NANYANG TECHNOLOGICAL UNIVERSITY

Centre for Continuing Education

Interpretation, Application and Documentation ISO 14001 :2004 Environment Management System

26 - 27 OCTOBER 2006

by

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INTERPRETATION / APPLICATION
&
DOCUMENTATION

ISO 14001:2004



Process For Continual Improvement

By Mr. Johnson Tan Swan San



Part 1
ISO 14001:2004

ENVIRONMENTAL MANAGEMENT SYSTEMS

NTU-CCE

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Part 1
ISO 14001:2004

ENVIRONMENTAL MANAGEMENT SYSTEMS

NTU-CCE

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01. ISO 9000 VS ISO 14000
02. ISO 14001:2004 EMS Diagram
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    - Environmental Policy
    - Planning
    - Implementation and Operation
    - Checking
    - Management Review
06. Developing an ISO 14001 EMS Model
07. Types of Environmental Aspects
08. Work Examples & Discussion

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ISO 9000 VS ISO 14000

- ISO 9000 Quality Management Systems deal with *customer* needs.
- ISO 14000 Environment Management Systems address the needs of a broad range of interested parties (*Customer, Business Community, Public/Community, Employees/Trade Unions, Investors & Financial and Government Regulatory Bodies*) and the evolving needs of the society for environmental protection.

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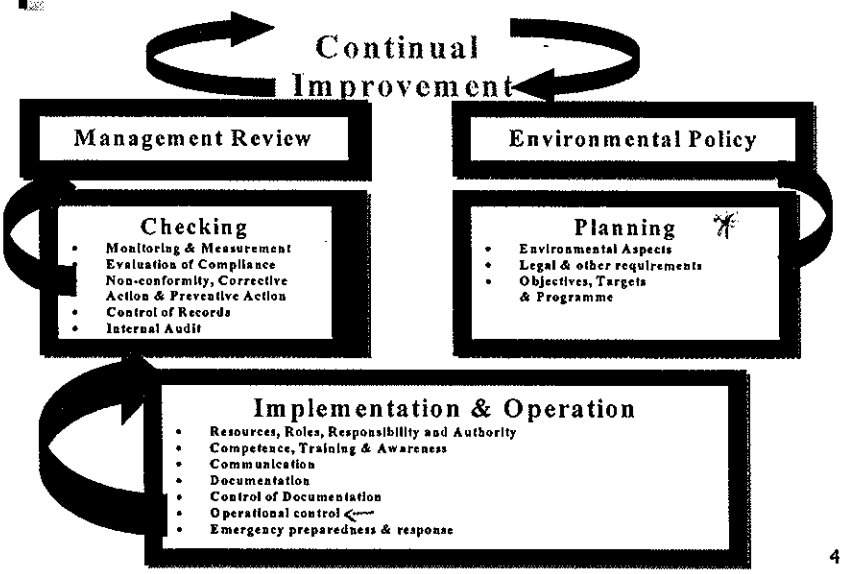
ISO 14001:2004 EMS DIAGRAM



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Procedures are not compulsory but records are. clause 4.3! - Planning.

SCOPE OF APPLICATION: ISO 14001:2004

This International Standard is applicable to an organization that wishes to :

- establish an appropriate environmental policy
- identify the Environmental Aspects arising from the organization's past, existing or planned activities, products and services in order to determine the environmental impacts of significance.
- identify priorities and set appropriate environmental objectives and targets.
- establish a structure and a programme (s) to implement the policy and achieve objectives and targets.

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SCOPE OF APPLICATION: ISO 14001:2004

- facilitate planning, control, monitoring, preventive and corrective activities, auditing and review activities to ensure both that the policy is complied with and that the environmental management system remain appropriate and
- be capable of adapting to changing circumstances.

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DEFINITIONS OF TERMS USED IN ISO 14001

1. Environmental Policy

- Is the driver for implementing and improving an organization's environmental management system.
- Should reflect the commitment of top management to comply with applicable legal requirements and other requirements, to prevent pollution and to continually improve.
- Should be sufficiently clear to be able to be understood by internal and external interested parties.

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DEFINITIONS OF TERMS USED IN ISO 14001

2. Environment

Surroundings in which an organization operates, including air, water, land, natural resources, flora, fauna, humans, and their inter-relation

3. Environmental Aspect

Element of an organization's activities, products or services which can interact with the environment

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DEFINITIONS OF TERMS USED IN ISO 14001

4. Environment Impact

Any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organization's environmental aspects

Note: The relationship between environmental aspects and impacts is one of "Cause and Effect".

Environmental Aspects → Environmental Impacts

(Cause) → (Effect)

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DEFINITIONS OF TERMS USED IN ISO 14001

5. Environmental Objective

Overall environmental goal, consistent with the environmental policy, that an organization sets itself to achieve.

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DEFINITIONS OF TERMS USED IN ISO 14001

6. Environmental Target

Detailed performance requirement, applicable to the organization or part thereof, that arises from the environmental objectives and that needs to be set and met in order to achieve those objectives

Note: The objectives and targets should be specific and measurable wherever practicable. They should cover short and long term issues.

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DEFINITIONS OF TERMS USED IN ISO 14001

7. Environmental Programmes

- The creation and use of one or more programmes is important to the successful implementation of an environmental management system
- Each programme should describe how the organisation 's objectives and targets will be achieved including timescales, necessary resources and personnel responsible for implementing the programme(s).

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ISO 14001:2004 EMS REQUIREMENTS

4.1 General Requirements

4.2 Environmental Policy

4.3 Planning

- 4.3.1 Environmental Aspects
- 4.3.2 Legal and other Requirements
- 4.3.3 Objectives,Targets and Program(s)

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ISO 14001:2004 EMS REQUIREMENTS

4.4 Implementation and Operation

- 4.4.1 Resources, Roles, Responsibility and Authority
- 4.4.2 Competence, Training and Awareness
- 4.4.3 Communication
- 4.4.4 Environmental Management System Documentation
- 4.4.5 Control of Documents
- 4.4.6 Operational Control
- 4.4.7 Emergency Preparedness and Response

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ISO 14001:2004 EMS REQUIREMENTS

4.5 Checking

4.5.1 Monitoring and Measurement
4.5.2 Evaluation of Compliance
4.5.3 Nonconformity, Corrective Action and Preventive Action
4.5.4 Control of Records
4.5.5 Internal Audit

4.6 Management Review

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ISO 14001:2004 EMS REQUIREMENTS

4.1 General Requirements

- The Organization shall establish, document, implement, maintain and continually improve an Environmental Management System in accordance with the requirements of this International Standard.
- Determine how it will fulfill these requirements.

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ISO 14001:2004 EMS REQUIREMENTS

4.2 Environmental Policy

- Top management shall define the organization's environmental policy and ensure that it

a) is appropriate to the nature, scale and environmental impacts of its activities, products or services

b) includes a commitment to continual improvement and prevention of pollution

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must be in the policy.

ISO 14001:2004 EMS REQUIREMENTS

c) includes a commitment to comply with applicable legal requirements and with other requirements to which the organization subscribes which relate to its environmental aspects.

d) provides the framework for setting and reviewing environmental objectives and targets

e) is documented, implemented and maintained

f) is communicated to *all persons working for or on behalf of the organization* and

→ including suppliers & sub-contractors

g) is available to the public

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ISO 14001:2004 EMS REQUIREMENTS

4.3 Planning

4.3.1 Environmental Aspect

- Establish procedure to identify environmental aspects
- The process to identify the significant environmental aspect associated with its activities, products and services at operating units should consider, where relevant

a) emission to air

b) release to water

c) release to land

d) use of raw materials and natural resources

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ISO 14001:2004 EMS REQUIREMENTS

e) use of energy

f) energy emitted, e.g. heat, radiation, vibration

g) waste and by-products and

h) physical attributes, e.g. size, shape, colour, appearance

Consideration should be given to aspects related to the organization's activities, products and services , such as

- design and development
- manufacturing processes
- packaging and transportation
- environmental performance and practices of contractors and suppliers

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ISO 14001:2004 EMS REQUIREMENTS

- waste management
- extraction and distribution of raw materials and natural resources
- distribution, use and end-of-life of products

Determine those aspects that have or can have significant impact(s) on the environment (i.e. significant environmental aspects).

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ISO 14001:2004 EMS REQUIREMENTS

4.3.2 Legal and other Requirements

Establish procedure to have access to the applicable legal and other requirements to which the organization subscribes related to its environmental aspects.

- national and international legal requirements
- state/provincial/departmental legal requirements
- local government legal requirements

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ISO 14001:2004 EMS REQUIREMENTS

4.3.3 Objectives, Targets and Programmes

- Establish, implement and maintain documented environmental objectives and targets, its relevant functions and levels within the organization.
- Shall be measurable, where practicable, and consistent with the environmental policy.
- Establish, implement and maintain a programme (s) for achieving its objectives and targets.

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ISO 14001:2004 EMS REQUIREMENTS

Programme (s) shall include -

(a) designation of responsibility for achieving objectives and targets at relevant function and levels of the organization and

(b) the means and time-frame by which they are to be achieved

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ISO 14001:2004 EMS REQUIREMENTS

4.4 Implementation and Operation

4.4.1 Resources, Roles, Responsibility and Authority

- Roles, responsibility and authorities shall be defined, documented and communicated in order to facilitate effective environmental management

- Shall appoint a specific Management Representative (s) for
  (a) ensuring that an Environmental Management System is established , implemented and maintained in accordance with the requirements of this International Standard

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ISO 14001:2004 EMS REQUIREMENTS

(b) reporting to top management on the performance of the Environmental Management System for review.

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ISO 14001:2004 EMS REQUIREMENTS

4.4.2 Competence, Training and Awareness

- Any person (s) performing tasks that have the potential to cause significant environmental impacts identified by the organization is (are) competent on the basis of appropriate education, training or experience.

- Shall identify training needs associated with its environmental aspects and its Environmental Management System.

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ISO 14001:2004 EMS REQUIREMENTS

- Shall establish, implement and maintain a procedure for achieving conformity with the requirements of the Environmental Management System.

- Shall maintain associated training records

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ISO 14001:2004 EMS REQUIREMENTS

4.4.3 Communication

- With regards to its environmental aspects and environmental management systems, the organization shall establish procedures for:
  a) Internal communication between the various levels and functions of the organization
  b) Receiving, documenting and responding to relevant communication from external interested parties.

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ISO 14001:2004 EMS REQUIREMENTS

4.4.4 Documentation

- The Environmental Management System (EMS) shall include:
  (a) the environmental policy, objectives and targets
  (b) description of the scope of the EMS
  (c) description of the main elements of the EMS and their interaction, and reference to related documents.
  (d) documents, including records, required by this International Standard,and
  (e) documents, including records, determined by the organization to be related to its significant environmental aspects.

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ISO 14001:2004 EMS REQUIREMENTS

4.4.5 Control of Documents

- Documents required by the EMS and by this International Standard shall be controlled.
- Records are a special type of document and shall be controlled.
- The organization shall establish, implement and maintain a procedure to
  - (a) approve documents for adequacy prior to use
  - (b) review and update as necessary and re-approve documents.
  - (c) ensure that changes and the current revision status of documents are identified.

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ISO 14001:2004 EMS REQUIREMENTS

(d) ensure that relevant versions of applicable documents are available at points of use.

(e) ensure that documents remain legible and readily identifiable.

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ISO 14001:2004 EMS REQUIREMENTS

4.4.6 Operational Control

Identify and plan those operations that are associated with the identified significant environmental aspects consistent with its environmental policy, objectives and targets in order to ensure that they are carried out under specified conditions by

a) establishing, implementing and maintaining a documented procedure (s) to control situations where their absence could lead to deviation.
b) stipulating the operating criteria in the procedures, and
c) establishing, implementing and maintaining procedures related to the identified significant environmental aspects and *communicating applicable procedures and requirements to suppliers, including contractors.*

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ISO 14001:2004 EMS REQUIREMENTS

4.4.7 Emergency Preparedness and Response

- Establish, implement and maintain a procedure to identify potential emergency situations and potential accidents that can have an impact (s) on the environment and how it will respond to them.
- Shall respond to actual emergency situations and accidents and prevent or mitigate associated adverse environmental impacts.
- Shall periodically review and where necessary, revise its emergency preparedness and response procedures, in particular, after the occurrence of accidents or emergency situation.
- Shall periodically test such procedures where practicable.

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ISO 14001:2004 EMS REQUIREMENTS

4.5 Checking

4.5.1 Monitoring and Measurement

- Establish documented procedures to monitor and measure,on regular basis, the key characteristics of its operations that have a significant environmental impact.
- Ensure that calibrated and verified monitoring and measuring Equipment is used and maintained.
- Retain all associated monitoring records

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ISO 14001:2004 EMS REQUIREMENTS

4.5.2 Evaluation of Compliance

- Establish, implement and maintain a procedure for periodically evaluating compliance with applicable legal requirements and other requirements to which the organization subscribes.

- Shall maintain records of the results of the periodic evaluation

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ISO 14001:2004 EMS REQUIREMENTS

4.5.3 Non-Conformity, Corrective Action and Preventive Action

- Establish, implement and maintain a procedure for dealing with actual and potential nonconformity (ies) and for taking corrective action and preventive action.
- The procedure shall define requirements for
  a) identifying and correcting nonconformity(ies) and taking action (s) to mitigate their environmental impacts.

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ISO 14001:2004 EMS REQUIREMENTS

b) investigating nonconformity (ies), determining their causes, and taking actions in order to avoid their recurrence
c) evaluating the need for action (s) to prevent nonconformity(ies) and implementing appropriate actions designed to avoid their occurrence
d) recording the results of corrective action(s) and preventive action (s) taken
e) reviewing the effectiveness of corrective action (s) and preventive action (s) taken

- Ensure that necessary changes are made to EMS documentation

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ISO 14001:2004 EMS REQUIREMENTS

4.5.4 Control of Records

- Establish, implement and maintain procedures for identification, storage, protection , retrieval, retention and disposal of records.
- Environmental Records may include:
  a) records of applicable legal requirements
  b) records of significant environmental aspects
  c) inspection, maintenance and calibration records
  d) process monitoring records
  e) pertinent contractor and supplier records

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ISO 14001:2004 EMS REQUIREMENTS

f) records of test for emergency preparedness
g) incident reports
h) communication with interested parties
i) complaint records
j) training records
k) audit records
l) management review results & etc

- Records shall be and remain legible, identifiable and traceable.

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ISO 14001:2004 EMS REQUIREMENTS

4.5.5 Internal Audit

- Ensure that internal audits of the EMS are conducted at planned interval to

a) determine whether the EMS

- conforms to planned arrangements for environmental management including the requirements of this International Standard, and

-has been properly implemented and is maintained and

b) provide information on the results of audits to management

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ISO 14001:2004 EMS REQUIREMENTS

- Audit Programme (s) shall be planned, established, implemented and maintained by the organization, taking into consideration the environmental importance of the operation (s) concerned and the result of the previous result.

- Selection of auditors and conduct of audits shall ensure objectivity and the impartiality of the audit process.

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ISO 14001:2004 EMS REQUIREMENTS

4.6 Management Review

- Top management shall review the organization's EMS at planned intervals, to ensure its continuing suitability, adequacy and effectiveness.
- Review shall include assessing opportunities for improvement and the need for changes to EMS, including Environmental Policy and Environmental Objectives and Targets.
- Input to Management Reviews shall include

(a) results of internal audits and evaluations of compliance with legal requirements and with other requirements to which the organization subscribes.

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ISO 14001:2004 EMS REQUIREMENTS

(b) Communication(s) from external interested parties, including complaints,

(c) the environmental performance of the organization

(d) the extent to which objectives and targets have been met

(e) status of corrective and preventive action

(f) follow-up actions from previous management review

(g) changing circumstances, including developments in legal and other requirements related to its environmental aspects and

(h) recommendation for improvement

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ISO 14001:2004 EMS REQUIREMENTS

- The outputs from management review shall include any decision and actions related to possible changes to environmental policy, objectives, targets and other elements of the EMS consistent with the commitment to continual improvement.

- Records of Management Review shall be retained.

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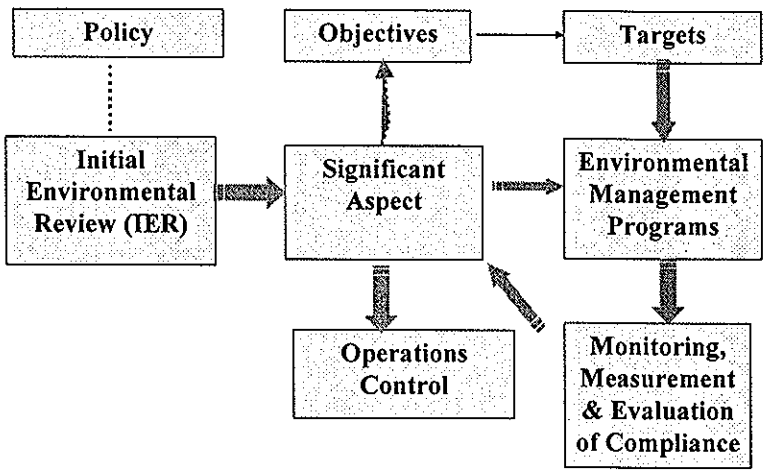
DEVELOPING AN ISO 14001 EMS MODEL



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TYPES OF ENVIRONMENTAL ASPECTS

- Air Pollution
- Water Pollution
- Noise Pollution
- Odour Pollution
- Process Waste
- Utility Waste

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WORK EXAMPLES & DISCUSSION

- Work Examples
- Group Assignments
- Case Studies
- Assessment Exercise
- Discussion

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Part 2
ISO 14001:2004

APPLICATION & DOCUMENTATION OF ENVIRONMENTAL MANAGEMENT SYSTEMS

NTU-CCE

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Part 2
ISO 14001:2004

APPLICATION & DOCUMENTATION OF ENVIRONMENTAL MANAGEMENT SYSTEMS

NTU-CCE

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Content

01. An Overview of ISO 14001:2004 EMS
- General Requirement
- Environmental Policy
- Planning
- Implementation and Operation
- Checking
- Management Review

02. ISO 14001:2004 Key Activities Flow Chart

03. Documentation Structure of an ISO 14001EMS Manual

04. Documentation Format of an Environmental Procedure

05. Practical Illustration of an ISO14001:2004 EMS Model
- Environmental Aspect & Impact Evaluation
- Register of Legal and Other Requirements
- Establishing Environmental Objectives & Targets
- Developing Environmental Management Programmes
- EMS Monitoring & Measurement Schedule
- Evaluation of Compliance To Legal & Other Requirements

06. Practical Exercise on Drafting Environmental Procedures

07. Practical Exercise on Environmental Aspect & Impact Evaluation

08. Group Assignment & Presentation

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ISO 14001:2004 EMS REQUIREMENTS

4.1 General Requirements

4.2 Environmental Policy

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- 4.3.3 Objectives,Targets and Program(s)

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ISO 14001:2004 EMS REQUIREMENTS

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- 4.4.5 Control of Documents
- 4.4.6 Operational Control
- 4.4.7 Emergency Preparedness and Response

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ISO 14001:2004 EMS REQUIREMENTS

4.5 Checking

4.5.1 Monitoring and Measurement
4.5.2 Evaluation of Compliance
4.5.3 Nonconformity, Corrective Action and Preventive Action
4.5.4 Control of Records
4.5.5 Internal Audit

4.6 Management Review

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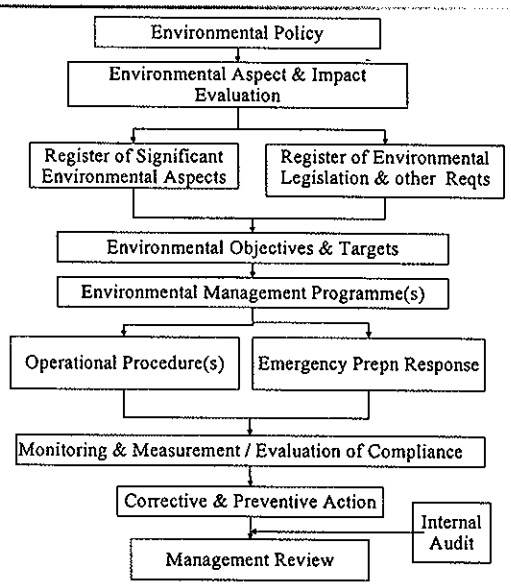
ISO 14001:2004 KEY ACTIVITIES FLOW CHART



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DOCUMENTATION STRUCTURE OF ISO 14001 EMS MANUAL

- Environmental Manual (See EM Content)
- Environmental Procedures * (See EP Content)
- Environmental Records
- Work Instructions

* ISO 14001:2004, Item 3.19
Procedure : - Specified way to carry out an activity or a process.
[Note: Procedures can be documented or not]

Documented Procedures are required by ISO 14001:2004, Clause No. 4.4.6 (Operational Control).

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DOCUMENTATION FORMAT OF ENVIRONMENTAL PROCEDURS

1. OBJECTIVE
2. SCOPE
3. DEFINITION
4. ASSOCIATED DOCUMENTS
5. RESPONSIBILITIES
6. PROCEDURE DETAILS

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PRACTICAL EXERCISE ON DRAFTING ENVIRONMENTAL PROCEDURS

1. IDENTIFICATION AND ASSESSMENT OF ENVIRONMENTAL ASPECT & IMPACT EVALUATION
2. WATER POLLUTION CONTROL PROCEDURE
3. TOXIC SUBSTANCES CONTROL PROCEDURE
4. WASTE MANAGEMENT PROCEDURE

(Group Assignment & Presentation)

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PRACRTICAL ILLUSTRTRATION OF AN ISO 14001 EMS MODEL

- Environmental Aspect & Impact Evaluation
  (See Previous Given Sample)
- Register of Legal and Other Requirements
  (See attached Sample)

Reference (Singapore): http://app.nea.gov.sg

Legislation and Publication

* Environmental Public Health Act

* Environmental Pollution Control Act

Reference (Malaysia): Environmental Quality Act

& etc...

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PRACRTICAL ILLUSTRTRATION OF AN ISO 14001 EMS MODEL

- Establishing Environmental Objectives & Target (See attached Sample)
- Developing Environmental Management Programmes (See attached Sample)

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PRACRTICAL ILLUSTRTRATION OF AN ISO 14001 EMS MODEL

- EMS Monitoring & Measurement Schedule (See attached Sample)
- Evaluation of Compliance To Legal & Other Requirements (See attached Sample)

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PRACRTICAL EXERCISE

Practical Exercise on Environmental Aspect & Impact Evaluation

(Group Assignment & Presentation)

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GROUP ASSIGNMENT & PRESENTATION

- Register of Legal and Other Requirements
- Establishing Environmental Objectives & Targets
- Developing Environmental Management Programmes
- EMS Monitoring & Measurement Schedule
- Evaluation of Compliance To Legal & Other Requirements

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PART 3 : ISO 14001:2004

CONTENT OF ENVIRONMENTAL MANUAL

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02	Controlled Distribution List	EM-002
03	The Company's Background	EM-003
04	Company's Environmental Policy	EM-004
05	Environmental Objectives, Target and programme(s)	EM-005
06	Company's Organisation Structure	EM-006
07	Environmental Control Organisation	EM-007
08	Key Responsibilities and Authorities of Environmental Control Organisation	EM-008
09	Environmental System Schematic Representation	EM-009
10	Environmental Management System Requirements	EM-010
11	Glossary of Terms	EM-011
12	Environmental Management System Documentation	EM-012

ENVIRONMENTAL MANAGEMENT SYSTEM DOCUMENTATION

The Environmental Manual and Environmental Procedures are properly documented and compiled in the following manner in order to demonstrate conformance to the stated requirements of ISO 14001: 2004.

S/N	Std.	Element Description	Environmental Manual / Environmental Procedure	Doc No
01	4.1	General Requirements	Environmental Management System Requirements	EM-010
02	4.2	Environmental Policy	Company's Environmental Policy	EM-004
03	4.3.1	Environmental Aspects	Environmental Aspects Assessment Procedure	EP-310
04	4.3.2	Legal and other Requirement	Legal and other Requirement Identification Procedure	EP-320
05	4.3.3	Objectives, Targets and Programme(s)	Environmental Objective, Target And Programme(s)	EM-005
06	4.4.1	Structure and Responsibility	Company's Organisation Structure	EM-006
08	4.4.1	Structure and Responsibility	Environmental Control Organisation	EM-007 EM-008
09	4.4.2	Competence , Training and Awareness	Competence, Training and Awareness	QP-1901
10	4.4.3	Communication	Communication Procedure	EP-430
11	4.4.4	Documentation	Environmental Management System Documentation	EM-012
12	4.4.5	Control of Document	Control of Documents	QP-0401
13	4.46	Operational Control	Purchasing Control	QP-3401
14	4.4.6	Operational Control	Supplier Assessment	QP-3301
15	4.4.6	Operational Control	Chemicals Control Procedure	EP-460
16	4.4.6	Operational Control	Atmospheric Emissions Control Procedure	EP-461
17	4.4.6	Operation Control	Noise Control Procedure	EP-462
18	4.4.6	Operational Control	Waste Water Treatment	EP-463

S/N	Std.	Element Description	Environmental Manual / Environmental Procedure	Doc No
19	4.4.6	Operational Control	Waste Recycle Procedure	EP-464
20	4.4.6	Operational Control	Waste Disposal Procedure	EP-465
21	4.4.7	Emergency Preparedness and Response	Fire Protection and Response Procedure	EP-470
22	4.4.7	Emergency Preparedness and Response	Fire Evacuation Procedure	EP-471
23	4.4.7	Emergency Preparedness and Response	Chemical Emergency Procedure	EP-472
24	4.5.1	Monitoring and Measurement	Monitoring , Measurement and Evaluation Procedure	EP-510
25	4.5.1	Monitoring and Measurement	Infrastructure & Maintenance	QP-2001
26	4.5.1	Monitoring and Measurement	Calibration Control	QP-4101
27	4.5.2	Evaluation of Compliance	Monitoring , Measurement and Evaluation Procedure	EP-510
28	4.5.3	Non-conformity, Corrective Action and Preventive Action	Non-conformance and Rectification Action Procedure	EP-520
29	4.5.4	Control of Records	Control of Environmental Records Procedure	EP-540
30	4.5.5	Internal Audit	Internal Environmental Audit Procedure	EP-550
31	4.5.6	Management Review	Environmental Management Review Procedure	EP-600

ENVIRONMENTAL ASPECT AND IMPACT EVALUATION

S/No.	Description of Work Activity	Environmental Aspect	Environmental Impact	@ Risk Index			Control Measures	Reference Documents / Remarks
				F	S	R		

@ F- Frequency of Occurrence; S-Severity of the Impact; R-Significance Rating

Completed By _____ Date : _____ Reviewed By : _____ Date : _____

XYZ PTE LTD

REGISTER OF ENVIRONMENTAL LEGISLATION AND OTHER REQUIREMENTS

S/No	Legislation	Relevant Section	Implication to Interstate Packages	Management Response
	Noise Pollution Act	—	To control noise generated within the [illegible]	

Updated by: _____

Date: _____

XYZ CO. PTE LTD

MEMORANDUM

TO : ALL STAFF

FROM : MANAGING DIRECTOR

DATE :

SUBJECT : ENVIRONMENTAL OBJECTIVES AND TARGETS

Please be advised that the Management has established appropriate Environmental Objectives to manage the environment-related issues in accordance with ISO 14001 Environmental Management System Requirements as well as customers' requirements.
The respective Process Owner is responsible to take timely action in accordance with Environment Management Programmes where appropriate to reduce / eliminate the impact.

Environmental Objective and Target

1) To reduce Product Waste/Rejection
   - Yield not less than 95%
   - Monthly Raw Material Wastage vs Material Usage not more than 15%

2) To reduce/eliminate Env Hazard Substances according to customers' requirements

3) To reduce/minimize Env Aspect
   a) Exposed Level of Dust
      - inhalation less than 10mg/m³ for 8 hrs
   b) Exposed Noise Level
      - Factory less than 90 dB(A)
      - Boundary noise less than 65 dB(A)

c) Contamination of discharge water within EPA

4) To reduce/minimize all scheduled wastes

5) To create Safety and Env Awareness by proving app training to the responsible employee before end 2005

XYZ PTE LTD

ENVIRONMENTAL MANAGEMENT PROGRAM

Objective	*Target & Location*	*Action Plan*	*Time Scale*	*Responsibility*	*Relevant Documents*
1. To reduce Product Waste / Rejects	a) ~~~~ 95%	Production Supervisor assigned to collect and monitor the data at Corrugator Area	Apr 05 to Dec 05	Production Supervisor	
	b) ——— 15%	Prod. Supervisor assigned to collect and monitor data on Flexo machine type	"	Prod. Supervisor	
2. Reduce G-H-S		QA Manager responsible to liaise with Supplier to work out GHS Reduction Plan	Apr 05 to Dec 05	QA Mgr.	MSDS

Updated by:_____ Date:_____

XYZ PTE LTD

MONITORING & MEASUREMENT SCHEDULE

S/N	*Monitoring Process / Legislation*	*Parameters to be measured*	*Frequency*	*Conducted By*	*Reference Documents*	*Remarks*

Updated By: _____

Dated: _____

XYZ PTE LTD

Register for Evaluation of Compliance to Legal and Other Requirements

S/N	Legislation and Other requirements	Relevant Section	*Reference Documents*	*Evaluation*		*Remarks*
				Compliance	*Non Compliance*	

Example – Identification of Environmental Aspects

Identify the potential Environmental Aspects
In relation to the following given activities, products and activities:

Process No.	Activities / Products / Services	Environmental Aspects
1	Receipt of toxic Chemicals - chemical leakage - wrong labelling	Spillage during transport → water & air pollution Transportation — truck fumes → dust → exhaust
2	Storage of toxic chemicals in drums at the warehouse - chemical spillage - expired materials due to wrong FIFO - inappropriate storage condition	Leakages → water & air pollution ground contamination
3	Maintenance of Moulding Processes - disposal of in-process material - disposal of rags/cotton - disposal of solvent/used lubricant	Washing of mould — water pollution Gun — noise pollution
4	Dust Exhaust System - particulate in air - noise generation exceed permitted level	Fumes — Air pollution — noise pollution. — Electrical resource — electricity
5	Use of Air Compressor	— noise pollution — Ground contamination by oil — Electrical resources — electricity

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ASSESSMENT EXERCISE (ISO 14001:2004)

Name: _____ Score: _____

Circle "True (T)" or "False (F)" for the following questions.

1	Element of an organisation's activities or products or services that can interact with the environment is termed as environmental impact. aspect	(T) / F
2	Environmental Policy should be communicated to all persons working for the organisation. and on behalf	(T) / F
3	The organisation shall identify and have access to the applicable legal requirements and other requirements to which the organisation subscribes related to its environmental ~~policy~~. aspects	(T) / F
4	The organisation shall decide whether to communicate externally about its significant aspects. It is not necessary to document its decision.	T / (F)
5	The procedures pertaining to operations that are associated with the identified significant environmental aspects should be documented.	T / (F)
6	The organisation shall maintain a procedure for periodically evaluating compliance with applicable legal and other requirements only.	(T) / F
7	The organisation shall maintain a procedure for dealing with actual and potential non-conformity as required by 4.5.3.	(T) / F
8	The Management Review should not include communication(s) from external interested parties.	T / (F)
9	Selection of auditors and conduct of audits shall ensure objectivity and the impartiality of the audit process.	(T) / F
10	The organisation shall maintain a documented procedure for the identification, storage, protection, retrieval, retention and disposal of records. for 9001 yes not 14001	(T) / F
11	The organisation is not responsible to identify potential emergency situations and potential accidents that can have an impact on the environment.	T / (F)
12	The organisation is not required to identify significant environmental aspects of goods and services used by the organisation.	T / (F)
13	The organisation shall ensure that all employees except the suppliers/ contractors are competent to perform tasks that have the potential to cause a significant environmental impact.	T / (F)
14	Documents required by the environmental management system and by this International Standard shall be controlled.	(T) / F
15	The organisation is not responsible to communicate applicable procedures and requirements to its suppliers/ contractors.	T / (F)
16	The Management shall ensure that essential resources which include human resources and specialised skills, organisational infrastructure, technology and financial resources are available.	(T) / F
17	The objectives and targets shall be measurable, where practicable, and consistent with the environmental policy.	(T) / F
18	The organisation is responsible to identify the environmental aspects of its product(s) ~~only~~ within the defined scope of the environmental management system. and processes	(T) / F
19	The organisation is responsible to establish, implement and maintain programme(s) for monitoring of environmental ~~aspects~~. objective	(T) / F
20	The organisation shall ensure that the significant environmental aspects are taken into account in establishing, implementing and maintaining its environmental management system.	(T) / F

Solution

TITLE: DISCHARGE OF WASTE WATER PROCEDURE

1. **OBJECTIVES**

To establish the procedures for the control of waste water discharge from the cooling tower.

2. **SCOPE**

- Measurement and Control of the water quality discharged from the cooling tower

~~Measurement of the wa~~

3. **DEFINITIONS**

4. **ASSOCIATED DOCUMENTS**

Code of Practice on Pollution Control by NEA
Code of Practice on Sewerage and Sanitary works by PUB
Sewerage and Drainage Act (Chapter 293A)

5. **RESPONSIBILITIES**

Facilities Engineer shall be responsible for taking measurement, maintaining record and ensure that the quality of the water discharged from the cooling tower is within the limits

6. **PROCEDURE DETAILS**

a) Water samples shall be collected every month and sent to the accredited laboratory for analysis

b) The result of the analysis shall be verified against the limit stipulated by NEA. ~~and filed accordingly~~

c) If the result from the accredited laboratory indicates that the quality of water is off-limit, the cooling tower shall be shut-down and the dosing system shall be checked to ensure proper operation.

d) After checking and rectifying the problem with the dosing system, the cooling tower may be operated and the water quality shall be monitored closely to prevent recurrence.

~~of~~

e) All the laboratory results and corrective action taken in the event of failure shall be filed accordingly for traceability.

CASE STUDY 01

XYZ CO. Pte Ltd is engaged to produce and supply the Asphalt Pre-mix to the subcontractors for the installation and laying of asphalt pre-mix on the road.

The major activities carried out by XYZ Co. are briefly described as follows:

01. In-coming Deliver Truck / Lorry
02. Unloading of Bitumen (130°C) from tanker to storage tank
03. Unloading of diesel from tanker to storage tank
04. Dust generated at the blending process was channeled to the Filter House -Chimney
05. Conduct Bitumen Test using "Asphalt Binder Analyzer" By heating at high temperature. Burning fumes were directed to an exhaust pipe.
06. Conduct" Particle Grading Analysis" using Sieve Shaker. Noise was generated during the process of analysis.
07. Operation of heavy machines such as compactors, rollers, excavators, pavers, milling and patching machines.
08. Handling and dispensing of fuels for machinery
09. Maintenance of Machinery and Equipment
10. Disposal of used cotton rag

You are required to identify and assess the potential Environmental Aspects using appropriate method and then record the findings in the Register of Environmental Aspect and Evaluation Record.

Soln