

CHAPTER 1

INTRODUCTION

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1.1 PROJECT TITLE

The project title is “ Study of Environmental Management Systems (ISO 14001) for Mesra Hijau Sdn. Bhd.” This project focuses on the preparation of an Environmental Management System (EMS) for Mesra Hijau Sdn. Bhd. (MHSB), in line with the company’s aim to achieve ISO 14001 in the near future. ISO 14001 contains requirements that may be objectively audited for certification / registration purposes or for self-declaration purposes.

1.2 SUBJECT BACKGROUND

As concern grows for maintaining and improving the quality of environment and protecting human health, organizations of all sizes are increasingly turning their attention to the potential environmental impacts of their activities, products or services. Environmental consideration is thus fast becoming an integral part of their overall business plan and planning activities. (John, 1997)

A system for integrating environmental consideration, issues and solutions into the overall business set-up, known as the Environmental Management System or EMS, evolved and now formalized into the ISO 14000 standards. EMS deals with every aspect of the whole business. It is involved in business planning, the organization

structure, the operations, the supervision and control of production processes. (Hussein, 1996).

Effective environmental management must be based on good information and its variation in relation to natural conditions. Environmental information forms the basis of the environmental management cycle whereby

- a) Policy or management decisions take account of the observed state of the environment.
- b) The effect of policy or management action is assessed through regular monitoring of key environmental parameters (indicators). (Bramley, 1997).

1.2.1 INTERNATIONAL DEVELOPMENTS SINCE THE 1970's

Environmental issues have been firmly established on the political agendas of most advanced industrial societies over the last three decades. (Elliot, *et. al*, 1997)

In Western Europe and the United States, and increasingly even world-wide, the approach to controlling or influencing the impact of industrial activity on health and the environment has undergone a significant transition. Initially efforts concentrated on the development of legislative and regulatory structures together with enforcement through an environmental permit structure. The response of industry was largely reactive, with investment in "end -of -pipe" technological solutions to ensure compliance with the ever increasing regulations. (John, 1997).

Since the mid-80's in the west, and more recently in central and eastern countries, industry has taken a more pro-active stance and recognize that sound environmental management on a voluntary basis can enhance corporate image, increase profit and competitiveness, reduce costs and obviate the need for further legislative measures by the authorities. It has also produced a number of environmental management tools, such as environmental auditing and environmental management systems. (John, 1997).

One of the most important activities of the last few years is perhaps the development of standards in the environment field. Standard developments were made at national and European levels which affect the industry worldwide. The main developments were the recognition of the British Standard for EMS (BS 7750) in some countries and the implementation of the Eco Management and Audit Scheme (EMAS) in the European Union. (John , 1997). These developments are summarized in Table 1.1.

Table 1.1 Historical evolution of environmental management within industry. (Bramley, 1997).

Topics	Pre-1970s	1970s - 80s	1990s
Scenario	Few regulations/ limited focus on air and water	Compliance reactive	Preventive/ proactive
General Approach	Hazardous waste not an issue	"End-of-pipe" control	Life- Cycle Approach
Management	-	-	Environmental audit
Organizational Structure	Limited corporate environmental presence	Corporate environmental presence functionally isolated	Full environmental integration throughout business
Costs	Environmental costs low	Environment is a cost to be minimized.	The environment is a strategic opportunity to be seized.

1.2.2 INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO) 14000 SERIES

The International Organization for Standardization (ISO) has taken the initiative to spearhead environmental management standardization activities at the international level (Saleha & Yeoh, 1996) and the ISO 14000 series of standards was evolved.

ISO 14000 refers to an evolving series of standards that provide management with the structure for managing environmental impacts of their activities. The standards can be classified according to their focus as follows:

- Organization evaluation - Environmental Management Systems, Environmental Auditing and Environmental Performance Evaluation, and;
- Product evaluation - Life Cycle Assessment, Environmental Labeling and Environmental Aspects in Product Standards

The standards are basically of two types : guidance and specification. All the standards except ISO 14001 are guidance standards. For certification or contractual purposes, purchasers, suppliers or third party certification bodies can use ISO 14001 as a reference standard for their audits. ISO 14001 requires organizations to identify their key environmental issues, establish an environmental policy, set targets and objectives and implement the environmental management systems (EMS) via training and documented procedures. The EMS must also include an auditing program and periodic management review, reflecting a commitment to continual improvement of the EMS (Saleha & Yeoh, 1996). A diagrammatic interpretation of the EMS is shown in Figure 1.1.

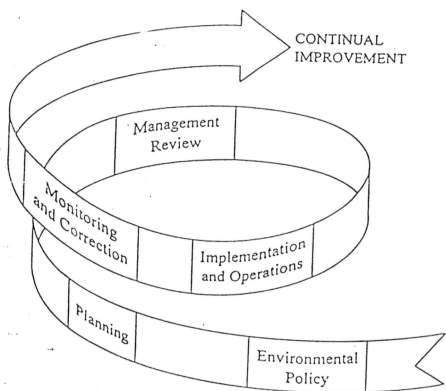


Figure 1.1 Basis of the EMS approach (Hunt & Johnson, 1995)

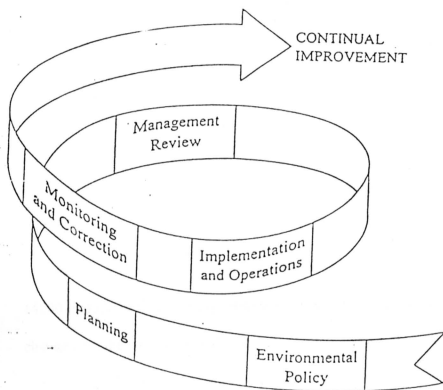


Figure 1.1 Basis of the EMS approach (Hunt & Johnson, 1995)

1.2.3 BENEFITS OF IMPLEMENTING ISO 14000

Among the noted benefits of implementing ISO 14000 are the series helps to control environmental impacts, reduces compliance costs, address companies' financial goals, promotes commitment of top management, reduces exposure to liability and improves competitive edge. The adoption of ISO 14000 series also provides additional benefits such as encouraging sound environmental practices among business, promotes environmental awareness among employees and the community, provides good public relations and facilitate commercialism by removing international trade barriers. (John, 1997).

1.2.4 CHALLENGES AND PROBLEMS OF IMPLEMENTING ISO 14000

Among the challenges and problems that arise due to the implementation of ISO 14000 include becoming a potential trade barrier in the global market place, extensive changes in the structure and operation of an organization which would increase expenditure and the debatable question as to whether the findings should be made available to the general public. (John, 1997).

There are few problems in environmental management that are easily or appropriately analyzed on the basis of a single criterion. Frequently there are non-quantifiable parameters that should be considered in the evaluation of alternatives. (Wei, 1996).

1.2.5 ISO 14001 ENVIRONMENTAL MANAGEMENT SYSTEM

The ISO 14001 environmental management system (EMS) is the cornerstone of the ISO 14000 series. It requires special attention because it is the only specification standards in the ISO 14000 series. It is a prescriptive document against which the company will be benchmarked and receive certification. (UNCTAD, 1996)

1.2.6 ENVIRONMENTAL MANAGEMENT SYSTEMS IN THE WORLD

At present, there is world-wide attention for EMS in companies. The aim is not only to comply with environmental regulations and minimize the financial risks of liabilities and costs, but to improve the environmental performance continuously in order to improve corporate image and gain competitive advantage. In 1985, the concept of EMS was first introduced in Europe. The concept is now firmly established in Western Europe and is receiving increased attention in Central and Eastern Europe, Asia and South America, as well as in the United States and Canada. EMS (together with environmental auditing) are now widely known and are becoming an integral part of business strategy, and are also being adopted by government as important management tools for companies. (John, 1997).

1.2.7 ISO 14000 SERIES IN MALAYSIA

In Malaysia, SIRIM, as the national standards body, has adopted the five Draft International Standards (DIS) as Provisional Malaysian Standards. The five DIS are :

- 1) ISO/DIS 14001 - Environmental Management Systems - Specification with guidance for use
- 2) ISO/DIS 14004 - Environmental Management Systems - General guidelines on principles, systems and supporting techniques
- 3) ISO/DIS 14010 - Guidelines for environmental auditing - General principles
- 4) ISO/DIS 14011 - Guidelines for environmental auditing - Auditing procedures - Part 1 : Auditing of environmental management systems
- 5) ISO/DIS 14012 - Guidelines for environmental auditing - Qualification criteria for environmental auditors. (Saleha & Yeoh, 1996)

The Malaysian Standards (MS) ISO 14000 certification scheme is voluntary and applicants have to establish an environmental management system that meets the MS ISO 14001 model (Saleha & Yeoh, 1996)

The scheme for the certification of Environmental Management System was launched by SIRIM in December 1995. The aim of the scheme is to provide an independent assurance of an applicant's environmental management system that meet the requirements of MS ISO 14001. SIRIM invited interested companies to participate in their pilot program and thirty two companies applied to join the program which ended in July 1997. The majority of companies are from the manufacturing sector such as electrical/electronic, palm oil, rubber and rubber based product, petrochemical, chemicals and housing developers (Abdul, 1996).

For certification purposes, the applicants have to select a specific site to be certified and certification will only be awarded for the following types of sites:

- Non-share site - where only one company operate within their perimeter
- Share site - share site can be two types i.e. shared by single organization and by separate organization. For single organization where different operating units or divisions operate at the same site, certification will only be allowed when the responsibility and authority is clearly defined and all interfaces been appropriately controlled and addressed. For separate organization, the applicant whose site is subject to certification must recognize and manage his interfaces with other organizations explicitly.
- Multiple site - when an organization has a number of sites covered in an identical fashion by its environmental management system, certification will only be awarded after one third of the sites have been assessed and all remaining sites must be registered within 18 months. (Abdul, 1996).

1.3 OBJECTIVE

1.3.1 MAIN OBJECTIVE

The main objective of this project is to conduct a study of MHSB's activities and initiate the development of a preliminary Environmental Management System (EMS) which would be in accordance to ISO 14000 guidelines and principles.

1.3.2 SUB-OBJECTIVES

The sub-objectives of this project which would bring benefits to MHSB are as follows:

1. To assure its customers of commitment to demonstrable environmental management
2. To improve cost control
3. To meet vendor certification criteria
4. To reduce incidents that result in liability
5. To conserve input materials and energy
6. To facilitate compliance for obtaining permits and authorizations
7. To foster development and share environmental solutions, and
8. To improve industry-government relations.
9. To maintain good public / community relations by being responsible in protecting the environment.

1.4 COMPANY PROFILE

Mesra Hijau Sdn. Bhd. (MHSB) was recently incorporated (December 1996), and is a wholly owned Malaysian registered company .

It is currently engaged in the construction of the world's largest man-made wetlands at the Putrajaya site in Selangor, Malaysia. It's activities include plant collection, propagation and planting of wetland plants. It has plans to diversify into landscaping works, especially for Highway beautification and into agricultural and environmental projects that will be useful for the nation.

The Management Structure of the Company is as shown in Figure 1.2. The head of the management structure is the management team which comprises four Executive Directors. Under this structure, comes a project manager who is in charge of a particular project (e.g. Putrajaya Wetlands). There are six scientific services units controlled by the project manager which are as follows:

- a) Ecology /Plant Growth Unit - This unit is headed by the chief ecologist and plant pathologist. This department monitors the growth of plants and is involved in formulating an Integrated Pest Management Program for the Putrajaya Wetlands Project.
- b) Soil Unit - This unit is headed by a soil scientist and is involved in soil quality testing and monitoring of the topsoil at the project site.

- c) Botany Unit - This unit is headed by a botanist who will monitor the growth of all wetland plants as well as ornamental plants at the nursery level and at the planting level.
- d) Water Quality Unit - This unit is responsible for all water quality monitoring at the site and also analyses the quality of the water in relation to plant growth.
- e) Fishery Unit - This unit is responsible for the breeding and maintenance of fishes at the nursery pond as well as introducing fishes which are suitable for the project.
- f) Operations Unit - This unit actually runs the whole operation of the project which includes plant sourcing, plant preparation, nursery operations and planting operations.
- g) Environmental Unit - This unit oversees the whole project and pays attention to the environmental factor in all its activities. This unit regulates the water and soil monitoring program and evaluate the environmental impacts of the company's activities.

In addition, there are also several external project advisors such as :

Wetland Specialists

Aquatic Plant Specialist

Landscape Architect

Entomologist

Integrated Pest Management Specialist

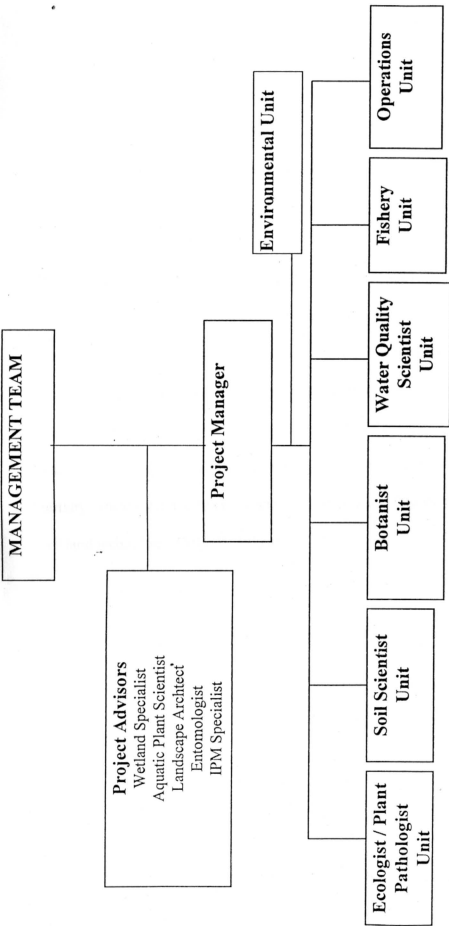


Figure 1.2 Management Structure of MHSB

1.5 CONCEPT OF CONSTRUCTED WETLANDS TECHNOLOGY

The concept basically revolves around the fact that wetland plants are able to process polluted river waters to clean water (Nix. *et. al.*, 1991). The term constructed wetlands refers to an artificially created man-made wetlands that simulates the natural environment as close as possible. (MHSB, 1998a)

Wetlands are considered a cost effective way to control stormwater (Saver, 1997). They act as reservoirs to contain sudden surges in water flow and direct runoff from drainage channels. They thus buffer, if not prevent altogether, the flooding potential. The velocity of water run-off is reduced, thereby lessening its erosive power and making a more stable environment and cleaner waterways. Wetlands allow for both aerobic and anaerobic bacterial decomposition, similar to processes in secondary and tertiary wastewater treatment. Figure 1.3 shows the fate of contaminants using the wetland technology. (MHSB, 1998a).

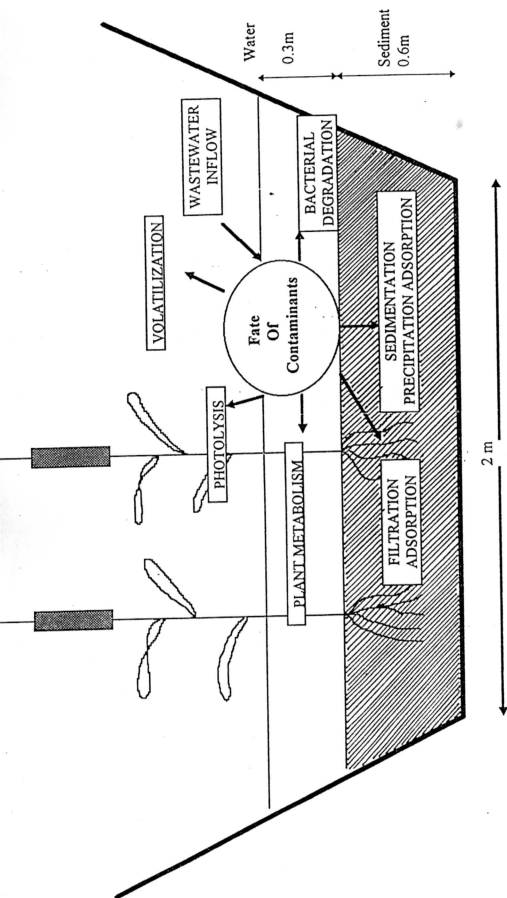


Figure 1.3 Fate of contaminants in a constructed wetlands treatment system