

Environmental Management Module - 3.

Environmental Management System:- EAMS, ISO 14000-
EMS as per ISO 14001 - benefits and barriers of
EMS - concept of continual improvement and pollution
Prevention, environmental policy - initial environmental
review - environmental aspect and impact analysis -
legal and other requirements - objectives and targets
- environmental Management programs - structure and
responsibility - training awareness and competence -
communication - documentation and document control
operational control - monitoring and measurement -
management review.

EMAS (Eco- MANAGEMENT AND AUDIT SCHEME)

EMAS is a management tool for companies and other organisations, which they can use to evaluate, report and improve their environmental performance.

- * It is a premium management instrument developed by the European Commission.
- * It is one of the voluntary instruments of environmental protection. It is positively motivates organisations to responsible approach and to improving its environmental performance beyond the legal requirements.
- * It also publish information in the form of individual environmental statements.
- * EMAS is a proactive approach of the company to monitoring, control and gradual reduction of the impact of the activities of the organisation on the environment.
- * It is designed for organisations functioning in the private sector as well as for organisations of state and public administration (ministries, municipalities etc.) or its parts (producing unit, remote workplaces).
- * EMAS, however, extends the ISO 14001 system, especially in terms of transparency when organization with an established system according statements EMAS are obligated to publish.

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environmental statements and hold open discussions with the public and other interested parties.

ISO 14001

- * The ISO 14001 standard defines EMS as "that part of the overall management system which includes the organisational structures, planning activities, responsibilities, practices, procedures, processes, and resources for developing and implementing, reviewing and maintaining the environmental policy."

Benefits of ISO 14001 certification.

- * EMS certification is of the management system itself, not the environmental performance.
- * Company can develop EMS but will not be certified, however most companies that develop EMS do indeed certify it.
- * Certification does not generate instant results.

Certification of EMS ISO 14001 has the following benefits to companies.

- * Prove that its activities have been evaluated and accepted by an accredited, independent third party.
- * It shows that an external 'stamp' of approval of EMS has been given to that the organisation's commitment to

Improve environmental performance is valid.

- * It shows commitment to the protection of the environment. Possibly, the greatest positive impact to the environment will be in the reduction of hazardous waste.
- * This would apply to reduction, reuse or recycling all of which maximize natural resources. There is thus conservation of other natural resources in the process.
- * It gives new organizations more chance with regulations that the written documentation ~~needs~~ necessary to demonstrate compliance with the regulations will be abide by. Overall relations with regulators would improve after ISO 14001 certification. The agency will know the certified organization care for the environment and has systems in place even before visiting the operation. This positive relation is extremely valuable and would help foster a better working relationship.
- * It leads to long term cost saving, especially in the area of environmental control and cleanup of incidents.
- * Certification will not eliminate all cleanups cost, however, it should minimize the number and size of future cleanups. There would also be increase in competitive position of the company. The cost would be partially offset by increased customer satisfaction, trust & moral

* It obviously leads to prevention of suffering and possible death by workers due to mishaps. the costs associated with injuries will also be reduced. System that protects or minimize impacts on the environment would in most cases also minimize impact on employees. This equates to reduced employee injuries and illness. A reduction in injury & illness will occur if the organization includes health & safety in injury of ISO 14001 certification efforts in addition to Environmental Management.

- * It increase public awareness in the environment as these is increasing days. If an organization improves its Environmental management program, it would surely improve its community relations as well.
- * ISO 14000 produces are productive environmental and could actions. that an organization does it good for environmental & could be communicated to the public since it is a positive venture.
- * It creates customer trust and satisfaction. Once an organization has the ISO 14001 certification, the customer feel more secure that the environment is being c
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- * It levels the playing field of international trade bringing more competitors to the scene. This means companies certificated to ISO 14001 have market access all over the world. In addition the employment would be created in the home country thereby reducing the unemployment thus poverty.
- * Insurance companies these days find it easier transacting business with companies that have effective EMS like ISO 14001.
- * The standard also provides an effective means of technological development as well as its transfer to the sectors of the industry or the organization.

Concept of continual improvement:-

- * ISO 14001 is widely accepted international standard for EMS that focuses on continual improvement.
- * Companies may be asked to demonstrate conformance with ISO 14001 as condition of doing business in some markets and
- * The standard is consistent with the key element found in many EMIS models, including European union's Eco-Management and Audit Scheme, EPA's Performance Track & the code of Environment & Audit Management principles for Federal Agencies, among others.

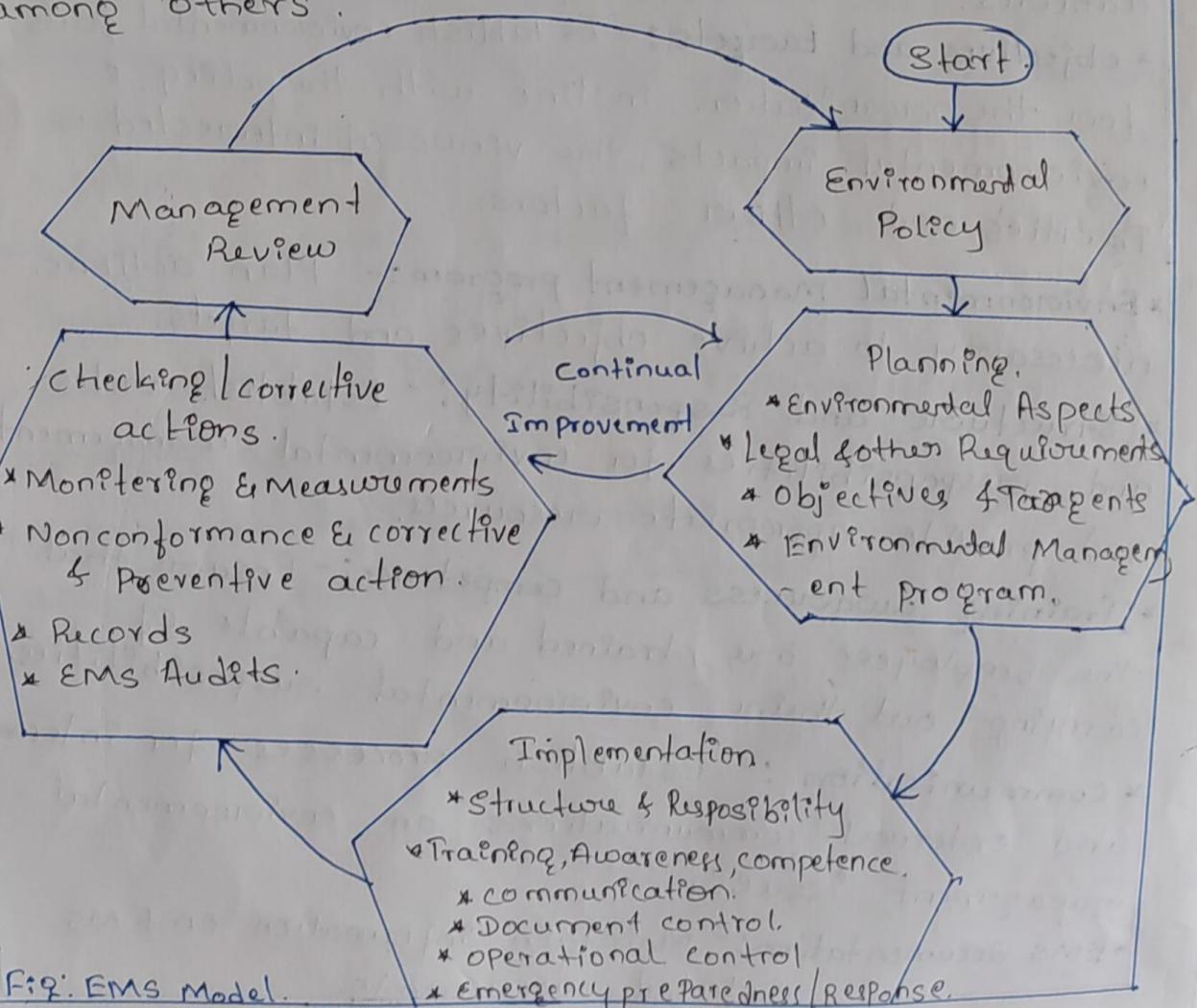


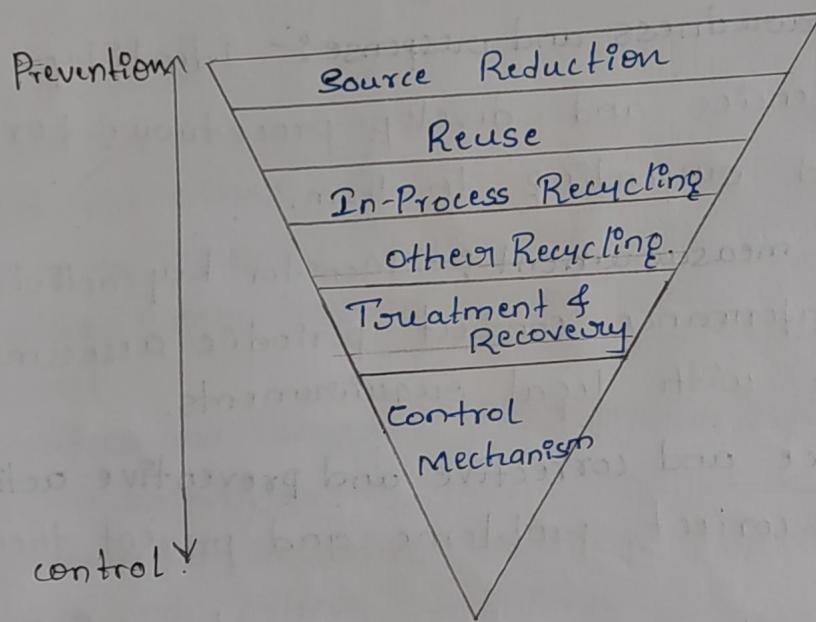
Fig: EMS Model.

- * Environmental policy:- Develop a statement of organization commitment to the environment. Use this policy as a framework for planning and action.
- * Environmental aspects:- Identify environmental attributes of your products, activities and services. Determination of those, that could have significant impacts on the environment.
- * Legal and other requirements:- Identify and ensure access to relevant laws and regulations, as well as other requirements to which an organization adheres.
- * Objectives and targets:- Establish environmental goals for the organization, in line with the policy, environmental impacts, the views of interested parties and other factors.
- * Environmental management program:- Plan actions necessary to achieve objectives and targets.
- * Structure and Responsibility:- Establish roles and responsibilities for environmental management and provide appropriate resources.
- * Training, awareness and competence:- Ensure that the employees are trained and capable of carrying out their environmental responsibilities.
- * Communication:- Establish processes for internal and external communications on environmental management issues.
- * EMS documentation:- Maintain information on EMS and related documents.

- » **Document control:** - Ensure effective management of procedures and other system documents.
- » **Operational control:** - Identify, plan & manage the operations and activities in line with the policy, objectives & targets.
- » **Emergency preparedness and response:** - Identify potential emergencies and develop procedures for preventing and responding to them.
- » **Monitoring & measurement:** - Monitor key activities and track performance conduct periodic assessment of compliance with legal requirements.
- » **Nonconformance and corrective and preventive action:** identify and correct problems and prevent their occurrence.
- » **Records:** Maintain & manage records of EMS performance.
- » **EMS audit:** - Periodically verify your EMS is operating as intended.
- » **Management review:** - Periodically review EMS with an eye to continual improvement.

Pollution Prevention:-

Pollution prevention is generally defined as the use of processes, practices, materials, products or energy that avoid or minimize the creation of pollutants or wastes at the source.



Pollution prevention techniques and practices focus on:

- * Substances of concern
- * Materials and feed stock substitution
- * Operating efficiencies
- * On-site reuse & recycling
- * Training
- * Purchasing Practices
- * Product design
- * Equipment modifications
- * Product reformulation
- * Process changes
- * Clean Production.
- * Avoid of cross-media transfer of Pollutants or waste.
- * Life cycle assessment.

Pollution Prevention Techniques and Practices.

1) Materials and feedstock substitution:-

It is a method of source elimination.

* Polluting materials in a production process are embedded in a product are replaced with less polluting or non polluting substances.

* Opportunities for materials and feedstock substitution include:

* Painting applications

* Parts cleaning

* Metal finishing

* Painting operations

* Building and grounds maintenance

2) Operating efficiencies and training:-

These are examples of how normal parts of good operation can provide effective ways to prevent pollution.

examples include

* changing production schedules to minimize equipment & feedstock change overs

* Improving maintenance schedules.

* Separating by-products at the source.

* Training staff to improve material handling and recognize opportunities.

3) Product design and reformulation:-

It includes methods for preventing pollution associated with the entire lifecycle.

* Addressing environmental concerns at the early stage can avoid environmental impacts throughout the product lifecycle in a cost-effective manner.

- * Results of redesigning or reformulating a product includes
 - Reducing toxicity of a product.
 - Reducing waste material
 - Extending the life of product.
 - Extending the life of the materials used.
 - Reducing energy & material intensity needed to produce, use & dispose of the product.

ii) Equipment modifications and process changes:-

It involves new technologies or approaches to existing operating systems processes and practices to improve production efficiencies & reduce pollution & waste.

An example is mechanical stripping instead of using solvent to remove paint and vanish.

5) The value of waste:-

* waste can also be viewed as a loss of valuable process materials that could have economic and environmental benefits if reused or recycled.

The following approaches reflects this perspective on the value of waste.

- * Onsite reuse & recycling:- it is considered pollution prevention because it occurs at the same place as the original activity
- * Reuse:- Means using materials again in their original form or in new applications.
- * Recycling: extends the effective life of resources. Environmentally sound recycling is usually preferable to end-of-pipe solutions.

- * Raw materials, chemicals & treated & untreated wastewater are examples of materials that could be reused or recycled.
- * Some examples of reuse and recycling are
 - Recovering metals by ion exchange or reverse osmosis.
 - Recycling cooling water
 - Reusing trim & cutting from plastic moulding in on-site production rather than taking them for off-site disposal.

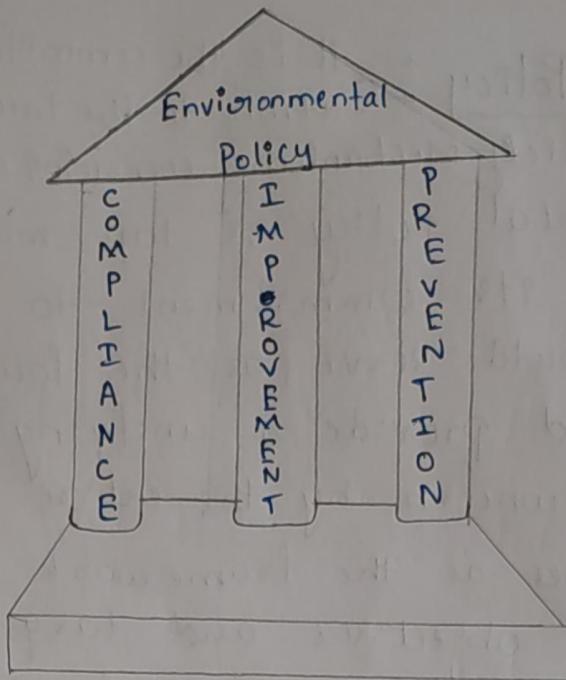
Initial Environmental Review:-

- * It is the first step in creating an EMS to perform an initial Environmental Review.
 - * It tells where organization is and creates a road map for organization.
- There are four main areas.
- Review previous environmental issues.
 - consider any regulations which have operational impact
 - Identify & evaluate possible environmental issues in organization.
 - outline ~~current~~ operations and how it is managed, also consider indirect impacts.
 - The initial Environmental Review does not consider an audit.
 - The Environmental Review is an initial assessment to help EMS
 - The Environmental Audit assess the performance of the organization's EMS.

- Benefits of an Initial Environmental Review:-
- It helps determine the organization's environmental position, and should include:
- Environmental statutory and regulatory requirements
 - Recognize items / areas with environmental impact
 - Environmental performance criteria.
 - Feedback of previous experiences
 - Opportunities for improvement in-house as well [contractors, vendors, etc.,]

Environmental Policy :- it is the commitment of an organization to the laws, regulations, etc., the other policy mechanism concerning with environmental issues.

- * An environmental policy is top management's declaration of its commitment to the environment. This policy should serve as the foundation for your EMS and provide a unifying vision of environmental concern by the entire organization.
- * Since it serves as the framework for setting environmental objectives and targets, the policy should be brought to life in plans and deeds. Everyone in the organization should understand the policy and what is expected of them in order to achieve the organization's objectives and targets.
- * The policy should reflect three key commitments, including a commitment to continual improvement. While this does not mean that it must improve in all areas at once, the policy should drive an organization's efforts to continually improve environmental management (and the improved performance that results from these efforts).



- * The environmental policy should be explicit enough to be audited. If you choose to use phrases such as "We are committed to excellence and leadership in protecting the environment", consider how you would demonstrate that such a commitment is being met.
- * The environmental policy can be a stand-alone document or it can be integrated with the health and safety, quality, or other organizational policies.
- * Consider who should be involved in developing the policy and the best process for writing it. Input from a range of people within an organization should increase commitment and ownership.

* Make sure that ~~your~~^{an} employees understand the policy. Options for communicating the policy internally include posting it around work sites (e.g., in lunchrooms), using paycheck stuffers, incorporating the policy into training classes and materials, and referring to the policy at staff or all-hands meetings. Test awareness and understanding from time to time by asking employees what the policy means to them and how it affects their work.

* The policy also should be communicated externally. Some options for external communications include placing the policy on business cards, in newspaper advertisements and in annual reports, among other options.

For EPA's Performance Track program, an organization's policy must include:

- * Compliance with legal requirements and voluntary commitments;
- * Pollution prevention
- * Continuous improvement in environmental performance including areas not subject to regulation, and
- * Sharing information on environmental performance and their operation of the EMS with the community.

Benefits of developing an environmental policy

- * An organisation can publicly advertise that it has considered its environmental performance and has adopted best practice or is working towards improving its environmental

Performance.

- * It can advertise the environmental status and environmental objectives of the organisation to all stakeholders.
- * Current & potential clients can read the statement & are able to determine whether they would like to continue or start business with the organisation.
- * It can also provide clear direction to all stakeholders about the organisation's environmental values.

The environmental policy must be include following points.

- * The ISO 14001 standard is probably the best reference standard for the development of an environmental policy.
- * It must include a commitment for continual improvement and prevention of pollution.
- * It include a commitment to comply to relevant legal & other requirements.
- * It provide the framework for setting & reviewing environmental objectives and targets.
- * It must understand whether the organization presents a direct environmental risk to their operations.

It must understand whether the organisation present an environmental risk by not understanding and not complying with legal & other requirements and to understand whether the organisation has any environmental programs to reduce environmental programs to reduce environmental impact and improve their environmental performance.