRENCE (L)
9	Continuous /Daily
7	Weekly to fortnightly
5	Monthly
3	Yearly
1	Rarely

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2. Severity of Impact

RATING	SEVERITY OF IMPACT (S)
9	Emissions exceeding Regulatory limits
7	Adverse effect on community/land.
5	Adverse effects on animals/plant life
3	Waste of natural resource/energy
1	Emissions within legal limits.

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3. Consequence

RATING	CONSEQUENCE (C)
9	Threat to community / flora / fauna
7	Adverse effect of large spill on land / Plants
5	Adverse effect of small spill on land / Plants
3	Waste of natural resource/energy
1	Full arrangements for containment of Potential release into environment

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4. Operating Controls

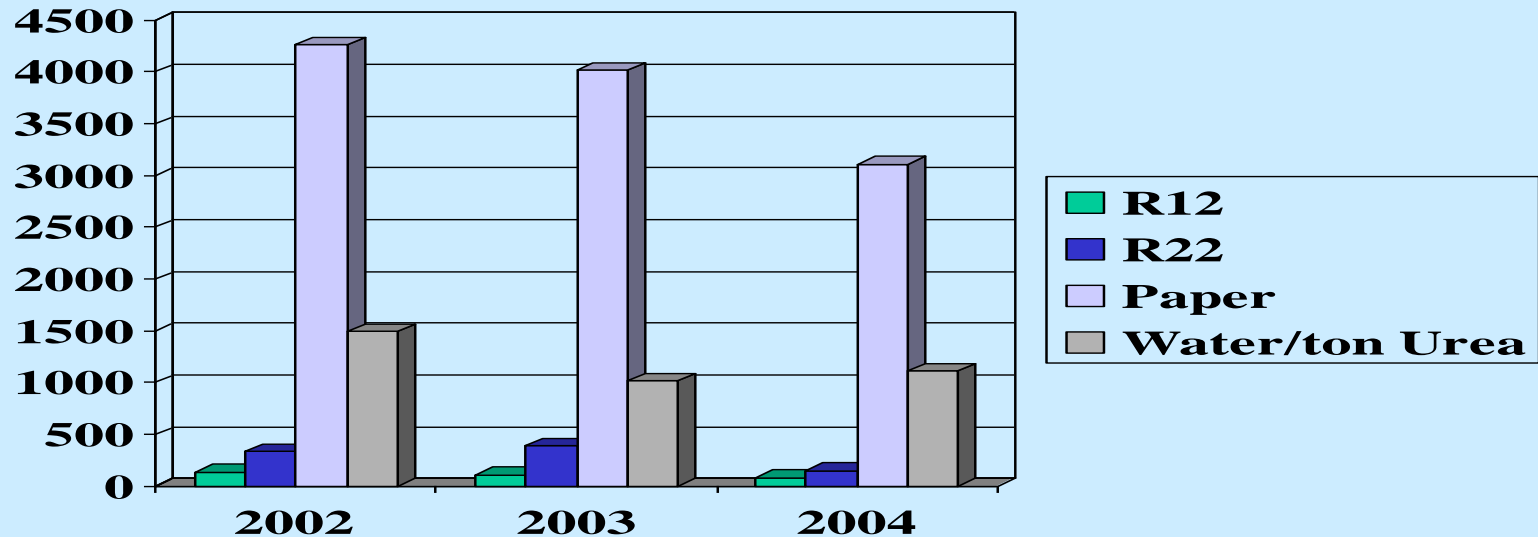
RATING	OPERATING CONTROLS (O)
9	Absence of any controls or ineffective controls
7	Not complying with regulatory limits
5	Partial controls
3	Partial compliance
1	Reliable & effective controls in place.

ISO 14001: IMPLEMENTATION PROCESS & TECHNIQUES

- **SETTING ENVIRONMENTAL OBJECTIVES:** Evaluation of significant environmental aspects forms the basis for setting Environmental objectives and plans.
- **BENCHMARKING OF ENVIRONMENTAL PERFORMANCE :**
The amount of environmental burden contributed by an organization can be determined by monitoring and maintaining the inventory of environmental waste generation trend. This will help realizing the **HIDDEN ENVIRONMENTAL FOOT PRINT** of an organization

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- **BENCHMARKING EXPERIENCE OF** 



ISO 14001: COST SAVING & BENEFITS OF ENVIRONMENTAL MANAGEMENT SYSTEM

- **Without measuring the pre-EMS performance metrics and costs, there is no way of knowing how implementing the EMS results in cost savings.**
- **Having accurate data available, one can pick a high expenditure and evaluate ways to reduce this cost.**

ISO 14001: EMS BENEFITS IN



- **Identification of significant environmental aspects, monitoring and benchmarking resulted in continual improvement in environmental performance of the site.**

- **Some major benefit /achievements are :**
 - 1. Elimination of Chromium & Asbestos gasket material.**
 - 2. 100% NEQS compliance achievement.**
 - 3. Substantial reduction in use of paper.**
 - 4. Elimination of R12 refrigerant gas.**
 - 5. Reduction in water intake through Effluent re-cycling.**

ISO 14001: POTENTIAL BENEFITS OF EMS

- **Potential benefits of an effective EMS are :**
 - 1. Assuring customers of commitment to demonstrate sustainability management**
 - 2. Maintaining good public/community relations**
 - 3. Satisfying investor criteria and improving access to capital**
 - 4. Obtaining insurance at reasonable cost**
 - 5. Enhancing image and market share**
 - 6. Improving cost control**
 - 7. Reducing incidents that result in liability**
 - 8. Conserving input materials and energy**
 - 9. Demonstrating reasonable care**
 - 10. Improving industry-government relations**
 - 11. Creating a safe working environment**
 - 12. Legal compliance**
 - 13. Reducing waste**
 - 14. Pollution prevention**
 - 15. Enhanced internal management**

THANK YOU