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PN-ACQ-610

Implementing An Environmental Management System

Technical Report No. 99/7

October 1999

Submitted by:

Chemonics International, Inc.

Under Contract No. 492-C-00-98-00029-00
Associated Number 492-0444
United States Agency for International Development

November, 1999

Ms. Priscilla P. Rubio
Cognizant Technical Officer
Office of Environmental Management
U.S. Agency for International Development
Ramon Magsaysay Building
1680 Roxas Boulevard, Malate, 1004
Manila, Philippines

Subject: **Implementing an Environmental Management System**
A course for consultants

Project: **Industrial Initiatives for a Sustainable Environment (IISE)**
Contract No. 492-C-00-98-00029-00

Dear Ms. Rubio:

In accordance with the requirements of the subject contract, we are pleased to submit a copy of the module used in a training course entitled "Implementing an Environmental Management System, a course for consultants" conducted in Cebu on September 27 to October 1, 1999, by the IISE consultant, Mr. Stanley Rodgers

This module incorporates the several phases involved in the implementation of an EMS which were discussed in depth during the course.

If you have any questions regarding this report, please do not hesitate to contact me.

Sincerely,

John A. Dorr, Ph.D.
Chief of Party

Enclosures

cc: see report distribution list

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REPORT DISTRIBUTION LIST

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C

Industrial Initiatives For A Sustainable Environment (IISE)
Environmental Management Systems (EMS) Implementation Course
Training Profile

1.0 Background

The Environmental Management Systems (EMS) Implementation Course is offered to selected participants to accomplish the objective stated in Section 2.0 below. One of IISE's project goals is to implement EMS in 400 firms, plants, and organizations within selected sectors. As such, IISE needs to develop the capacity to provide services to its clients.

Implementation of an effective EMS requires a planned and documented approach to the process. This training course focuses on the methodology involved in the implementation of an EMS as outlined in the ISO 14000 series.

2.0 Objective

The objective of the EMS Implementation course is to create a pool of EMS consultants who may be contracted by IISE to assist industries in EMS implementation.

3.0 Eligibility

Eligibility for this course requires that participants have successfully completed both the P2/CP and EMS Components of the Initial Environmental Review (IER) Training Course.

4.0 Course Content

The EMS Implementation Course consists of a week-long workshop encompassing the phases involved in the implementation of an EMS. This includes the following:

4.1 Phase 1: This is intended to set the scene for the remaining phases by ensuring that senior management have a common understanding of the requirements of ISO 14001-4 and have the commitment necessary to ensure its successful implementation, that all staff are briefed on the proposed program and provide a report on the current status of the organization's management of environmental matters.

4.2 Phase 2: This is intended to put in place the mechanisms required to assure the degree of acceptance and ownership necessary to secure the successful implementation of the program.

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4.3 Phase 3: This develops and sets the relationship between ISO 14001-4 and the organization's environmental policy in order to form the basis for the establishment of the necessary integrated procedures to meet the requirements of the standard.

4.4 Phase 4: This involves the development of the environmental management program, progressive implementation and on going compliance of the environmental procedures required to meet the requirements of the standard.

4.5 Phase 5: This is intended to ensure that the procedures are both fully implemented and effective and that sufficient evidence has been gathered to prove the credibility of the system to the satisfaction of the certification authority.

5.0 Method

The EMS Implementation Training Course makes use of a variety of training media. These include traditional lectures with multi-media presentations, group exercises, hands-on activities, open discussions and most importantly, actual plant visits.

6.0 Course Duration

The duration for the course is five days. All participants must fully attend all sessions. Attendance is monitored.

7.0 Course Assessment

The EMS Implementation Course is assessed through a written examination. Participants must achieve a passing score that is established by the Chemonics technical training program, in order to be certified by IISE as EMS consultants. Also, as noted in **Section 5.0** of the IISE Participant Guidelines, full attendance is required to achieve IISE certification.

8.0 Course Recognition

Two forms of recognition may be received. Participants who attend for the duration of the training course will receive a **certificate of attendance**. Participants who pass the written examination and who attend all training days will receive a certification as an **IISE-registered "Certified EMS Consultant."** Only those participants who are certified may be contracted by IISE to for EMS implementation.

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9.0 Course Costs

As per the cost sharing agreement (enclosed), which all participants are required to sign, Chemonics IISE and the participants agree to the following:

9.1 Chemonics/IISE will pay for air or ground transportation costs to and from the training venue. Tickets for air transport will be purchased by Chemonics on behalf of the participants and distributed to them. Participants are required to return the ticket stub and both boarding passes to Chemonics after the conclusion of travel. Photocopies of the ticket will be provided by the participants to Chemonics during the week of the course.

9.2 Chemonics/IISE will arrange or pay for ground transportation to and from the airport and the hotel/training venue. Chemonics/IISE will not pay for transport to or from any other destination during the training period.

9.3 Chemonics/IISE will arrange and pay for lodging and meals at the training venue. Chemonics will not pay for any other lodging or meal expenditures.

9.4 Chemonics/IISE will not pay for any other per diem or associated support costs.

9.5 Chemonics/IISE will pay for all costs associated with the production of training materials (e.g. workbooks, and handouts).

9.6 The participants or their employers are responsible for all salary and other costs associated with the participant's attendance at this training course.

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Implementing an Environmental Management System

A course for consultants

Course Content

- Phase 1 Commitment and status
- Phase 2 Structure and training
- Phase 3 Documenting policy
- Phase 4 Operational implementation
- Phase 5 Certification/Registration

Phase 1- Commitment and Status

Sets the scene for the remaining phases by:
ensuring that senior management have a common understanding of the requirements of the Standard and have the commitment necessary to ensure its successful implementation, that all staff are briefed on the proposed program and provides a report on the current status of the organisation's management of environmental matters.

Phase 1- Commitment and Status

- Acceptance of the EMS concept outlined in ISO 14004/1
- Senior management awareness training on IR/ISO 14000
- Setting up management and implementation committees
- Providing training on EMS implementation to the committee
- Briefing staff on the IR and EMS program

Phase 1 - Commitment and Status

- Performing the IR
- Completing other activities (legal, PR, records search etc.)
- Reporting the IR and implementing its recommendations
- Developing the organisation's environmental policy

Phase 1 - Commitment and Status

Client Acceptance of ISO 14004

ISO 14004	ISO 14001
Guidance "should"	Specification "shall"
Descriptive text	Prescriptive text
Implementation guide	Specification standard
Organisation specific "unique system"	Auditable "common to all" core system
Not suitable for certification purposes	Used for certification purposes

To provide CEOs and senior managers with a understanding of their responsibility to th environment and the role of the ISO 1400 series standards in meeting their environment policy.

Phase 1 -Commitment and Status

Senior management training

- Understanding the legal regime.
- Interacting with the environment.
- Developing your environmental strategy.
- Implementing the strategy.
- The ISO 14000 series standards.
- Linking quality, occupational health and safety and the environment.
- Developing the organisation's environmental policy.
- Organisational assessment.

Phase 1-Commitment and Status

Management and Implementation Committees

Management

- CEO/MD/VP/GM and immediate reportees
- Provides direction
- Sets time-lines
- Provides resources
- Drives project to completion

Implementation

- Department and section representation
- Develops policies
- Writes procedures
- Implements EMS
- Performs audits
- Gains certification

Phase 1-Commitment and Status

Implementation training

Objectives

To provide those personnel involved in the planning of, or assigned the responsibility for, implementing an environmental management system (EMS) with guidance on how to implement an EMS which meets their organisation's needs.

Phase 1-Commitment and Status

Implementation training

- Planning the implementation process.
- Identifying the key elements.
- Managing your significant environmental aspects.
- Ensuring compliance with your EMS.
- Open discussion and questions.

Phase 1-Commitment and Status

IR/EMS Briefing Program

IR

- Explain objective
- Outline IR process
- Data collection
- Data analysis
- Perform an iteration
- Report writing

EMS

- Explain objective
- Outline process
- Define time-scales
- Identify any resource needs
- Progress monitoring

Phase 1-Commitment and Status

Performing the IER

Aspects/Impacts

- Activities/products/ services (Con & Inf)
- Aspects (No Ab, Em)
- Risk analysis
- Significance criteria
- Significant impacts
- Significant aspects

EMS Audit

- Policy ?
- Procedures ?
- System ?
- Controls ?
- Monitoring ?
- Audits ?
- Reviews ?

Phase 1-Commitment and Status

Performing the IR

Legal Requirements

- Aspect related
- Identification complete
- Kept up to date
- Responsibility assigned within the organisation
- Compliance monitored
- Compliance maintained

Feedback

- Past environmental incidents/accidents
- Past employee related incidents/ accidents
- Investigations done
- Lessons learnt
- Action taken to prevent a recurrence

Phase 2-Structure and Training

This phase is intended to put in place the mechanisms required to assure the degree of acceptance and ownership necessary to secure successful implementation of the program, through:

- Appointing an Environmental Management Representative
- Setting up the organisational structure for the EMS
- Conducting environmental awareness training for selected trainers (train the trainer).

Phase 2 -Structure and Training

Appointing an EMR

- Role and responsibility
- Authority (STOP)
- System/Expert/Both
- Emergency
- Manager/Facilitator
- Full/part time
- Competence

Organisational Structure

- Flat/Hierarchal
- Staff or line
- Reporting chain
- Single or dual function

Phase 2 -Structure and Training

Awareness Training

- Single or multiple trainers
- Competence
- Number of employees
- Tone and level
- Language of instruction
- Syllabus

Environmental Management System Implementation Workshop

Managing the Process

1. Gain Commitment

- Show cost savings through cleaner production
- Reduction in environmental risk reduced liability insurance costs
- Due diligence defence in the event of an accident/incident
- Buying power and influence of green consumers

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Environmental Management System Implementation Workshop

Managing the Process

1. Gain Commitment

- Is this to be a top down and/or bottom up driven initiative ?
- Has the impact of the cultural change this process will require been considered and planned ?
- Has the impact of improved environmental performance on job security been considered ?

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Environmental Management System Implementation Workshop

Determining the objectives

1. Why do you want to implement an EMS
   - Improve the environment
   - Reduce environmental risk
   - Reduce waste and cut costs
   - Regulatory requirement
   - Customer pressure
   - Marketing and image purposes

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Environmental Management System Implementation Workshop

Managing the Process

1. Gain Commitment

- Do senior management understand what commitment means ?
- Human resources (internal and external)
- Available funds
- Involvement of interested parties
- Are they committed to taking action to reduce the organisation's impact on the environment and, if so, at what cost ?

Environmental Management System Implementation Workshop

Identifying the Key Elements

1. Identifying what your organisations does
   - Activities (+ resources = process)
   - Product (result of activities or processes)
   - Service (result of activity at the customer/supplier interface)

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Environmental Management System Implementation Workshop

Identifying the Key Elements

2. Identifying your Environmental Aspects
   - interaction of the organisation's activities, products, processes and services with the environment, it must include:
   - those activities which you can control or influence in:

     normal, including start up and shut down

     abnormal, and

     emergency situations

IDENTIFICATION of ENVIRONMENTAL ASPECTS

_____

(Operational unit name)

Line No.	Activities, Products and/or Services (flowchart, process steps, functional list)	Environmental Aspects (Interactions with the environment)							
		Releases to Air	Discharges to Water	Discharges to Land (solid or liquid)	Other Aspects (visual/space/ noise/vibration)	Resource use			
						Energy (power/light/gas)	Water	Purchasing (products &/or services)	Transport vehicles/plant/ equipment
1	2	3	4	5	6	7	8	9	10

Sheet 1 of ___ sheets

24/02/F1D/1

6 Feb 97

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IDENTIFICATION of ENVIRONMENTAL ASPECTS

_____

(Operational unit name)

Line No.	Activities, Products and/or Services (flowchart, process steps, functional list)	Environmental Aspects (Interactions with the environment)							
		Releases to Air	Discharges to Water	Discharges to Land (solid or liquid)	Other Aspects (visual/space/ noise/vibration)	Resource use			
						Energy (power/light/gas)	Water	Purchasing (products &/or services)	Transport vehicles/plant/ equipment
1	Stationery bus	CE	CE	CE	AN	Nil	CE	Nil	Nil
2	Operating bus	BN,CA,CE	CE	CE	AN	BN	AN,CE	AN	Nil
3	Cleaning the bus	AN,BA	AN,BA	AN,BA	AN	BN	BN	AN	Nil
4	Maintaining the bus	BN,CE	BN,CE	BN,CE	BN	BN	AN,CE	BN	AN
5	Hiring a replacement bus	AN-BN	CE	CE	AN	AN-BN	AN	AN	AN
1	Purchasing raw materials								
	• Steel	CN	CN,CE	CN	CN, CE	CN	CN	Nil	BN,CE
	• Air freight	BN,CE	BE	AN,BE	CN	CN	AN	Nil	Nil
2	Soldering	BN	AN	BN	Nil	BN	Nil	BN	BN
1	2	3	4	5	6	7	8	9	10

Sheet 1 of 1 sheets

24/02/F1D1

6 Feb 97

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IDENTIFICATION of ENVIRONMENTAL ASPECTS
Instructions for Use

Column 1: Insert a unique process or activity number starting at one and related to the sheet number, ie. 1/1, 1/3(sheet 1), 2/1,2/1(sheet 2)

2: Insert activity, process, or task step, product or service

3-10: Provide an indication of the significance of the interaction with the environment by indicating in normal, abnormal or emergency circumstances the following:

A. irregular discharge, small quantities, low toxicity, low consumption rate, occasional purchase;

B. regular discharge pattern, significant quantities, recognised toxicity, recognised consumption rate, regular purchasing requirement

C. regular and continuous discharge, large quantities, high toxicity, significant levels of consumption, essential purchasing requirement

eg.1. AN would indicate an irregular discharge and/or low toxicity etc in normal circumstances, CE would indicate large quantities and/or high toxicity etc in emergency circumstances. Each column may have up to three sets of letters, such as AN,BA,CE on each line.

eg.2. Resource use columns 7-10 may not always show a direct link with the activity or task in question. It I s possible for a process to show no discharges to water in Normal or Abnormal circumstances but in the event of a fire there may be a significant discharge to water (CE) shown in column 4 and resource use in terms of water to put out the fire (CE) shown in column 8 and because of the attendance of the fire service an AE in column 10.

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Environmental Management System Implementation Workshop

Identifying the Key Elements

2. Identifying your Environmental Aspects

   Site or other factors

   - impact regulated or of public concern
   - topography, hydrogeology, geography
   - impact or its magnitude uncertain,
   - impact detectable
   - measurement uncertainty (ppm/ppb)
   - reliability of measurement
   - specified standards attached to it - WHO

Environmental Management System Implementation Workshop

Identifying the Key Elements

2. Identifying your Environmental Aspects

Site or other factors

- susceptibility of the local environment (particularly ecosystems and species)
- depletion of biotic and/or abiotic resources
- global warming
- human and ecotoxicity
- ground level ozone and ozone depletion
- acidification and eutrophication

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IDENTIFICATION of SIGNIFICANT ENVIRONMENTAL ASPECTS

Instructions for use

Column 1: Insert unique line number from environmental aspects sheet (24/02/F1D) for those aspects rated B or C in normal, abnormal or emergency circumstances.

2: Provide full details of the aspect including type of discharge or resource use, quantities/time period, measurability, likely toxicity, concentration etc.

3: Identify for each aspect or all aspects, as appropriate, the environmental factors likely to make this aspect a significant impact for the specific site under consideration. typical factors that may influence significance could include, regulatory requirements, ability to measure the aspect, national or international environmental standards, views of interested parties, resource availability politicalconsiderations, absence of scientific data on the impact, sensitivity of local eco-systems, geography, topography etc.

4.-12 Assess the probability of occurrence and the severity of consequences using the table shown below

Probability of Occurrence		Severity of Consequences	
Criteria	Rank	Criteria	Rank
Very high	5	None	0
High	4	Minor	2
Moderate	3	Low	4
Low	2	Moderate	6
Very low	1	High	8
None	0	Very high	10

13-15.Add the numbers in each similarly identified column and enter them in the appropriate column under risk ranking. eg. add the numbers in columns 4 and 7 and enter the result in column 10.

16. Select from columns 10-12 the highest ranking impacts and enter the ranking in column 13.

17. Identify the significant aspects from column 13 and enter them in column 14.

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IDENTIFICATION of SIGNIFICANT ENVIRONMENTAL ASPECTS

_____
(Operational unit name)

Line No.	Environmental Aspect	Environmental/Site Factors	Risk Analysis									Significant Impact Ranking	Significant Aspect Ranking
			Probability of Occurrence			Severity of Consequences			Risk Ranking				
			N	A	E	N	A	E	N	A	E		
1/1	Discharge to water or land of oil or fuel in an emergency situation, accident, fire, engine explosion,	Local Factors Number of people adjacent to or on the bus in an urban environment.			2			6			8	5	x
1/2	Release of exhaust gases to atmosphere	Weather conditions	5	5	5	4	6	8	9	11	13	1	x
1/4	Release to atmosphere of oil and fuel fumes (VOC's)	Proximity of buildings	3		4	2		2	5		6	4	x
	Discharges to water of oil, grease, solvents, fuel residues as run off	Proximity of other vehicles Access and availability to emergency services	4		5	4		7	8		12	3	x
	Discharges to land, waste components, spent oil, rages, cleaning solvents	Time of bus operation	5		5	4		8	9		13	2	x
		Global Factors Global warming											
		Ozone creation											
		Urban smog											
1	2	3	4	5	6	7	8	9	10	11	12	13	14

Sheet 3 of ___ sheets

ASPECTF2V2

12 Jun 97

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IDENTIFICATION of SIGNIFICANT ENVIRONMENTAL ASPECTS

_____
(Operational unit name)

Line No.	Environmental Aspect	Environmental/Site Factors	Risk Analysis									Significant Impact Ranking	Significant Aspect Ranking
			Probability of Occurrence			Severity of Consequences			Risk Ranking				
			N	A	E	N	A	E	N	A	E		
1	2	3	4	5	6	7	8	9	10	11	12	13	14

Sheet 1 of ___ sheets

ASPECTF2V2

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Environmental Awareness Seminar

INTERACTING WITH THE ENVIRONMENT

Organisations interact with the environment when they perform:

1. Activities (purchasing raw materials or equipment, perform maintenance on their equipment, train staff)
2. Deliver products (tangible or intangible) or services, and/or
3. Process raw materials

Environmental Awareness Seminar

INTERACTING WITH THE ENVIRONMENT

1. Emissions to the Atmosphere
   - Gases
2. Discharges to Land
   - Solid or liquid waste
3. Releases to Water
   - Ground or underground water
4. Land degradation or contamination
5. Resource use
6. Human health

Environmental Awareness Seminar

DEVELOPING YOUR ENVIRONMENTAL STRATEGY

Strategies for addressing an organisation's environmental impacts, include:

1. Source elimination/reduction
2. Recycling/reuse/reclamation
3. Treatment
4. Disposal
5. Environmental Management System

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Environmental Awareness Seminar

Implementing Your Environmental Strategy

Why do you want to implement an EMS

- Improve the environment
- Reduce environmental risk
- Reduce waste and cut costs
- Regulatory requirement
- Customer pressure
- Marketing and image purposes

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Environmental Awareness Seminar

IMPLEMENTING YOUR ENVIRONMENTAL STRATEGY

4. Understand your commitment in terms of:
   - Human and other resources, including time, money, assistance required, etc.
   - Cultural change and its effect on the organisation
   - Integration of environmental and other organisational policies (quality, OHS)
   - Short term costs, long term benefits

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Environmental Awareness Seminar

Implementing Your Environmental Strategy

Gain Commitment

- Show cost savings through cleaner production
- Reduction in environmental risk reduced liability insurance costs
- Due diligence defence in the event of an accident/incident
- Buying power and influence of green consumers

THE ISO 14000 SERIES STANDARDS

The series is currently made up of the following documents:

1. ISO 14001 Environmental management systems - Specification with guidance for use. 1996.
2. ISO 14004 Environmental management systems - General guidelines on principles, systems and supporting techniques. 1996.

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THE ISO 14000 SERIES STANDARDS

3. ISO 14010 Guidelines for environmental auditing - General principles. 1996
4. ISO 14011 Guidelines for environmental auditing - Audit procedures - Auditing of environmental management systems. 1996.
5. 14012 Guidelines for environmental auditing - Qualification criteria for environmental auditors. 1996.
6. 14015 Environmental management - Environmental assessment of sites and organisations. CD 1/99.

THE ISO 14000 SERIES STANDARDS

7. ISO 14020 Environmental labels and Declarations-General principles. 8/98.
8. ISO 14021 Environmental labels and declarations - Self declared environmental claims. DIS 4/98.
9. ISO 14024 Environmental labels and declarations - Type I environmental labelling-Principles and procedures. 4/99.
10. ISO/DTR 14025 Environmental labels and declarations-Type III Environmental declarations - Principles and procedures. 4/99.

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THE ISO 14000 SERIES STANDARDS

11. ISO 14031 Environmental management - Environmental performance evaluation - Guidelines. DIS 3/98
12. ISO/DTR 14032 Environmental management - Examples of environmental performance evaluation. Draft 2/99
13. ISO 14040 Environmental management - Life cycle assessment - Principles and framework. 6/97.
14. ISO 14041 Environmental management - Life cycle assessment - Goal and scope definition and inventory analysis. 10/98.

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THE ISO 14000 SERIES STANDARDS

15. ISO 14042 Life cycle assessment - Life cycle impact assessment. DIS 12/98.
16. ISO 14043 Life cycle assessment - Life cycle interpretation. DIS 10/98.
17. ISO 14050 Environmental Management - Vocabulary. 5/98.
18. 14060. Guide for the inclusion of Environmental Aspects in Product Standards. CD 1/95 (Issued as ISO Guide 64.)

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THE ISO 14000 SERIES STANDARDS

19. ISO/TR 14061 Information to assist forestry organisations in the use of Environmental Management Systems standards ISO 14001 and ISO 14004. 1998

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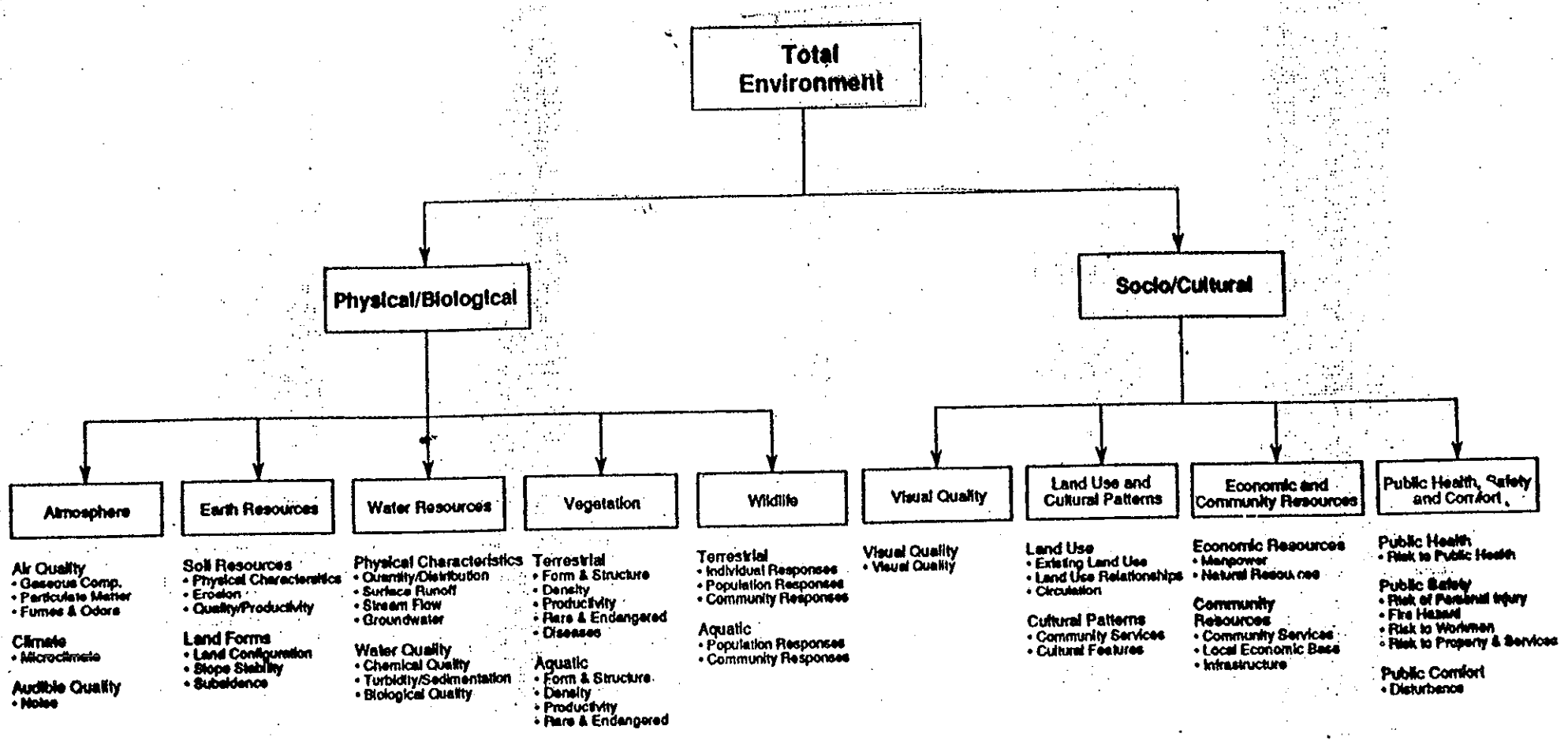

Figure 1: The physico-biological and socio-cultural environmental structures. Environmental conditions required by or potentially affected by a major facility need to be structured to achieve comprehensive consideration of all relevant conditions and to avoid duplication. This illustrates a typical organisation of environmental conditions. Each major category is capable of combination with others or of expansion through the addition of new categories or sub-categories.

Developing & Implementing ISO 14000 Procedures & Manuals

Policy

A. The overall intentions and direction of an organisation with respect to particular issues as formally expressed by management with executive responsibility.

B. General guides to action that outline the framework within which objectives are established and strategies are selected and implemented.

ENVIRONMENT MANAGEMENT MANUAL

Documenting the System

The purpose of a documented system i to:

- Provide consistency of definition an form in giving instructions.
- Provide direction as to how an activit is to be accomplished.
- Provide a method of implementin policy.
- Provide objective evidence.

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ENVIRONMENT MANAGEMENT MANUAL

Documenting the System

- Provide a basis for training.
- Provide a method of implementin change throughout the organisation i a controlled way.
- Provide confidence in the wa operations are performed.
- Provide a method of recording events
- Provide a reference for review an audit.

ENVIRONMENT MANAGEMENT MANUAL

A Environmental Management Manual is document setting out the organisation environmental policy, organisation responsibilities, procedures and practices.

The manual may be contained in on document or broken into two separat manuals, as follows:

Environmental Policy Manual.

Environmental Procedures Manual.

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ENVIRONMENT MANAGEMENT MANUAL

The manual should contain as a minimur the following:

The organisation's environmental polic statement (s).

A statement outlining how the policy(s is (are) to be implemented.

Organisational structure, divided into:

- **Organisation wide.**
- **Environmental department.**
- **Functional control of environmenta issues.**

ENVIRONMENT MANAGEMENT MANUAL

Position descriptions of the ke personnel within the organisation wh have environmental responsibility.

Statement of ownership of the manu contents, including

- **List of effective pages**
- **Register of amendments.**
- **Distribution list.**

List of procedures used to implemen the policy (s).

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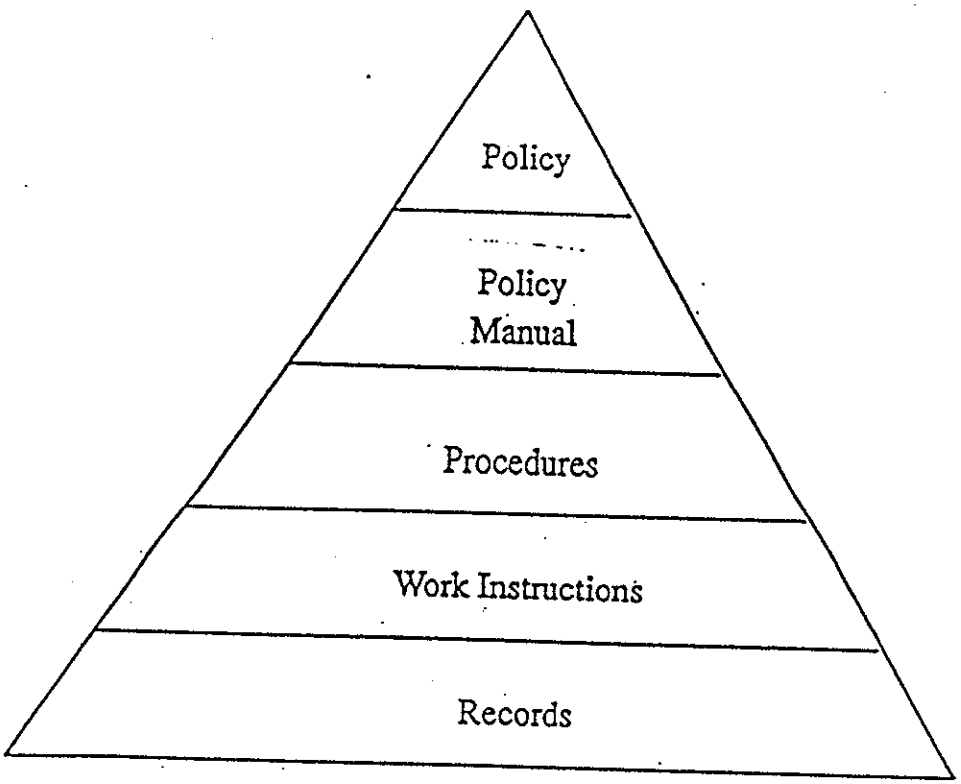
ENVIRONMENT MANAGEMENT MANUAL

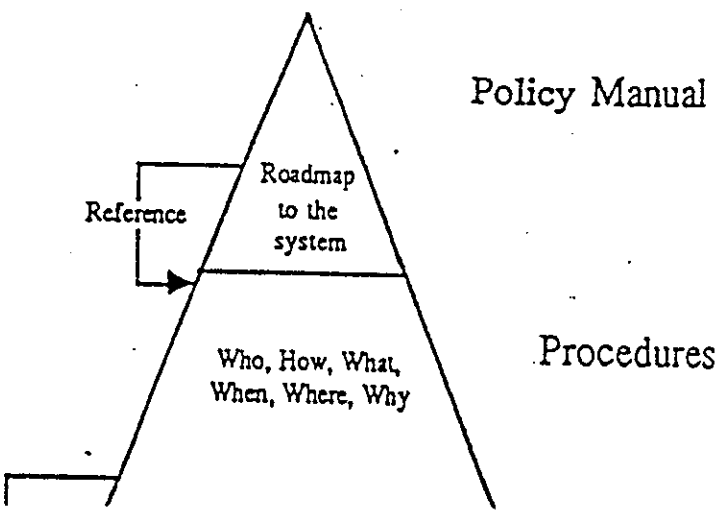
Reference to Environmenta Management Programmes/plans

Flow chart of the operationa processes and associated contro points, with respect to environmenta impacts.

Reference to, or samples of, standar forms.

Cross reference to any othe standards


Policy
Policy Manual
Procedures
Work Instructions
Records


Policy Manual
Roadmap to the system
Reference
Who, How, What, When, Where, Why
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3. Definitions EM 2.3

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3. Quality Policy EM 3.3

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3. Planning EM 4.3
   1. Environmental aspects EM 4.3.1
   2. Legal and other requirements EM 4.3.2
   3. Objectives and targets EM 4.3.3
   4. Environmental management programme EM 4.3.4
4. Implementation and Operation EM 4.4
   1. Structure and responsibility EM 4.4.1
   2. Training awareness and competence EM 4.4.2
   3. Communication EM 4.4.3
   4. Environmental management system documentation EM 4.4.4
   5. Document control EM 4.4.5
   6. Operational control EM 4.4.6
   7. Emergency preparedness EM 4.4.7
5. Checking and corrective action EM 4.5
   1. Monitoring and measurement EM 4.5.1

Document Control

DRES uses a wide variety of documentation to manage and control our EMS. It can be in the form of specifications and standards, regulatory documents such as permits, licenses, codes of practice, copies of specific statutory acts or regulations etc., procedures, work instructions, audit plans etc, and may be on paper, film, fiche and computer storage media and transmitted through electronic data interchange, faxes, telephone conversations or by other more common methods such as courier or mail services.

To meet the requirements of the EMS standard it is essential that the receipt, approval, issue and distribution of all documents be controlled. In particular:

1. Each document and any subsequent changes must be readily identifiable as authorised by the DRES approval authority, and:
   a. transcribed documents must be checked for accuracy and authorised prior to use;
   b. uncontrolled, unofficial or personal copies of documents are not in use either by DRES or any sub contractor's personnel;
   c. documents are annotated with both their change status, the nature of the change and any control item symbol, where required by the client, in a clearly identified manner;
   d. changes are transmitted rapidly to those effected;
   e. obsolete data is withdrawn or destroyed promptly and this fact recorded;
   f. documentation is held at appropriate areas in the workplace and that such documentation is current, accessible, in good condition and legible;
   g. documents subject to a significant number of changes or environmental deterioration are reissued periodically;
   h. a Master Record Index is maintained for all documents subject to change;
   i. client supplied documents are not amended without their approval.

Document changes need to be considered and controlled in such a way as to ensure that the original intent is not lost and that the reason for the change can be traced back to source information

Communication

DRES encourages our employees, subcontractors, customers, regulatory bodies and other interested parties to communicate directly with us on matters connected with our environmental aspects and EMS.

Specifically our employees are asked to identify any environmental issues with which they have a concern and to communicate these internally to the appropriate level and function within our organisation.

We have established procedures to enable an effective response to external communications from the parties interested in our environmental aspects and our EMS.

DRES believe that our employees and the interested parties should be aware of our environmental performance and we report annually in accordance with the International Chamber of Commerce World Industry Council for the Environment:Environmental Reporting Guidelines.

PREPARING PROCEDURES AND WORK INSTRUCTIONS

INTRODUCTION

1.1 One of the most important activities in implementing an EMS is to decide what must be controlled and how it is to be controlled to ensure that potential impacts are avoided and actual impacts kept to the minimum. If control is to be exercised by the use of procedures and work instructions then they too must be subject to control. Procedures and work instructions may broadly be defined as follows:

1. *Procedure.* A procedure is used to document why something must be done, where it will be done, what must be done, when it will be done and who will do it.
2. *Work Instruction.* A work instruction documents how it will be done.

1.2 As a general rule procedures and work instructions need to be present in circumstances where there is a chance that mistakes will be made because the process is complex or critical and/or where there is a history of regular staff turn over. Where training is provided this may reduce the need for in depth work instructions.

1.3 Procedures and work instructions may be combined in the one document. However as these two documents are used by different audiences combining the two documents may not necessarily simplify the process. For example procedures are largely used by supervisors who are interested in why the job has to be done, who is to do it and what has to be done whereas the operator is interested in how the job is done. In addition the literary skills of operators do not always match those of supervisors and in some workplaces they may not even speak a common language. It can also make revising the document more difficult and increase its size unnecessarily.

1.4 Procedures and work instructions have traditionally been written down, however this may not be the easiest way of showing what has to be done especially where the work force does not have a high standard of literacy or English or the national language is not their first language. The use of flow charts, which may be made up of the written word, diagrams, sketches, photographs or other forms of pictorial presentation may be more appropriate in the working environment. Providing these flow charts are complete and subject to the same controls as the written ones then their use is to be encouraged.

1.5 Records form the evidence that confirm to any interested party that the EMS has been properly implemented and is working effectively in implementing the organisation's environmental policy. These records may take the form of legal documents such as permits, waste agreements etc., list of environmental aspects and impacts, objectives and targets,

programme, as evidence is collected which shows the procedure or work instruction is working effectively.

DEVELOPING PROCEDURES AND WORK INSTRUCTIONS

2.1 There are four stages which should be completed to ensure the successful development of procedures and work instructions, these are as follows:

1. Concept
2. Design
3. Verification
4. Continuous Review

CONCEPT STAGE

Define the Audience

2.2 In developing procedures or work instructions it is first necessary to consider the target audience who will be expected to use the procedure or work instruction and then define these individuals or groups in terms of their age, experience, educational and ethnic backgrounds and whether they have any disability. For example when dealing with age consider issues such as impaired vision or hearing and the ability to bend or move quickly. Remember 10% of the population are left handed and the procedures or work instructions must be developed to cope with any user within the work group. In Australia a significant proportion of the population do not speak English as a first language consequently procedures and work instructions may have to be provided in languages other than English.

Decide the Purpose of the Procedure or Instruction

2.3 The next stage in the development process is to define the purpose of the procedure or work instruction. They may be:

1. *General*
   a. give a broad overview of a process or activity
   b. describe a particular process or activity in detail
2. *Specific*
   a. relate to a technical process or activity, such as welding or painting
   b. simple or complex assembly or installation activity
3. *Informative or Passive*
   a. contain information which is intended to provide general background to the user rather than stating how it is to be done.

2.4 The way in which the procedure or instruction is to be used will help define the media that is to be utilised to transmit the information to the user. For example they might be used to provide information that is:

1. to be read and remembered, such as where the tool store or the purchasing officer is located,
2. followed step by step during a manufacturing process,
3. consulted for particular pieces of information during the performance of a particularly critical operation or which relate to a particular customers needs,
4. used to diagnose faults in a machine or process
5. a combination of these.

Identify any Restrictions

2.5 The identification of any restrictions on the procedure or instruction is necessary before the media to be used is selected. Restrictions may relate to the physical size of the document or sample in terms of width length or thickness, the material on which the document is to be written, for example must it be weatherproof or resistant to oil or petrol, whether photographs should be printed in black and white or colour, the need for adhesive backing to ensure the document, photograph, sample etc. can be located effectively in the work place and the frequency of use.

DESIGN STAGE

Outline the Instruction

3.1 First decide on the topics to be covered in the procedure or instruction and identify these as main headings and sub headings. Once this is completed organise these into a logical sequence . The sequence should reflect the way in which the task must be completed. This may include the :

1. collection of those things needed to complete the task,
   a. parts ,
   b. tools,
   c. instructions,
   d. consumables,
2. performance of the task which may be broken down into stages,
3. quality control activities such as testing or inspection performed by the operator,
4. transfer to other operators, packaging and storage etc.,

Identify the Media and Design the Structure

Hazards

3.3 In developing the instruction always ensure that notes are used to separate information from action and identify those steps in the process where there could be a danger to personnel, equipment or the product and use warnings and cautions to alert the operator to these circumstances, where appropriate. Typically these are used in the following circumstances:

1. Warnings. Whenever there is a danger to the environment or personnel.
2. Cautions. Where there could be damage to equipment or the product by performing a step incorrectly.
3. Notes. These relate to individual steps in the process where some knowledge or clarification is required to ensure the task is completed correctly.

These may take the form of photographs, sketches, diagrams, samples etc. which depict the incorrect way of doing a task or the effect of incorrectly doing the task.

Draft the Procedure or Instruction

3.4 Under each subheading draft out the relevant instructions. Decide what illustrations, diagrams and other graphics are needed and arrange them in the appropriate layout. As you write the instruction consult with those persons involved in doing the work to ensure that the instruction accurately reflects what is actually done and not what you believe is done. Once the first draft is complete review it and redraft as required.

VERIFICATION

4.1 Once the procedure or instruction is complete it is necessary to verify its content. The content should be verified by both the user and the users supervisor. The process should include both the checking of the procedure or instruction for errors of fact, omissions, misleading, ambiguous or outdated material and for accuracy in documenting the task that is actually performed. The results of the verification process should be documented either in a register or on the procedure or instruction itself.

CONTINUAL REVIEW

5.1 Procedures or instructions should be subject to an ongoing review process. The review process may be related to changes in operators, the process itself, documentation, product requirements, tooling, equipment and personnel training etc., but should also be undertaken as a minimum every 12 months. This will ensure that the procedure or instruction continues to be relevant and thus of value to the user.

TASK ANALYSIS SHEET

Task Objective
List here what the user must be able to do after the instruction is written.

Equipment/Materials
List here the equipment, utilities (air, water, power) and materials, including consumables, needed to do the task.

Documentation
List here the documentation , instructions, records, manuals, sketches photographs etc. needed to do the task.

Step No.	Steps in Performing the Task	Precautions	Graphics	Learning Difficulty
List the task steps in a logical sequence	*Identify and document the specific steps needed to complete the task from start to finish. Also include verification points in the task, where appropriate.*	*Identify any warnings or cautions necessary to avoid personal injury or damage, harm to the environment, equipment or the product.*	*Remember to show the user how to do the task by the use of sketches, drawings, photographs, flowcharts, samples etc.*	*Identify objectively whether the task is easy, moderate to easy, moderate to difficult or difficult. Include in this column details of any prior knowledge the user must have before doing the task.*

Management Review

Scope

1. This procedure outlines the requirements to be met for the management review process at DRES.

Applicability

2. This procedure applies to all staff involved in the maintenance of our environmental management system.

References

3. The following references provide links to other relevant documents:

1. ISO 14001:1996 Clause 4.6
2. ISO 14004:1996 Clause 4.

Definitions

4. The definitions used in this document are taken from the DRES Environmental Management Manual and ISO 14050 unless otherwise stated.

Requirements

5. In order to ensure the continued suitability and effectiveness of our environmental management system and to benchmark our environmental performance it is necessary to conduct a high level management review at regular intervals. The review is not only arrived at by evaluating the effectiveness of the current system but must also take into account all those other factors such as regulatory changes, new technology, product and process changes, industry forecasts etc., that are likely to effect our impact on the environment.

6. The Managing Director will conduct a management review at not greater than quarterly intervals. The review will take the format of a meeting, the agenda for which will include the following topics as a minimum:

1. DRES environmental performance, in terms of our objectives and targets;
2. Systematic evaluation of our environmental policy and procedures;
3. Continual improvement strategy, needs and corrective action;
4. EMS audit results and corrective actions:

Attendance at the meeting will include, but is not limited to the Directors, Corporate Environmental and Quality Advisers, Operations Manager, Marketing Manager and the Design Manager.

7. *Action.* Minutes of the review meeting are to detail the specific action and timescales set for task completion by attendees in response to the changes or requirements identified under each agenda heading.

8. *Records.* Minutes of the management review meetings will be retained for a period of not less than three years by the Managing Director.

Audit Checklist

9. The following checklist may be used to audit compliance with this procedure:

1. Are management reviews performed at the specified interval ?
2. Do the management reviews address the agenda topics listed in para 6 ?
3. Is attendance at the meeting restricted to those persons listed in para 6 ?
4. Are minutes of the review meeting taken and do they detail the required action and responsibilities ?
5. Are the records retained for the specified period ?

Legal and other requirements

Scope

1. This procedure outlines the requirements to be met in respect of identifying and maintaining a current list of legal and other requirements relevant to our operations.

Applicability

2. This procedure applies to all staff involved in the maintenance of our environmental management system.

References

3. The following references provide links to other relevant documents:

1. ISO 14001:1996 Clause 4.3.2
2. Corporate environmental requirement data base
3. EP 4.6.1 Management review
4. EP 4.5.4 EMS Audits

Definitions

4. The definitions used in this document are taken from the DRES Environmental Management Manual and ISO 14050 unless other wise stated.

Requirements

5. Manager, Corporate Services is to arrange for the organisation's legal representative Singh and Fumble to provide a list of relevant legal and other requirements, such as codes of practice, corporate governance requirements etc., that apply to our activities, products and services. Singh and Fumble should also provide a short summary in plain English as to the meaning of each of the requirements and how it may apply to us, where it is not clearly spelt out in the primary document and indicate our options in meeting the requirement.

6. On receipt of the information the Manager, Corporate Services is to develop, implement and maintain a corporate data base which can be accessed online by department managers. The data base is to be kept current and Singh and Fumble are to be tasked with identifying and reviewing any new or changed requirements as they arise and providing an update and plain English summary for the data base.

8. The Manager Corporate Services is to maintain a record of the return email messages and in liaison with the Corporate, Environmental Adviser is to determine when compliance is achieved. Where compliance is not likely to be achieved within the specified period this information is to be forwarded to senior management for consideration at the next management review meeting.

9. The corporate data base is to be subject to periodic audit and considered as a document in terms of Reference 1 Clause 4.4.5.

Audit Checklist

10. The following checklist may be used to audit compliance with this procedure:

1. Is a list of relevant legal and other requirements applicable to DRES available on a data base ?
2. Is its content traceable to an original legal opinion ?
3. Is the data base updated at regular intervals and subject to document control ?
4. Are Group Managers advised within the requisite time period of a revision to the data base ?
5. Do Group Managers respond within the specified time period with the details required in para 7 ?
6. Are records of the responses retained by the Manager Corporate Services ?
7. Is compliance with the requirements monitored ?
8. Where compliance is unlikely to be achieved within the specified timescale is this information forward to senior management for consideration at the next management review meeting ?

Developing & Implementing ISO 14000 Procedures & Manuals

Work Instructions

Blade protrusion for desired cutting depth is easily obtained by turning the front knob

You can change the amount by which the blade sticks out by turning the knob at the front. Adjust the blade so that it sticks out by the correct amount for the cutting depth you want.

It is not essential to install the immobiliser circuit if it is not required.

Fit the immobiliser circuit only if you want to.

FMEA focus	Person responsible	Other participants	Date
The focus can be a given production section, a product, a customer complaint etc.	To ensure an effective FMEA, it should be prepared by one individual with responsibility for it and implemented by a group in which different personnel categories are represented.		The date links the FMEA to the aspect register into which you copy or enter all environmental aspects dealt with.

Activity/product/service	Environmental aspect	Environmental impact	ELU	Conflicts with legal requirements	Conflicts with requirements from interested parties	Probability	Severity	P*S	Significant environmental aspect?	Action/comments
State the relevant raw material, product or service. (For a product FMEA state the phase in the life cycle).	State what it is about the raw material/ product/service which has an impact on the environment. If it is a product, the environmental aspect could, for example, be that its weight causes consumption of resources and emissions during use. Quantify if possible.	State what effects the environmental aspect has on the environment, e.g. for the weight of a vehicle: oil resource depletion, greenhouse effect and so on.	See the ELU tab for a guide.	Answer yes or no. If "Yes", state which legislation, interested party or policy commitment.				Enter "Yes" if the product of P*S is greater than or equal to 20, "No" if the product of P*S is less than 20.		Record, for example, obvious means of improvement, procedures which can "resolve" the aspect etc.

State probability:
Highly improbable = 2
Improbable = 3
Rare occurrence = 4
Occurs occasionally, e.g. when stopping starting = 5
Always occurs, e.g. during normal operation = 6

State severity.
Very little environmental impact, max. 100 ELU/year = 1
Little environmental impact, 100-1 000 ELU/year = 2
Moderate environmental impact, 1 000-10 000 ELU/year = 3-4
Cause of some concern on part of staff or other interested parties, 10 000-50 000 ELU/year = 5-6
Complaints by staff or other interested parties, 50 000-1 000 000 ELU/year = 7-9
Conflicts with legal requirements, strict customer requirement or environmental policy. Higher than 1 000 000 ELU/year = 10

Phase 3-Documenting Policy

This phase develops and sets the relationship between the Standard and the organisation's environmental policy in order to form the basis for the establishment of the necessary integrated environmental procedures to meet the requirements of the Standard.

Phase 3 -Documenting Policy

- Drafting introductory environmental statements
- Drafting an Environmental Management Manual (EMM) to ISO 14001
- Reviewing the EMM
- Incorporating changes to EMM requested by Client
- EMM review by the Certification Body
- Incorporating EMM changes requested by the Certification Body

Phase 3 -Documenting Policy

Environmental Statements

- Corporate mission /vision
- Division /site mission /vision
- Environmental values/ philosophy
- Environmental policy
- Other policy's

Management Manual

- Media (electronic/film /paper/video)
- Layout and style (internal/marketing)
- Single or multiple tier (policy/procedures)
- Multi lingual
- Access policy

Phase 3 -Documenting Policy

Environmental Management Manual Development Strategy

Consultant Developed	Client Developed
▮ Increased client direct costs	▮ Increased client indirect costs
▮ Reduced client ownership	▮ Greater client ownership
▮ Reduced development time	▮ Increased development time
▮ Less changes likely after CB review	▮ More changes likely after CB review

Combination of both methods

Phase 3 -Documenting Policy

Environment Management Manual

- Reviewing the EMM
- Incorporating changes to EMM requested by Client
- EMM review by the Certification Body
- Incorporating EMM changes requested by the Certification Body

Phase 4-Progressive Implementation

This phase involves the development of the environmental management program, progressive implementation and on going compliance auditing of the environmental procedures required to meet the requirements of the Standard.

Phase 4-Progressive Implementation

- Prepare appropriate procedures and instructions
- Modifying operating procedures to manage aspects/impacts
- Writing the appropriate EMPs
- Implementing the system and operating procedures progressively
- Providing EMS auditor training for selected client staff
- Performing post audit training benchmarking of the EMS

Phase 4-Progressive Implementation

System Procedures and Work Instructions

System procedures

- Audience
- 5 "W's"
- Layout and size
- Separate, integrated or harmonised
- Integrated checklist
- Authorised before use

Work instructions

- Audience
- "How"
- Media, - written, audio (tape), visual (flowchart sketch, video, photos)
- Competence based
- Authorised before use

Combined procedures/work instructions

Phase 4-Progressive Implementation

(Standard) Operating Procedures

- Audience
- Linked to significant impacts and aspects
- Manage the key characteristics of activity/ process
- Cautions and warnings
- Subject to authorisation and review

Phase 4-Progressive Implementation

Environmental Management Program

- Linked to objectives and targets
- Responsibility for attainment
- Resource allocation (financial, human and other)
- Timescale for completion
- Project plan, where appropriate

Phase 4-Progressive Implementation

Progressive Implementation

- Progressively implement system and operating procedures consecutively/ concurrently over a defined timescale
- Obtain collective sign-off
- Review results at regular intervals
- Take corrective action as necessary
- Arrange Stage 1 certification/registration

Phase 4-Progressive Implementation

Auditor Training

- Conduct internal auditor training
- Using a recognised syllabus
- With competent tutors
- Include a live internal audit of the organisations system
- Assess the competence of participants

Phase 4-Progressive Implementation

Benchmark Audit

- Identify the top three participants on the internal audit training course
- Tutor lead audit team made up of the top three participants, conducts a benchmark audit of the organisations EMS
- Three participants become future internal audit team leaders

Phase 5-Certification/Registration

This phase is intended to ensure that the procedures are both fully implemented and effective and that sufficient evidence has been gathered to prove the credibility of the system to the satisfaction of the certification/registration authority.

Phase 5-Certification/Registration

- Implementing the procedures in full for a nominated period
- Final review and benchmark audit of EMS against ISO 14001
- Performing the necessary corrective action
- Arranging certification visit by certification/registration body
- Certification/registration visit

Phase 5-Certification/Registration

Full Implementation

- Implement the system and operational procedures in full for a nominated time period (8-12 weeks)
- Audit the procedures vigorously during the implementation period
- Record non-conformances and corrective action taken

Phase 5-Certification/Registration

Final Review and Benchmark Audit

- Tutor conducts a final compliance audit to determine the effectiveness of the EMS
- Corrective action taken
- Assesses readiness for Stage 2 audit by certifier/registrar
- Arrange Stage 2 audit with client

Phase 5-Certification/Registration

Certification Audit

- Seek approval through client from certifier/registrar for consultant/tutor attendance during Stage 2 audit
- Clarify consultant/tutor role with client during certification/registration audit
- Act as an observer during audit and advise client only when absolutely necessary