

CHAPTER 5

PREVENTION

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Introduction

The preventive approach adopted to minimise adverse environmental impacts and to enhance environmental quality was strengthened in 1991 with the implementation of the new organisational structure. The newly created Prevention Division now comprises three sections namely:

- o Assessment;
- o Environmental Input to Development Planning; and
- o Department of Environment's Representation at the Centre for Investment, Malaysian Industrial Development Authority (MIDA).

The consolidation of activities related to the integration of environmental considerations at the project planning stage was timely and coincided with the commitment "to develop better techniques for integrating environmental considerations in the formulation of programmes and projects" in the Sixth Malaysia Plan Period (1991-1995). The Plan also calls for increased Federal and State level cooperation in the implementation of integrated project planning.

Assessment

The Assessment Section comprises six units; five units are concerned with the implementation of the Environmental Impact Assessment (EIA) Procedure and deal primarily with the review of EIA reports and the sixth unit is entrusted with the responsibility of coordinating compliance monitoring of conditions of EIA approval.

Environmental Impact Assessment (EIA)

The recognition that EIA can serve as a useful tool in the project decision-making process was reiterated in the Sixth Malaysia Plan where it is stated that enforcing fully the EIA requirement for projects which have

potential of damaging the environment will constitute one of the major programmes to be implemented.

Projects Subject to EIA-Notification

The Department continued to register projects subject to EIA which are either notified by the proponents or identified through reports and announcements in the mass media.

Table 5.1 summarises the projects identified annually from 1988 to 1991. In 1991, the largest number of projects identified are those related to resort and recreational development (23 per cent) followed by infrastructure development (17 per cent), quarrying (14 per cent) and housing (12 per cent). In contrast, in 1990 quarrying and infrastructure projects had together accounted for 40 per cent of the projects identified.

Review of EIA Reports

During the fourth year of the implementation of the EIA Procedure in Malaysia, 174 EIA reports were submitted to the DOE, an increase of 54 per cent over 1990 (**Table 5.2** and **Figure 5.1**). Of the 174 reports submitted in 1991, 161 (23 per cent) are preliminary EIA reports, two are detailed EIA reports and 11 are risk analyses. The two detailed EIA reports are for:

- i) Tourism and Recreational Development at Penang Hill, Penang; and
- ii) Development of Sungai Buloh, Selangor Darul Ehsan.

The total number of reports submitted since 1 April 1988 stood at 334 on 31 December 1991. Out of this, 310 (93 per cent) are EIA reports; 19 comprise risk analyses associated with hazardous installations (**Figure 5.2**) and 5 are detailed EIA reports.

Prescribed Activities/Types of Projects

Over the period 1 April 1988 to 31 December 1991, the largest number of reports were found to relate to development of infrastructure (17 per cent), followed by resort and recreational development (15 per cent) and industry (14 per cent). **Figure 5.3** illustrates the distribution of reports according to the category of activities. The same three activities also accounted for 42 per cent of the total number of reports in 1990, in contrast with 1989 and 1988 when there were few or no reports for infrastructure and recreational development respectively. In 1991, the biggest number of reports under the "Infrastructure" category relate to the establishment of industrial estates.

In 1991, the total number of reports to be reviewed by the Department came up to 233, including the 59 reports brought forward from 1990. By 31 December 1991, 114 reports (51 per cent) had been reviewed. The remainder were still being reviewed or decision deferred pending the submission of supplementary information. **Figure 5.4** compares the work load and

performance in reviewing EIA reports throughout the period 1988-1991. It is evident that the work load in 1991 had increased by 77 per cent over that of 1990. It must also be noted that the number of personnel involved had remained almost unchanged with 9 to 10 officers assigned to the Assessment Section in 1990 and 1991. As such the increase in the number of reports reviewed in 1991 (56 per cent) compared to 1990 reflects the commitment towards ensuring that projects do not face undue delay in implementation. Despite this, the Department receives complaints of delay in processing of EIA reports. The time taken to approve or reject EIA reports have been analysed and the results are shown in **Figure 5.5**.

Overall, of the 215 reports reviewed and decided upon in the first four years, the majority (70 per cent) of reports have been approved and 30 per cent have been rejected (**Figure 5.6**). It is also noted that 53 per cent of the decisions were made in 1991. The distribution of EIA reports has been analysed and the pattern remains the same with Selangor and Johor accounting for 45 per cent of the total number of



A Detailed EIA Ad Hoc Review Panel in Session



Waterfall at Frazer's Hill overcome by fallen debris and silt (courtesy of Sahabat Alam Malaysia)



Landscape marred by badly planned hill development

reports received during the period 1988-1991. **Figure 5.7** shows that the number of reports in these two states far outnumber the others. Of the remaining states, the count was between 22 to 28 reports each from Sarawak, Kedah and Pulau Pinang; 11 to 18 reports each from Melaka, Terengganu, Perak, Sabah, Negeri Sembilan and Pahang; and less than 10 reports each from Perlis, Kelantan and Wilayah Persekutuan.

Issues related to Implementation of the EIA Procedure

The main issues that have been raised can be grouped as follows:-

- i) lack of understanding about the objectives of EIA;
- ii) delay in obtaining decision on EIA reports; and
- iii) problems related to legal and enforcement matters.

These issues are in fact inter-related and consequential in nature. When the objectives of EIA are misunderstood and the procedure is seen as merely a "formality", the likelihood is that EIA reports are prepared late in the project planning cycle. This has been proven when examination of timing of report submission for the period 1988-1991 shows that only 2 per cent of reports were submitted early, that is during the planning stage.

As mentioned before, the number of personnel responsible for reviewing EIA reports have not increased commensurate with the increase in the number of reports submitted. In January 1991, a number of new posts were approved under the new organisational structure. With 15 posts for officers and 5 posts at supervisory level, the work load is expected to be more balanced when the recruitment exercise is completed in 1992.

Date	Project	Number of Written Comments
30 March 1989 – 30 April 1989	Tioxide	None
4 October – 3 November 1990	MTC	None
30 September – 30 October 1990	PUB-Linggiu Dam	6 (before closing date)
12 August – 12 September 1991	Penang Hill (Bukit Bendera)	419 (before closing date) 953 (after closing date)
12 August – 12 September 1991	Sungai Buloh	10 (before closing date) 2 (after closing date)

With respect to the quality of EIA reports, the weaknesses identified include:-

- o lack of baseline data;
- o failure to describe project concept;
- o failure to predict impacts particularly in quantitative terms;
- o lack of alternatives for siting, technology for production and pollution control; and
- o no proposal for monitoring the predicted impacts.

These weaknesses usually cause delay in processing of reports and when project proponents or their consultants are given time to submit supplementary information.

As to the question of whether Section 34A of the Environmental Quality Act 1974 infringes upon other laws providing powers to approving authorities, it has been explained that the powers of the Director General of Environmental Quality are distinct from those of project-approving authorities.

The lack of public participation in the EIA Procedure has also been raised in particular during the preparation of EIA reports and during public exhibitions of detailed reports. Records show that written comments submitted in conjunction with five detailed EIA reports reviewed between 1988-1991 have been poor, except for the much-publicized proposal for developing Penang Hill (see Box).

Preparation of EIA Reports: Time & Costs

Since 1988, the Department has been monitoring the costs of carrying out studies and preparing EIA reports as well as the time taken. **Table 5.3** is a summary of the findings of responses from 141 projects. To date, the minimum spent on EIA is \$4,000.00 for a recreational development project. This study also took the least time to prepare ie. one man-month. The maximum cost is \$2.27 million for a petroleum development project which also took the longest time of 71 man-months. In comparing costs of preparing EIA reports with the total project costs, it has been found that the minimum percentage is 0.001 per cent for a recreation project; and the maximum is 1.8 per cent for a waste treatment and disposal project.

Impact and Compliance Monitoring of EIA Reports

In 1991, a monitoring programme of 14 site visits were carried out as compared to six visits done in 1990 even though the number of staff allocated for this duty was very small. As a result of the visits, two notices were issued to project proponents for failure to comply fully with the required conditions. The Department also received six appeals regarding the conditions of EIA approval. These cases were reviewed accordingly and in one case, additional conditions were imposed to further enhance protection of the environment. The Department received a total of

six monitoring programmes from project proponents. A two-week baseline study on aircraft noise was also carried out at the Kuala Lumpur International Airport, Subang with the aim of updating the noise contour. The Department continued to monitor closely complaints of on-going approved EIA projects. Discussions were held between project proponents, consultants, non-governmental organisations and other relevant governmental agencies in order to assess and minimise impacts on the environment.

Awareness of EIA

To enhance the awareness of EIA among developers, decisionmakers, professionals, and the public, the Department continued to present lectures, briefings and seminars on EIA and issues related to its implementation (**Table 5.4**).

Also in 1991, in order to improve the review of preliminary reports, sixteen briefings were carried out by project proponents and their consultants for officers of the Department (**Table 5.5**). Also present at these briefings were representatives of relevant agencies including the Drainage and Irrigation Department, the Forestry Department and the Wildlife and National Parks Department. Such sessions have been found to be beneficial in resolving issues and contribute towards the integrative approach in having relevant departments discussing and agreeing right from the planning stages.

The booklet entitled "Environmental Impact Assessment (EIA) Procedure and Requirements", first published in October 1990 was revised in January 1991 and additional copies printed for distribution to project proponents, consultants and other interested parties. These booklets are also distributed at seminars, workshops and lectures. In addition to the booklet the Assessment Section also produced a newsletter "BERITA EIA" which features articles on EIA and statistics pertaining to EIA reports submitted and reviewed. Copies have been distributed to local and foreign agencies involved in EIA, as well as Malaysian Missions abroad.

Malaysia's experience in implementing EIA has been recognised by other countries in the region. Officials on study tours have been received and in

1991, these include 7 officials from the People's Republic of China and 15 officials from the Ministries of Agriculture and Forestry, Republic of Indonesia. Within the country, an official of the Department of Forestry was attached to the DOE for a one-month EIA-familiarisation programme.

Environmental Input to Development Planning

In line with the Sixth Malaysia Plan, the Department has been actively promoting the incorporation of environmental dimensions in the planning of projects by various government agencies. The emphasis is to address environmental considerations at the early stages of project planning.

In 1991, the Department continued to provide environmental input to a total of 30 development and natural resources development projects (**Figure 5.8**). This is an increase of 20 per cent from the number provided in 1990. These projects were mainly government initiated projects that included formulation of Master Plans (30 per cent), and coastal protection works (10 per cent). Other projects addressed include regional and development plans, environmental management plans, coastal reclamation and projects related to sustainable development. **Table 5.6** lists the projects and the various stages of study.

Regional/Master/Structure Plan

In the formulation of Regional/Master and Structure Plans, the Department contributed to a chapter on the environment for the North Peninsular Regional Development Study conducted by the Department of Town and Country Planning. Environmental input, in particular environmental quality data, data on environmentally sensitive areas, policy and strategy recommendations were also provided to the Department of Town and Country Planning. The Department of Environment also reviewed and provided input for five Master Plans on flood mitigation measures for the areas of Muar, Labuan, Teluk Intan, Sungai Petani and Kelantan rivers. Other inputs provided were for the studies for Rajang

Port, Technology Park of Malaysia and Sungai Buloh Botanical Garden. The Department was involved at the early stages of the studies particularly during the formulation of the terms of reference.

Input was also provided to six Structure Plans prepared for the regions of Kubang Pasu, Larut Matang, Kerian and Selama, Kuantan, Port Dickson, Kota Bharu, and Johor Timur by the Town and Country Planning Department. The draft 'Petaling and part of Klang Structure Plan' was finalised. Apart from the environment-related sectors, proposed land-use, natural resources, public utility, and industrial development were also given due attention, to ensure environmental issues were adequately addressed.

Natural Resources

In 1991, the Department participated actively in providing input to the forestry sector especially in the preparation of the Forestry Subsector Study report carried out by the World Bank mission and the documentation of the Tropical Forests Action Programme, coordinated by the Ministry of Primary Industries. In addition, an inter-governmental committee was set up to formulate guidelines to minimise adverse impacts of logging on the environment. A series of visits to Pahang, Melaka and Sarawak was also organised to assess the practicability of the guidelines.

The Department also started a joint project with the United Nations Environment Programme entitled "Planning for Environmentally Sound and Sustainable Development in Malaysia". The study which began in August 1991 was undertaken by a group of university lecturers from the Institute for Advanced Studies, University of Malaya. The objectives of the study are to formulate policies and strategies for future economic growth, taking into account environmental factors for environmentally sound planning.

Besides providing environmental input, the Department recognised the need to set up a reliable and efficient database. The database will provide information on natural resources in Malaysia to ensure that information is readily available for decision-making. A computer application system called 'En-

vironmental Input to Development Planning (EIDP)' was developed. During this exercise, a workshop on Environmental Input to Development Planning was convened on 12 March 1991. The workshop had two main objectives; firstly to identify existing environmental information captured by various government agencies and institutions; and secondly to standardise the information available in accordance with the format that will suit the Department's requirements as well as to establish future cooperation and collaboration amongst the agencies in the exchange of data.

The workshop was attended by 20 participants from government and research institutions. A questionnaire was distributed to the participants in order to obtain general information on the type of data, data structure and systems available at these agencies.

Coastal Protection Works

In 1991, the Department provided input to the feasibility study for the National Coastal Erosion Control Sector Project. The project was implemented by the Department of Irrigation and Drainage under a Technical Assistance Programme by the Asian Development Bank to assist Malaysia in implementing a nationwide Coastal Erosion Control Programme. The main objective of the study is to prepare a nationwide coastal erosion sector project. This project will provide protection works for coastal areas which are subject to critical erosion and where valuable economic assets are threatened. In the preparation of the report, environmental considerations were also addressed along with technical and socio-economic viability of these projects.

Other studies in coastal protection site-specific works were continued for areas in Gurney Drive and Permatang Bakar Kapor in Pulau Pinang, and Morib-Sepang in Selangor.

Geographical Information System

During the year, the proposal to acquire a Geographical Information System (GIS) was approved by the Manpower Planning and Development Unit (MAMPU). The objective of installing the GIS is to develop resource information database in visual and graphics

form, to facilitate resource planning and management, as well as environmental improvement projects. The GIS will enable the Department to acquire data from various departments and agencies to be utilised for environmental quality monitoring and management, natural resource and ecological resource system mapping, pollution sources inventory, environmental impact analysis and environmental modelling. A technical committee which was represented by MAMPU, National Remote Sensing Centre, the Department of Survey and National Mapping, the Department of Forestry and the MARA Institute of Technology was formed to assist the Department in the technical aspects of the GIS to be installed. Procurement and installation of the GIS is expected in mid-1991.

Project Presiting Evaluation

The Department receives applications for proposed development projects and assesses the siting vis-à-vis their surrounding land-use. Plans are examined to ensure any environmentally sensitive areas such as residential areas, schools, water catchment areas, forest reserves and national parks, that exist or are proposed within a certain radius are adequately buffered to avoid adverse environmental impacts due to the development activities. In the assessment, the Department also ensures that the potential operator has taken appropriate measures to control and abate pollution at this planning stage of the project.

State Offices of the Department conduct site investigations as well as provide views and recommendations to the relevant planning authorities. Problematic cases are referred to the Headquarters for final decision. Based on site evaluation reports, appropriate comments on site suitability as well as environmental control requirements are submitted to project planning authorities at state or local level prior to a final decision being made on the application.

In 1991, a total of 3541 applications for Presiting Evaluation were received by the Department (Figure 5.9). Compared with the number received the preceding year, there was an increase of 29 per cent.

Approval of Equipment/Facility

In accordance with the Environmental Quality Act 1974 and Regulations thereunder, approval in the form of written permission from the Director General must be obtained prior to the construction of any facility that is likely to result in the discharge of emission of pollutants into the environment. This is to ensure that adequate pollution control measures are incorporated to meet the emission and effluent discharge standards stipulated under the Environmental Quality (Prescribed Premises) (Crude Palm Oil) Regulations 1977, Environmental Quality (Prescribed Premises) (Raw Natural Rubber) Regulations 1978, Environmental Quality (Clean Air) Regulations 1978 and the Environmental Quality (Sewage and Industrial Effluents) Regulations 1979. This requirement also enables the Department to compile a comprehensive database for inventory and monitoring purposes. A total of 505 applications for written permission for water pollution control installations were received by the State offices, showing an increase of 32 per cent over the preceding year. For air pollution control equipment, a total number of 503 applications, an increase of 47 per cent over the preceding year were received.

Centre for Investment at MIDA

Since 1990, a senior officer of the Department of Environment had been placed at the Centre of Investment, Malaysian Industrial Development Authority (MIDA) headquarters, to advise investors on environmental requirements. The main functions of this officer are:

- (i) to assist and advise investors on environmental requirements and compliance with the various environmental regulations and guidelines; and
- (ii) to help the authority to expedite decisions on matters under the purview of the Department.

In 1991, a total of 113 investors, both local and foreign visited the Centre to seek advice on environmental requirements in Malaysia. Further to that, information on environmental requirements has also been disseminated to 13 groups of foreign investment missions that visited MIDA on industrial promotion programmes.

In 1991, work began to revise the Investment Guide to update and improve its contents. The revised version of the Investment Guide is expected to be published in 1992.

The Centre is also responsible for assessing proposed industrial projects together with MIDA for approval under the Industrial Coordination Act 1975. In 1991, 82 industrial projects, namely the chemical, petrochemical and toxic and hazardous waste recovery facilities, were referred to the officer for comments

before consideration by MIDA. Based on the inputs given, environmental requirements will be specified as a condition to be fulfilled in the approval given for the manufacturing licence before the licence is issued by MIDA. Also based on the inputs given, some of the industrial project applications were rejected, especially projects related to importation of waste. This is to ensure that environmental requirements are looked into at the planning stage and to enable proper implementation of environmental management.



The Malaysian Delegation at the UN ESCAP Project Meeting of Senior Officials on Environment and Development in Asia and the Pacific, Bangkok, 13-19 February 1991

Table 5.1

**Malaysia: Projects Subject to EIA Notified and Monitored by the Department
of Environment, 1 April 1988 - 31 December 1991**

No.	a Activity	Number of EIA Cases Referred				Total
		1988	1989	1990	1991	
1	Agriculture	1	5	3	4	13
2	Airport	0	0	2	0	2
3	Drainage and Irrigation	2	3	0	2	7
4	Land Reclamation	0	5	5	4	14
5	Fisheries	0	4	3	1	8
6	Forestry	1	6	16	11	34
7	Housing	2	5	12	22	41
8	Industry	7	9	14	16	46
9	Infrastructure	2	17	44	31	94
10	Port	1	2	1	0	4
11	Mining	5	1	15	3	24
12	Petroleum	9	5	12	5	31
13	Power Generation and Transmission	5	2	3	3	13
14	Quarry	3	17	44	25	89
15	Railway	0	0	2	0	2
16	Transportation	0	0	0	0	0
17	Resort and Recreational Development	2	8	31	41	82
18	Waste Treatment and Disposal	5	5	12	8	30
19	Water Supply	2	2	2	1	7
	b					
20	EEZ	1	1	0	3	5
	Total	48	97	221	180	546

Key:

a: Activities according to EIA Order, 1987

b: Petroleum Projects Development in the Exclusive Economic Zone
(Section 21(1) and 21(2) EEZ Act, 1984)

Table 5.2

**Malaysia: Number of EIA Reports Received and Being Reviewed
by the Department of Environment, 1988-1991**

No.	a Activitiy	Number and Type of Reports Received				Total
		1988	1989	1990	1991	
1	Agriculture	0	1	0	3	4
2	Airport	0	0	0	0	0
3	Drainage & Irrigation	1	1	0	3	5
4	Land Reclamation	0	3	3	3	9
5	Fisheries	0	0	0	1	1
6	Forestry	0	0	2	9	11
7	Housing	1	3	9	22	35
8	Industry	1	9	16	22	48
9	Infrastructure	0	1	17	38	56
10	Port	0	1	2	0	3
11	Mining	1	1	7	1	10
12	Petroleum	4	5	14	10	33
13	Power Generation & Transmission	2	3	1	5	11
14	Quarry	0	3	13	17	33
15	Railway	0	0	1	0	1
16	Transportation	0	0	0	0	0
17	Resort & Recreational Development	0	0	15	34	49
18	Waste Treatment & Disposal	1	3	10	1	15
19	Water Supply	0	1	3	2	6
	b		0	0	0	0
20	Exclusive Economic Zone	0	1	0	3	4
	Total	11	36	113	174	334

Key:

a: Activities according to EIA Orders

b: Petroleum Development Projects in the Exclusive Economic Zone
(Section 21(1) and 22(1) EEZ Act, 1984)

Table 5.3

**Malaysia: Man-Month and Costs of Carrying Out of EIA Studies
According to Activity, 1988 - 1991**

No.	Category of Prescribed Activities	Number of Cases	Man-Month				EIA Costs (\$)				Cost of EIA as Percentage of Project Cost (%)			
			Minimum	Maximum	Mean	Median	Minimum	Maximum	Mean	Median	Minimum	Maximum	Mean	Median
1	Agriculture	1	1.0	1.0	1.0		30,000	30,000	30,000		N.A	N.A	N.A	
2	Drainage and Irrigation	1	N.A	N.A	N.A		52,000	52,000	52,000		N.A	N.A	N.A	
3	Land Reclamation	2	12.0	12.0	12.0		50,000	202,240	126,120		0.057	0.297	0.177	
4	Fisheries	1	N.A	N.A	N.A		58,000	58,000	58,000		1.429	1.429	1.429	
5	Forestry	1	6.0	6.0	6.0		30,000	30,000	30,000		0.272	0.272	0.272	
6	Housing	16	2.0	5.0	3.1	3.0	15,000	50,000	31,860	35,000	0.003	0.249	0.064	0.020
7	Industry	29	2.0	24.0	7.3	6.0	25,000	1,550,000	163,787	48,500	0.012	2.597	0.290	0.058
8	Infrastructure	28	2.0	24.0	7.3	4.0	16,000	220,000	48,400	40,000	0.011	0.398	0.101	0.050
9	Port	1	24.0	24.0	24.0		735,000	735,000	735,000		0.244	0.244	0.244	
10	Mining	2	N.A	N.A	N.A		60,000	195,000	127,850		0.381	1.471	0.927	
11	Petroleum	12	3.0	71.0	19.5	11.5	30,000	2,270,000	577,222	422,000	0.016	0.401	0.167	0.104
12	Power Generation and Transmission	5	4.0	46.0	19.4		52,000	279,620	157,579		0.023	1.175	0.762	
13	Quarries	13	1.0	6.0	3.7	4.0	7,200	32,000	21,427	27,500	0.100	0.577	0.370	0.299
14	Resort and Recreational Development	23	1.0	31.0	6.8	5.5	4,000	142,000	42,526	35,000	0.001	0.547	0.084	0.028
15	Waste Treatment and Disposal	5	2.0	25.0			15,000	100,000	45,485		0.033	1.866	0.664	
16	Water Supply	1	14.5	14.5	14.5		76,000	76,000	76,000		0.058	0.058	0.058	
	TOTAL	141												

Note:

N.R - No report

N.A - Not made available

Table 5.4

EIA : Lectures, Briefings and Papers Presented, 1991

No.	Date	Organizing Agency/Place	Title of Lecture/Paper
1.	12 February	University of Malaya, Kuala Lumpur	Keperluan Undang-Undang dan Prosedur EIA
2.	30 May	Sweden-Malaysia Seminar on Environmental Technology, Kuala Lumpur	The Environmental Situation in Malaysia
3.	03 July	7th Symposium, Institute of Chemical Engineers, Bangi	Environmental Impact Assessment (EIA) in Petroleum and Petrochemical Industries
4.	03 July	7th Symposium, Institute of Chemical Engineers, Bangi	Environmental Impact Assessment (EIA) Procedures and Requirements in Malaysia; Major Environmental Issues in Chemical and Heavy Industries
5.	11 July	INTAN, Kuala Lumpur	Panelist: Integrated Environmental Planning in Development - International Course, INTAN
6.	28 July	IEM & IE, Singapore, Johor	Environmental Impact Assessment on Resort Development
7.	10 July	One-day Seminar on Water Supply Needs for Industry Housing Development, Majlis Perbandaran Seremban	EIA for Housing Development
8.	19 July	PERMATA, Bangi	Briefing on EIA
9.	05-06 August	EIA Workshop - IEM Petaling Jaya	EIA Procedure

Continuation...

No.	Date	Organizing Agency/Place	Title of Lecture/Paper
10.	14-19 September	12th Pacific-Asian Congress of Municipalities (PACOM), Kuala Lumpur	The EIA Procedure and Requirements for Urban Development in Malaysia
11.	23 September	ENSEARCH Forum on EIA, Petaling Jaya Hilton	Assessment of Progress and Major Issues in Implementing EIA
12.	22-23 October	Regional Conference on Industrial Estate Development, Hilton Hotel, Kuala Lumpur	Environmental Impact Assessment of Development Projects
13.	31 October	Seminar on Environmental Awareness - The Green Challenge, NPC Hotel, Petaling Jaya	EIA Requirements and Procedure in Malaysia: Progress
14.	08-11 October	Solid Waste Management Course, Local Government Division, State Secretariat, Perak	Penilaian Kesan Kepada Alam Sekeliling (EIA) Aktiviti Pelupusan Pepejal
15.	28 November	Meeting of Federal Heads of Department, Serdang.	Briefing on EIA
16.	02 December	Meeting of State Secretaries, INTAN Kuala Lumpur	Briefing on EIA
17.	03 December	Meeting of Chief Executives of Statutory Bodies, Kuala Lumpur	Briefing on EIA
18.	10 December	State Directors of MIDA, Kuala Lumpur	Briefing on EIA
19.	12 December	Meeting of State Secretaries and Secretaries General, Kuala Lumpur	Briefing on EIA

Table 5.5

EIA : Briefings by Project Proponents/Consultants on Projects, 1991

No.	Project	Proponent/ Consultant	Date
1.	Bukit Cherakah Agricultural Park	Ministry of Agriculture	25.2.91
2.	Desaru International Resort	Desaru International Resort Sdn. Bhd./EEC	8.3.91
3.	'Heavy Metal Offsite Recovery Facility', Shah Alam	Chemical Waste Management Sdn.Bhd./UKM	28.3.91
4.	Industrial Estate Development Located dt Mukim of Damansara District of Petaling, Selangor	Horizon Towers Sdn. Bhd./ Minconsult Sdn. Bhd.	4.4.91
5.	The Development of Sg.Buloh Forest Reserve into a Modern Self Contained Development Area Comprising Residential, Recreational Commercial, Institutional and Industrial Zones	Selangor State Development Corp./Erinco Sdn. Bhd.	5.4.91
6.	Recycling of Petroleum Sludge	Kahenda Petroleum Sdn. Bhd.	9.4.91
7.	Exploration Drilling of Block SB-3 Offshore West Sabah	Enron Oil Malaysia Inc./Gardline Surveys (M) Sdn.Bhd.	22.5.91
8.	D-35 oil & gas field Development Offshore Bintulu, Sarawak	Sarawak Shell Bhd./ Techsain Sdn. Bhd.	24.5.91
9.	Penang Hill Resort	Bukit Pinang Leisure Sdn. Bhd./Ageris Sdn. Bhd.	15.7.91
10.	Proposed Pulau Redang Resort	Redang Island Resort Sdn. Bhd./MGA Consult	11.7.91
11.	Proposed Kemansah Heights Golf & Residential Resort, Mukim Ulu Klang Selangor	Welltra Sdn. Bhd./ Perunding Utama Sdn. Bhd.	10.10.91
12.	North Kelantan Water Supply with Ground Water Sources	Public Work Department	22.10.91
13.	West Sualog-Kiabau Copper Mining Project	Leadstar Sdn. Bhd./BHp Engineering Philippines Inc.	30.10.91
14.	Kota Kinabalu Industrial Park Development Project	Sabah Urban Development Corporation Sdn.Bhd./ MGA Consult	11.11.91
15.	Malaysian Integrated Schedule Waste Collection, Treatment & Disposal Project	Consortium I.Kruger AS/ Syed Muhamad, Hooi & Binnie Sdn. Bhd.	13.11.91
16.	Selat Tebrau Reclamation Project	Johore Coastal Development Sdn. Bhd./Erinco Sdn. Bhd.	18.12.91

Table 5.6

**Malaysia : List of Environmental Inputs
to Project Development**

Type	Project	Stage of Study
Regional/Development Plan	North Peninsular Regional Development Study	Final Report
	Infrastructure Improvement and Development in Coastal Villages	Terms of Reference
Master Plan	Rajang Port	Draft Final Report
	Malaysia Technology Park	Draft Final Report
	Labuan Drainage	Draft Final Report
	Muar Town Flood Mitigation Project	Draft Final Report
	Teluk Intan River Erosion Control and Master Plan to Alleviate Tidal Flooding	Draft Final Report
	Sungai Petani Drainage and River Improvement Works	Technical and Financial Proposal
	Sungai Kelantan Flood Mitigation Project	Terms of Reference
	Sungai Buluh Botanical Park	Terms of References
	Negri Sembilan Environmental Master Plan	Inception
Structure Plan	Petaling and Part of Klang District	Draft Final Report
	Larut Matang, Kerian and Selama	Draft Final Report
	Kuantan	Draft Final Report
	Port Dickson	Technical Reports
	Kota Bharu	Inception Report
	Johor Timur	Inception Report
	Kubang Pasu	Inception Report

Continuation...

Type	Project	Stage of Study
Management Plan	Environmental Management Study at Sg. Sintok and Sg. Badak Basins, Kubang Pasu District, Kedah Darulaman	Terms of Reference
Natural Resource	World Bank : Forestry Sub-Sector	Draft Final Report
	Tropical Forests Action Programme	Draft Report
	Pahang Water Resources	Interim Inception Report
	National Conservation Strategy	Inception Report
	Guidelines to Minimise the Adverse Impacts of Logging to the Environment	Draft Report
	Population	
Coastal Protection Works	National Coastal Erosion Control Sector Project	Final Report
	Permatang Bakar Kapor, and Gurney Drive	Draft Final Report
	Morib-Sepang	Draft Final Report
Coastal Reclamation	Coastal Reclamation Along the West Coast of Peninsular Malaysia	Terms of Reference
Sustainable Development	UNEP Planning for Environmentally Sound Development in Malaysia	Terms of Reference

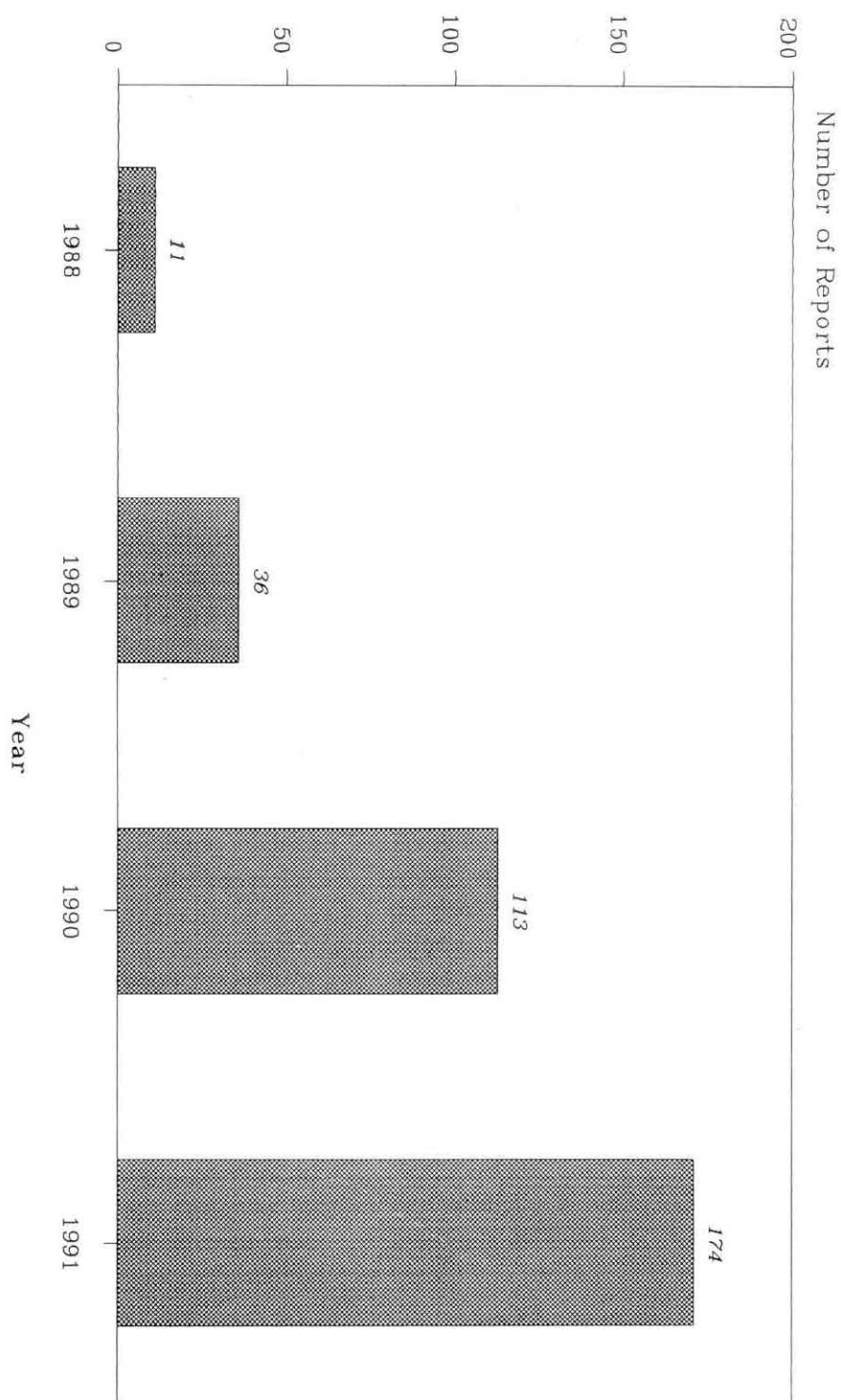


Figure 5.1 Number of EIA Reports Received by the Department of Environment, 1988-1991

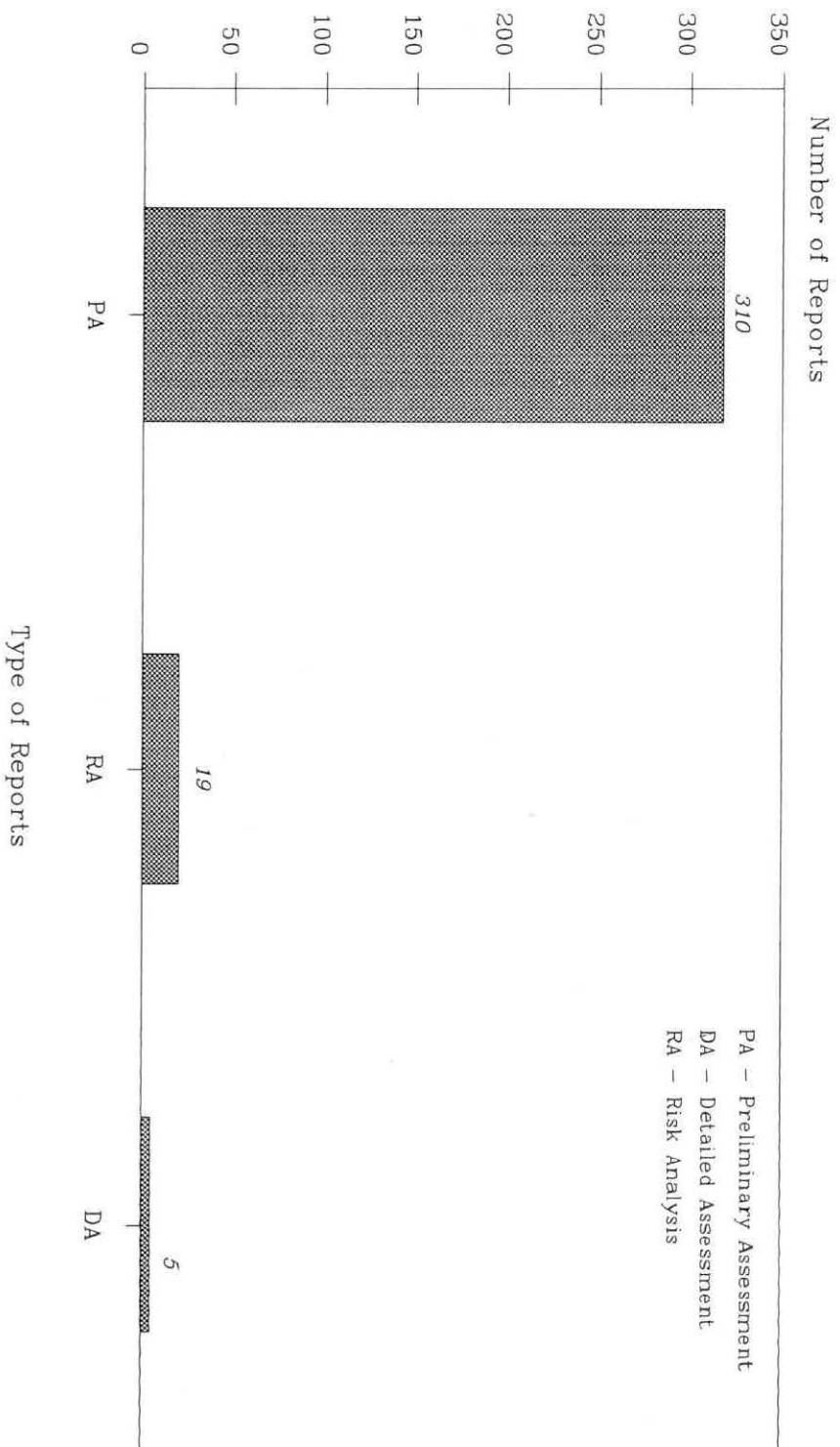


Figure 5.2 Number of EIA Reports by Type Received by the
Department of Environment, 1988-1991

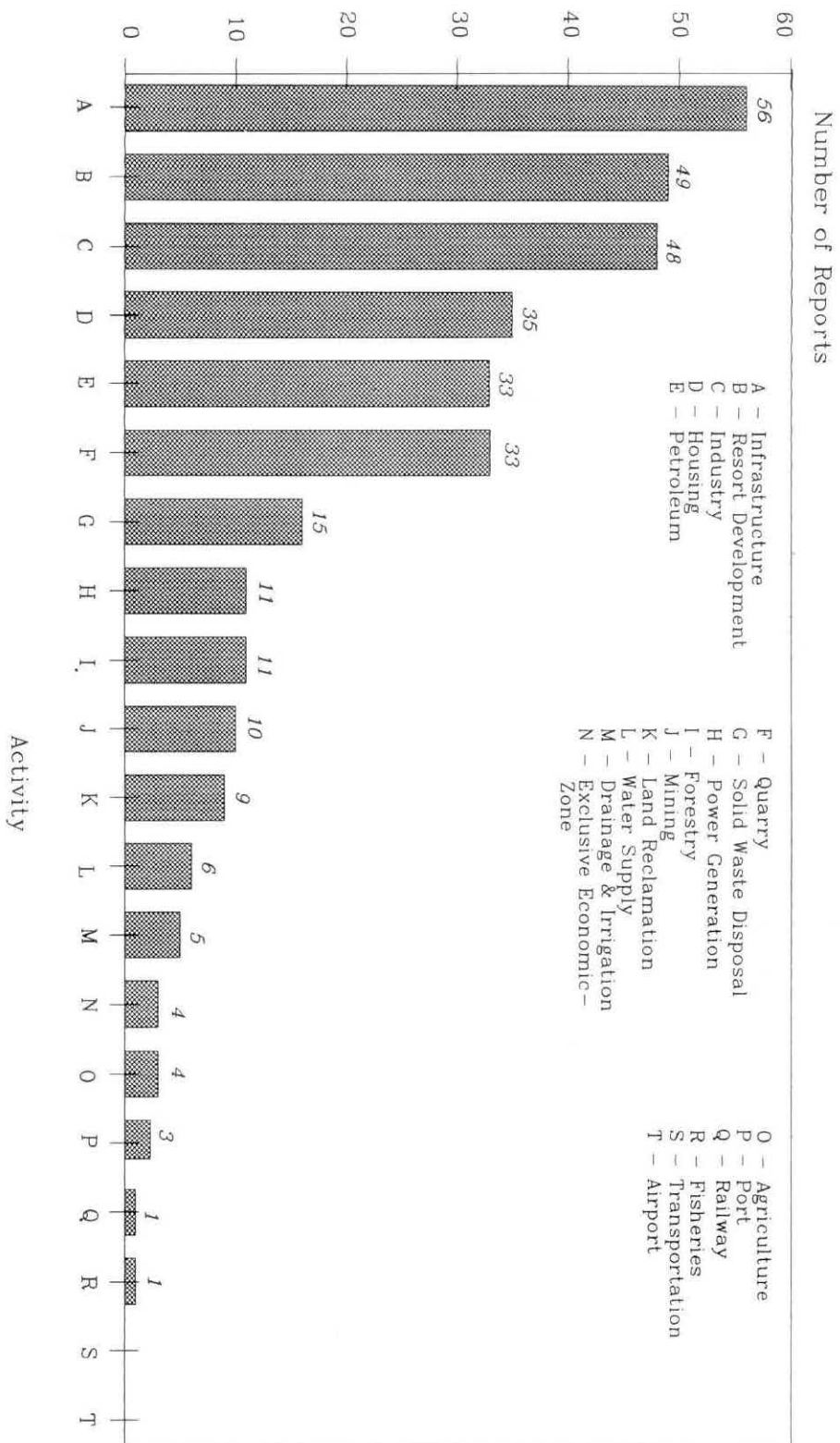


Figure 5.3 Number of EIA Reports by Category of Activity
Received by the Department of Environment, 1988-1991

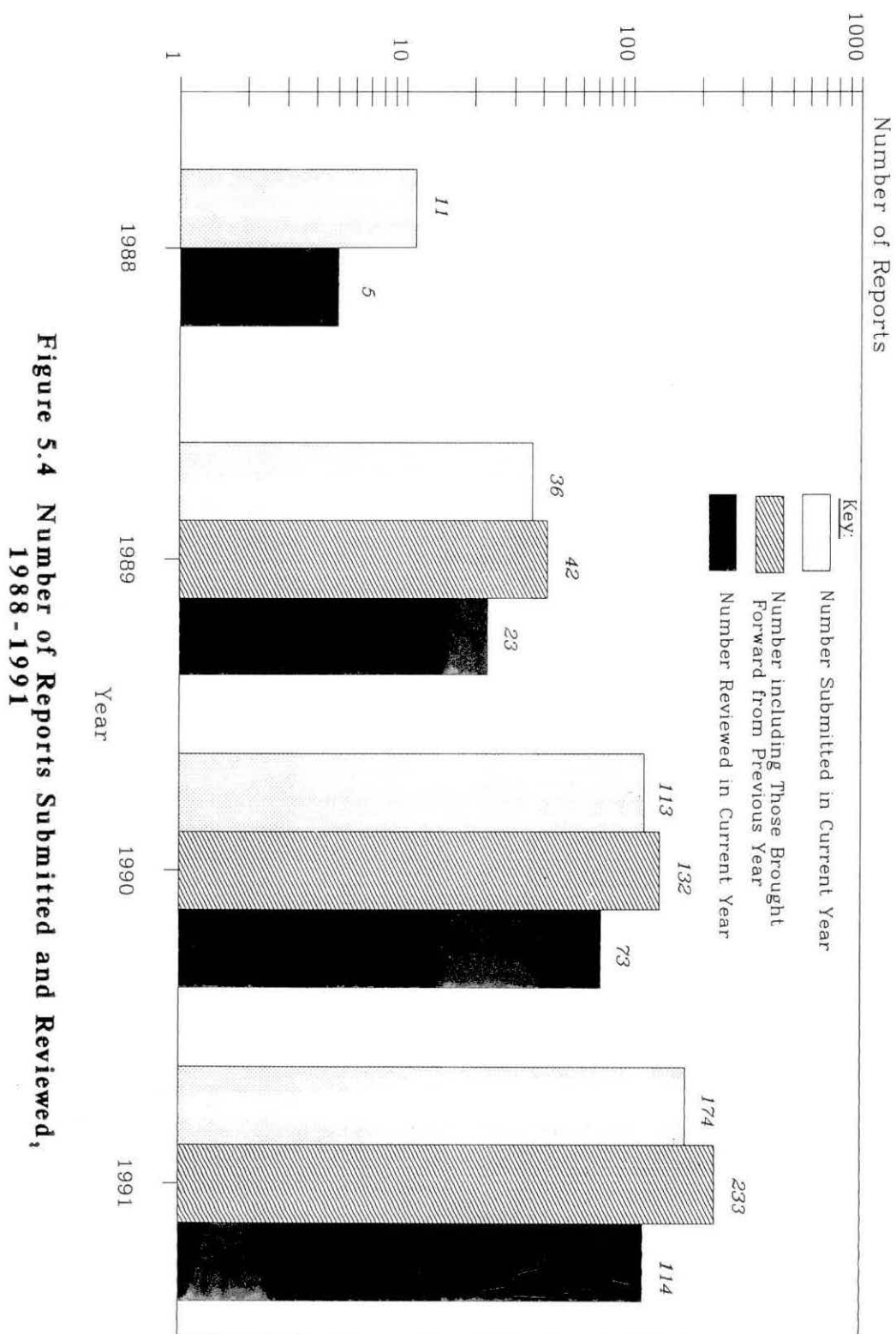
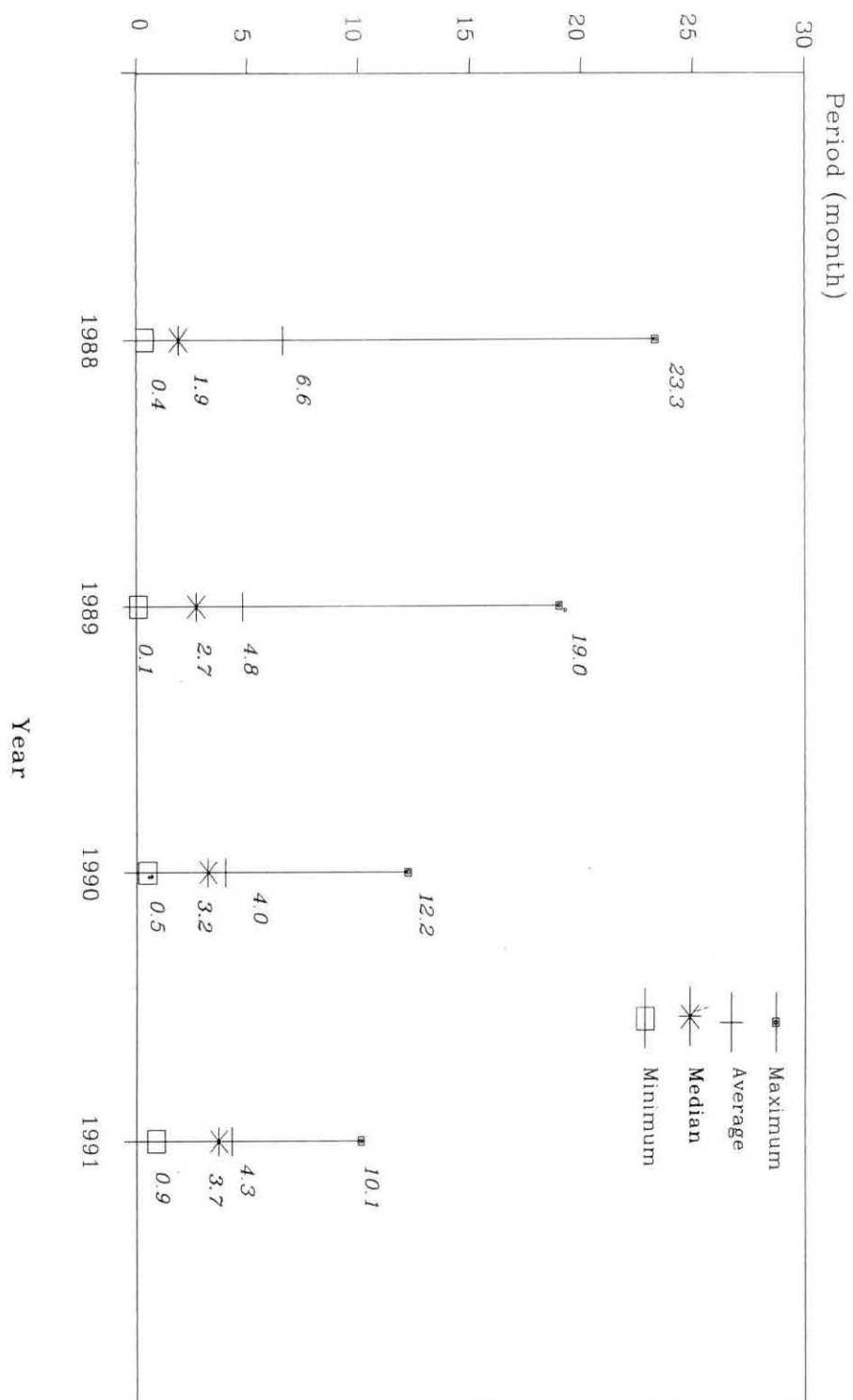


Figure 5.4 Number of Reports Submitted and Reviewed,
1988-1991



**Figure 5.5 Time Taken to Approve or Reject EIA Reports
by the Department of Environment, 1988-1991**

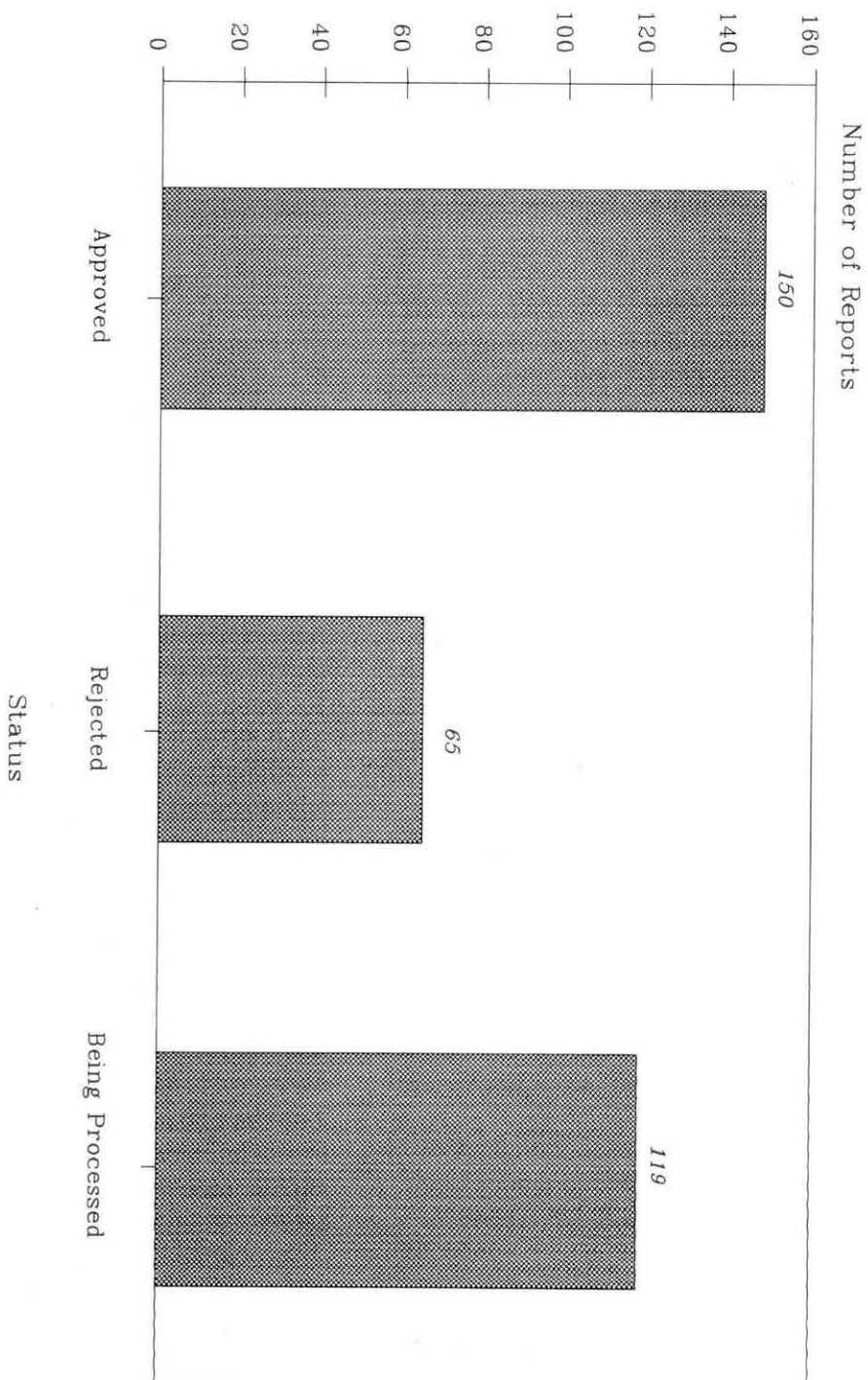


Figure 5.6 Number of EIA Reports Reviewed by the Department of Environment, 1988-1991

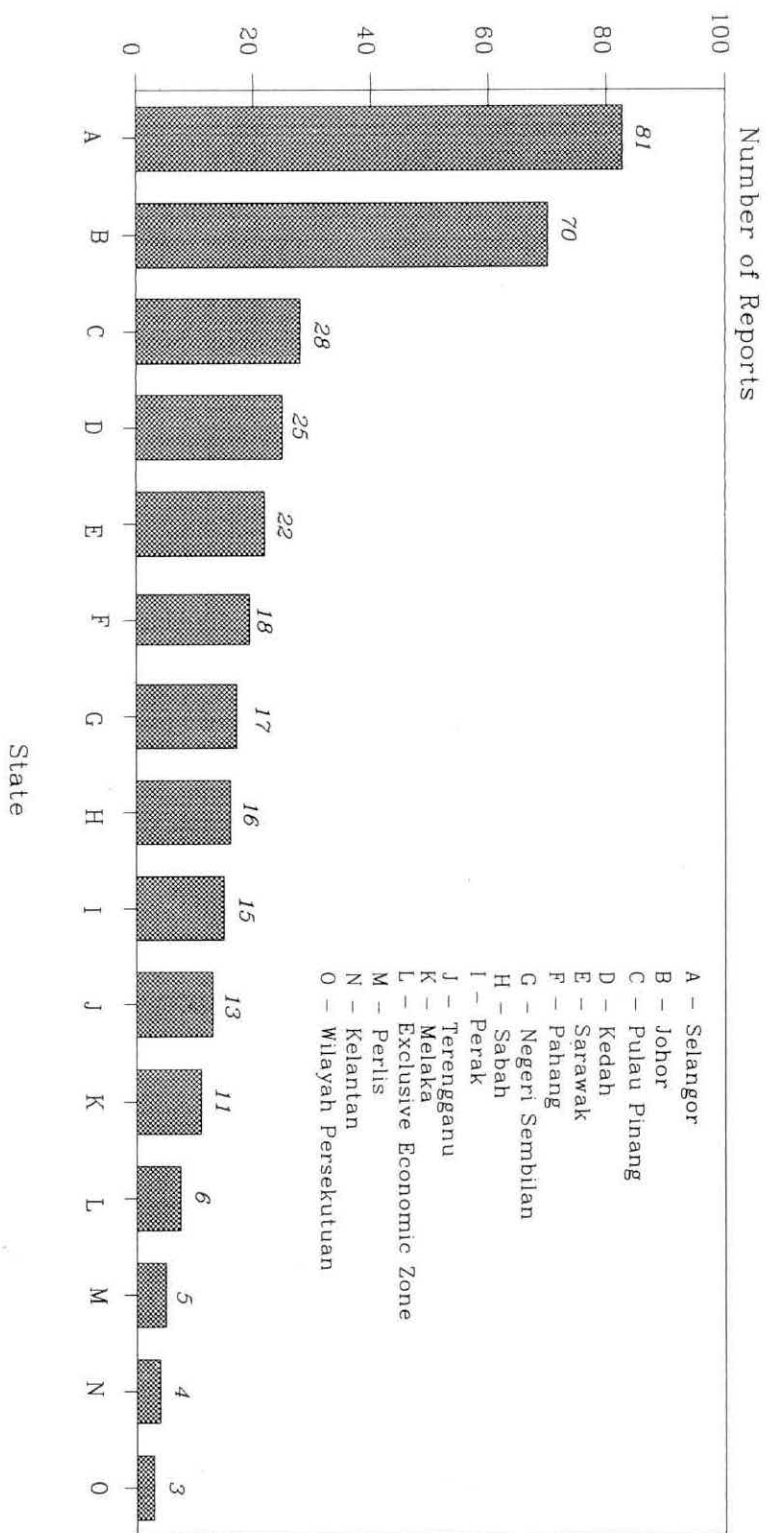


Figure 5.7 Number of EIA Reports by State Received by the Department of Environment, 1988-1991

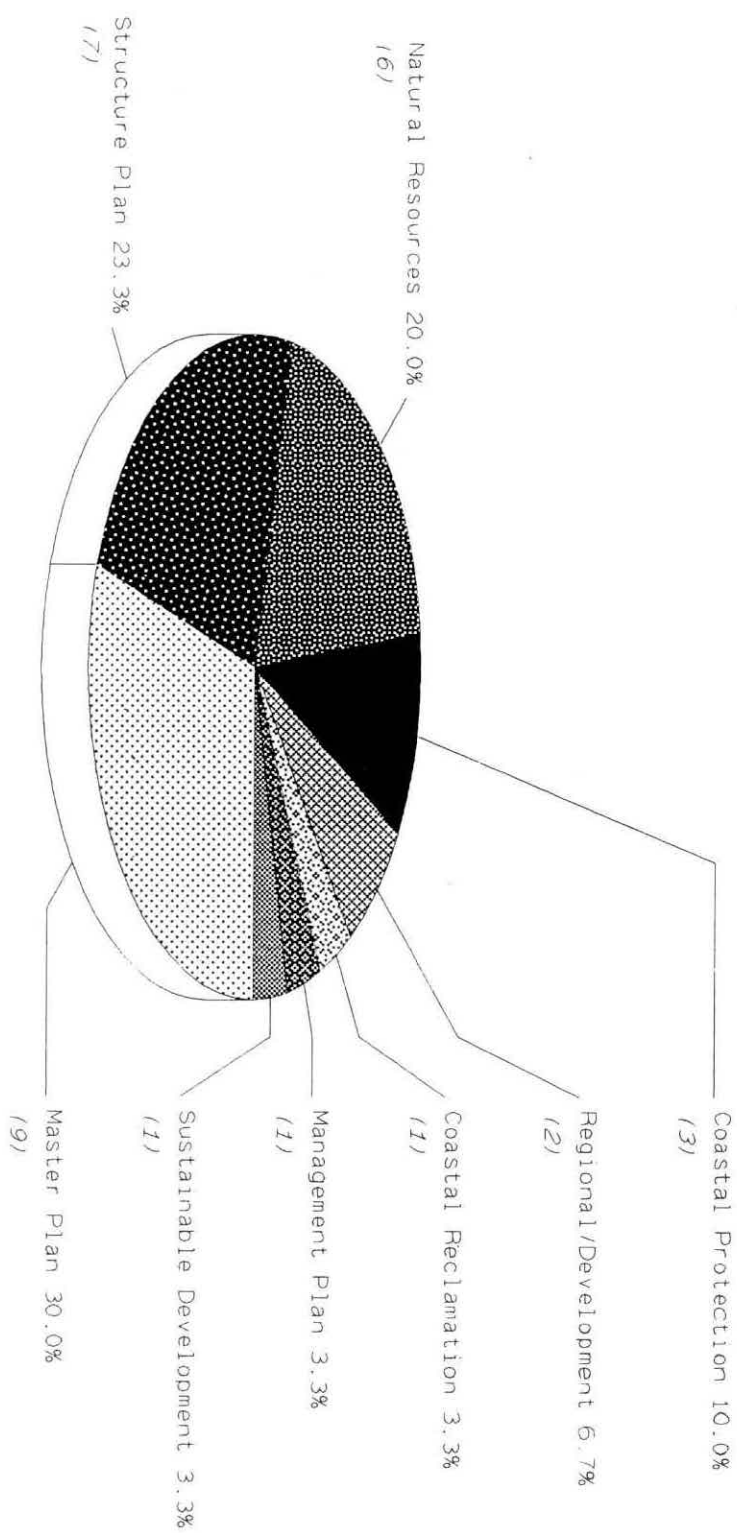
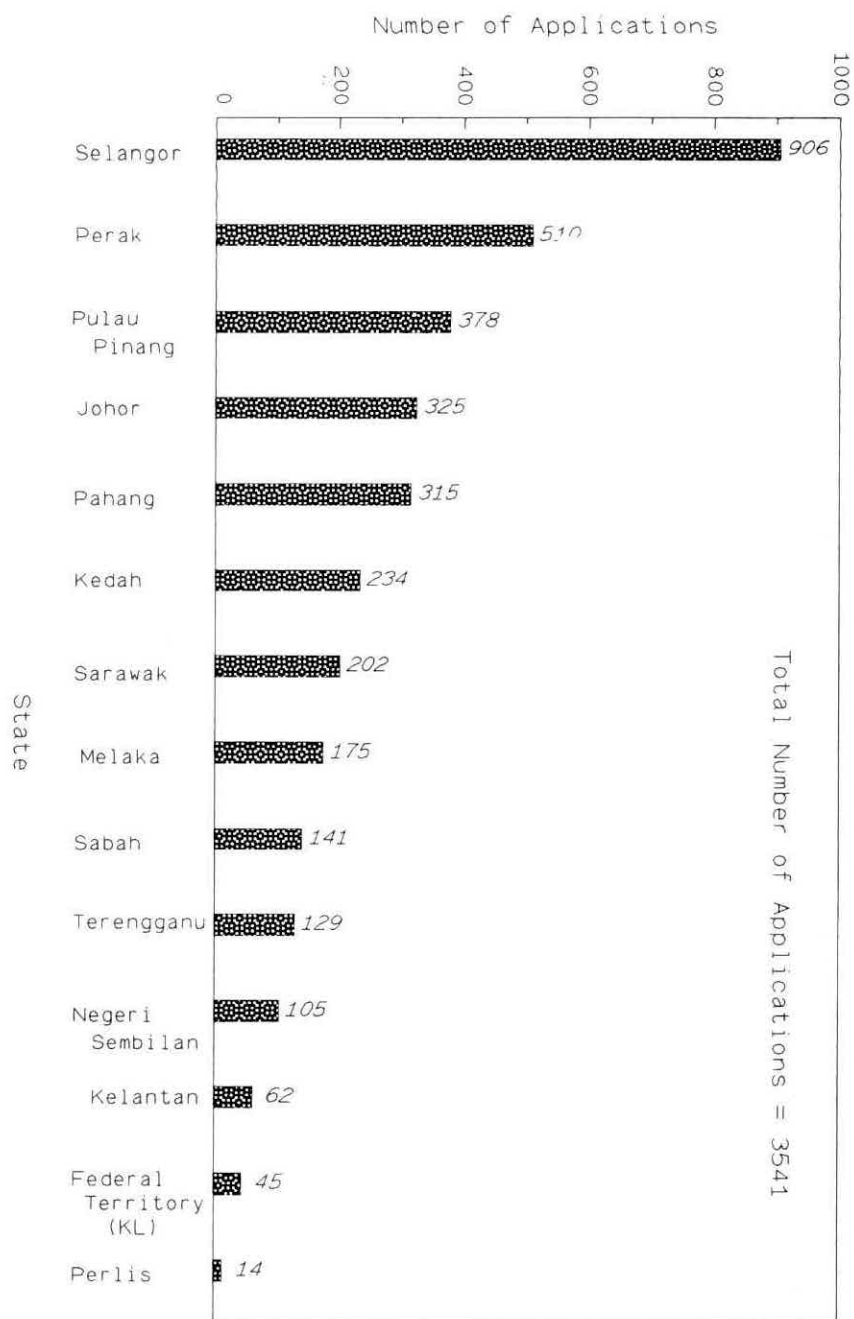


Figure 5.8 Department of Environment: Environmental Input to Project Development Planning, 1991

Figure 5.9 Malaysia: Application for Presting Evaluation of Development Projects by State, 1991



CHAPTER 6

DEVELOPMENT

DEVELOPMENT

Preamble

The tasks of this Division, developmental in nature and supportive of the Control and Prevention Divisions, are categorised into the following:

- o New Programme Formulation
- o Environmental Education, Information and International Affairs
- o Electronic Data Processing

This is consistent with the initial expectations laid down in the Sixth Malaysia Plan (1991-1995): “DOE...be strengthened to enable it to play a developmental role as well as to be more effective in enforcement”, as highlighted earlier in the preceding chapters.

NEW PROGRAMME FORMULATION

Introduction

This section comprises two units, namely

- (i) Regulations and Guidelines; and
- (ii) Studies and Inventories

While the former looks into the review and formulation of regulations and guidelines, and takes up the specialized function of chemicals management (in lieu of the latest development of prior-informed consent [PIC] and notification procedures under the Amended London Guidelines on Banned or Severely Restricted Chemicals in International Trade), the latter deals with special studies and study-oriented development projects and compilation of inventories. Listings of air pollution and water pollution sources are being compiled with a view to collect and collate statistics on the status of emission and waste treatment facilities currently available in Malaysia; thereby supporting the pollution control programmes of the Department.

Regulations and Guidelines

Law Review

To ensure that adequate regulations exist to protect the environment, an Environmental Law Review Committee was established on 12 June 1991 with the main task of identifying the weaknesses and inadequacies of the Environmental Quality Act 1974 (EQA) and regulations made thereunder relating to pollution control and abatement as well as pollution prevention, and to recommend amendments to the EQA and its regulations, or formulate new laws to address the shortcomings.

In the process, the Committee also studied the provisions of other environment-related laws vis-a-vis the EQA with a view to streamline their operations and to recommend amendments if any, in order to improve protection and conservation measures, and to fill in the gaps created by new emerging environmental issues.

Four working groups were set up for the purpose of the review exercise according to the main segments of the environment, namely, air, water, land and the marine environment.

Members of the Committee and Working Groups were drawn from various non-governmental organisations including professional bodies as well as government agencies which have the appropriate enforcement and implementation experiences in the relevant areas.

Formulation of Environmental Guidelines

In areas where legal control could not be carried out, especially via the Environmental Quality Act 1974, guidelines were prepared to assist the relevant sectors in the protection and preservation of the environment. In 1991, at the request of the Housing Developers Association (HDA), an Interim Guide-

lines for the Controlled Burning of Felled Plant Material and Combustible Solid Wastes from the Housing Industry in the Klang Valley were prepared. Draft guidelines for the transportation of toxic and hazardous chemicals were also prepared and circulated for comments.

Chemicals Management

Implementation of the Montreal Protocol on Substances that Deplete the Ozone Layer

The Government of Malaysia is committed towards the reduction and ultimate elimination of the use of CFCs and Halons, joining global efforts towards the protection of the ozone layer. In line with the Malaysia Incorporated concept, five industrial working groups representing the major user-sectors worked very closely with the Technical Working Committee under the National Steering Committee on Protection of the Ozone Layer. The action plan and strategies proposed by the National Ozone Depleting Substances (ODS) Case Study (completed with the cooperation of the Canadian Industrial Development Agency [CIDA]) would accelerate the process of eliminating completely the consumption of ODS, Malaysia being largely an importer and not an exporter of ODS.

Malaysia is seriously concerned that the over-zealous and constantly-changing approach adopted by the Parties to the Montreal Protocol is disrupting national plans for compliance; and burdening the limited resources of developing countries. At the same time, there has yet to be a positive response to new product suitability and liability by producing countries. Malaysia would also continue to pursue the matter of historical culpability of industrialised states for the damage caused by their activities and products.

Meanwhile, two activities on ODS reduction and elimination of CFCs in the car air-conditioning and Halon sectors have been identified whereupon financial support is being sought from an Interim Multilateral Fund (IMF), set up in 1991. Malaysia is an elected member of the Executive Committee (EXCOM) of the Multilateral Fund under the Montreal Protocol.

The EXCOM was established to manage the IMF, an environmental fund that is considered new and additional, with balanced governance. Malaysia has been working constructively to develop management procedures and implementation protocol which could serve as useful guidance to other environmental funding mechanisms currently being negotiated in the UNCED process.

In addition to the regular meetings and consultations between the Government and the industries concerned, there is close cooperation with regards to participation in public awareness programmes, workshops and seminars.

The process to define the policies and regulations which are necessary to restrict the use of the ODS has already been initiated, ahead of the time frame granted.

In this capacity, Malaysia has been represented in the following international activities on the Montreal Protocol:

Montreal Protocol

- (i) Second Meeting of the Ad-Hoc Working Group of Legal Experts on Non-Compliance with the Montreal Protocol, Geneva, 8-10 April 1991;
- (ii) Preparatory and Second Meetings of the Conference of Parties to the Vienna Convention, Nairobi, 10-14 June 1991;
- (iii) Preparatory and Third Meetings of the Parties to the Montreal Protocol, Nairobi, 17-21 June 1991;
- (iv) Third Meeting of the Ad-Hoc Working Group of Legal Experts on Non-Compliance with the Montreal Protocol, Geneva, 5-8 November 1991.

Multilateral Fund

- (i) First Meeting of the Subcommittee (SUBCOM) of the Multilateral Fund under the Montreal Protocol, Montreal, 4-6 March 1991;
- (ii) Fourth Meeting of the Executive Committee (EXCOM) of the Multilateral Fund Under the Montreal Protocol, Nairobi, 17-18 June 1991;

- (iii) Fifth Meeting of the Executive Committee (EXCOM) of the Multilateral Fund Under the Montreal Protocol, Montreal, 18-22 November 1991.

Training

- (i) Second Training Course on Measures to Reduce the Use of the ODS, Tokyo, 27 October-16 November 1991;
- (ii) Second Seminar on Promotion of Ozone Layer Protection in Asian Countries, Tokyo, 24 November-3 December 1991.

The following main reports and draft regulations have been prepared:

- (i) Draft Customs (Prohibition of Imports and Exports) (Montreal Protocol) (CFCs and Halon) Order ;
- (ii) Draft Environmental Quality (Use of CFCs and other gases as Propellant and Blowing Agent) ;
- (iii) Malaysia Country Programme to Reduce and Eliminate the Consumption and Emissions of Ozone-Depleting Substances (ODS);
- (iv) The Conservation, Leakage Control and Recycling of CFC 12, and Demonstration of Project in Automotive Air-Conditioning sector;
- (v) Servicing, Maintenance and Recovery Charging Kit for Portable Extinguisher (Halon 1211) and Training Project in Halon Sectors;
- (vi) National Strategy for Ozone Protection;
- (vii) Draft Final Report (Project Report): CFCs and Halon in Malaysia - Use Patterns and Costs of Alternatives (DOE/CIDA); and
- (viii) Industrial Working Group Reports (Prepared by Industrial Working Groups appointed by DOE).

The reports as outlined in subparagraphs iii, iv and v above were submitted to the Executive Committee (EXCOM) of the Multilateral Fund under the Montreal Protocol for consideration of financial implications.

Implementation of the Amended London Guidelines for the Exchange of Information on Banned or

Severely Restricted Chemicals in International Trade, Prior Informed Consent (PIC) Procedure and the International Register of Potentially Toxic Chemicals (IRPTC)

Background

The London Guidelines for the Exchange of Information on Banned or Severely Restricted Chemicals in International Trade were adopted in 1987 and amended in 1989 to include the Prior Informed Consent (PIC) Procedure. The main element of these provisions refers to the principle that international shipment of a chemical (banned or severely restricted for health and environmental reasons) should not proceed without the agreement, where such agreement exists, or contrary to the decisions, of the relevant authority (designated national authority) in the importing country.

National Commitment

The Department of Environment had been designated as the National Authority for the Implementation of the London Guidelines for the Exchange of Information on Chemicals in International Trade. In line with this, an inter-agency Committee on Banned and Severely Restricted Chemicals was established to provide guidance and policy direction on the implementation of the London Guidelines in Malaysia. The Committee comprises representatives from the Pesticides Board, the Factories and Machinery Department, the Royal Customs and Excise Department, the Pharmaceutical Division and the Health Division of the Ministry of Health with the Department of Environment as the Secretariat.

A Technical Committee for Chemicals Not Otherwise Controlled was also established to provide technical advice and guidance regarding the use and export of banned and severely restricted chemicals, other than pesticides that would be subjected to PIC procedure under the London Guidelines. The Technical Committee consists of relevant government departments, industries, non-governmental organizations and academic institutions.

The Department of Environment is also the National Correspondent for the UNEP/IRPTC and the Na-

tional Focal Point for the International Programme for Chemical Safety (IPCS). Its activities in this capacity include the operation of a query-response service on chemicals, development of a data-base including information and reference facilities on chemicals and coordination of any programmes or activities organised by UNEP/IRPTC at the national level, such as the implementation of the London Guidelines.

In 1991, the Department of Environment received 33 notifications of export of chemicals restricted in the country of origin. The Department also continued to work on a Malaysian Inventory of Chemicals and Chemical Substances in preparation for the development of a National Notification and Assessment Scheme for Chemicals. The scheme would provide a mechanism for identifying and controlling new chemicals and chemical products before they are made commercially available in the country. This scheme in application will, where appropriate, complement existing mechanisms and arrangements for specific groups of chemicals with each group being controlled by specific legislation.

International Participation

Fully aware of the need of developing countries to make informed decisions on the use of toxic chemicals and dangerous products, especially those which are banned or severely restricted in the country of origin, Malaysia has been in the forefront in promoting the PIC procedure, its mandatory application and the need for legally binding instruments. It has been spearheading such efforts in the UNCED Preparatory Meetings 1,2 and 3; and at the UNEP Governing Council.

Through the year Malaysia has participated in the following international meetings and workshops on the implementation of the London Guidelines and PIC:

- (i) The second session of the Ad-Hoc Working Group of Experts on the Implementation of the Amended London Guidelines, Geneva, 8-12 April 1991 under UNEP;
- (ii) The Regional FAO-UNEP/UNITAR Workshop on the Implementation of Prior Informed Consent PIC, Manila, 29 July-2 August 1991;

- (iii) The Sub-Regional UNEP/UNITAR Workshop on the Implementation of PIC, Kuala Lumpur, 9-13 December 1991.

Studies and Inventories

Studies

In response to pollution problems and growing concern of the public towards environment, the Department embarked upon various study-oriented projects to support the existing programmes for pollution control as well as to strengthen enforcement through the application of project outcome and latest know-how.

In the process, a total of 5 projects have been identified based on priority as follows:

Study on Small and Medium Electroplating Industries

This study was undertaken by Universiti Kebangsaan Malaysia (UKM) and completed in December 1991 in which the aim was to identify the most practical and reliable technique for wastewater reduction for industries of this kind. Outcome of this study will eventually assist electroplaters and related waste generators to adequately minimize and treat their wastes before discharge into the public sewer.

Formulation of Water Quality Criteria and Standard

Phase III

The objective of this project was to review the existing discharge standards so as to complement the Interim National Water Quality Standards formulated during phase I and II; thus improving, modifying and strengthening the provisions of the Environmental Quality (Sewage and Industrial Effluents) Regulations 1979. This study is undertaken by the Institute of Advanced Studies (IPT), University of Malaya (UM) and due to be completed in September 1992.

Formulation of Water Quality Criteria and Standards

Phase IV

Following up on phase II, this phase aims to classify more major rivers according to their beneficial uses; and is being undertaken by a collaboration of 5 local Universities lead by IPT, UM; also due for completion in September 1992.

Reduction of Waste at Source for Photographic Shops, Tanning Industries and Automotive Service Stations

This project intends to come out with practical recommendations/methodologies to minimise wastes generated by these activities, as clearly spelt out in the Scope of Work. This is an on-going project undertaken by IPT, UM and is due for completion before 1993.

Development of an Oil Spill Model

This study is yet to commence and expected to be implemented fully by May 1992. IPT of University of Malaya was appointed to undertake the study basically to determine the trajectory movement of an oil spill taking into consideration oceanographic features, physical, chemical as well as climatic characteristics in forecasting spill movement. The aim is also to determine the origin of a spill to develop scenarios and counter measures in combating oil spills. Expected to be completed in March 1993; the objective is to complement the implementation of the National Oil Spill Contingency Plan for Malaysian Waters.

Inventories

Statistics gathered over the years were compiled to establish a Data base for sources of pollution, categorised, as a start, under 'air' and 'water'.

Air Pollution Sources

In 1991, the air inventory emission sources were divided into three main sources: stationary, mobile

and solid waste disposal sources. Summaries of emission sources are given in **Tables 6.1, 6.2, 6.3** and **Figure 6.1**.

From **Table 6.1** the major emission contribution by stationary sources is from fuel combustion, the sources of which number 2,819 out of 7,711. Next to that is food and agriculture (1,674) followed by wood-based products (1,555). Mobile sources at 5,211,922 are the most significant in terms of number of motor vehicles; while there are 80 sources from solid waste disposal, 78 of which are at municipal disposal sites.

Figure 6.1 shows the distribution of significant mobile sources by state, the highest coming from Selangor, followed by Johor, Perak, Pulau Pinang and Federal Territory (Kuala Lumpur); with the lowest being Perlis. Distribution of stationary sources is shown in **Figure 6.2** whereby the majority are in Selangor, Perak, Federal Territory (Kuala Lumpur), Pulau Pinang and Johor. Perlis again shows the lowest count.

Air Pollution Load

Preliminary estimates on pollution load which were generated by various industrial activities and mobile sources are shown in **Tables 6.4, 6.5, 6.6** and **6.7**. The trend of load emission resulting from main sources is produced in **Figure 6.3**. In terms of distribution 71 per cent of emissions are from mobile sources, 8 per cent each from power stations and industrial fuel, 0.7 per cent from open burning practices at disposal sites, 1.8 per cent from various industrial processes, 7.2 per cent from municipal incinerators and 3.3 per cent from industrial wastes.

Water Pollution Sources

From **Table 6.8**, about 2,292 industries were identified as significant water pollution sources in Malaysia. Out of these, food and beverage industries contributed 928, ie. the biggest percentage at 40.5 per cent, with 324 rubber-producing premises and 270 chemical-producers making up the major potentially-polluting industries.

Figure 6.4 shows that from the distribution of water pollution sources by state the majority are found in Selangor (414), Johor (384), Pulau Pinang (328) and Perak (253).

Water Pollution Load

In terms of organic water pollution, human and animal wastes still remain major contributors of pollution followed by manufacturing and agro-based industries. The distribution in terms of BOD discharge of these sources is shown in **Table 6.9**.

ENVIRONMENTAL EDUCATION INFORMATION AND INTERNATIONAL AFFAIRS

Introduction

Activities in environmental education and dissemination of environmental information have continually been on the rise thanks to increasing demand, and 1991 had been a particularly eventful year. Programmes aimed at informing and educating the public, the policy-makers and the private sector continued to play a major role, routinely, in environmental management, while the highlight of the year was unmistakably the first Malaysia Environment Week, 21 to 27 October 1991.

In parallel, promotion of regional and international cooperation in the field of environment had increased manifold as a result of increasingly prominent global issues to include climate change, ozone depletion, biological diversity and transboundary pollution, not to mention the quickening pace of preparations towards the United Nations Conference on Environment and Development (UNCED) June 1992.

Environmental Education

World Environment Day

In keeping with the tradition initiated by United Nations Environment Programme (UNEP), the World Environment Day (WED) was celebrated this

year with the local theme 'Caring Today for Tomorrow'. The celebration, held on 9 June 1991 in the grounds of the Forest Research Institute of Malaysia (FRIM), Kuala Lumpur, was organised by the Department of Environment, The STAR, FRIM, the Malayan Nature Society (MNS), World Wild Fund for Nature (WWF) plus numerous private companies that contributed by way of donating refreshments and souvenirs.

Activities held during the celebration included the following:

- o launching of the Environmental Protection Society of Malaysia (EPSM) cartoon book;
- o nature walks;
- o mural painting for children;
- o origami workshop;
- o face painting for children;
- o musical and dance shows with environmental themes;
- o poetry recital;
- o screening of videos on the environment;
- o screening of a newly released sitcom cum docudrama on the environment, entitled 'Anak Alam' (Child of the Universe) featuring the hit song "Hijau" (Green) by Zainal Abidin;
- o distribution of brochures and pamphlets;
- o sale of organically-produced fertilizers;
- o sale of books, T-shirts, posters and photographs; and
- o collection of recyclable items.

Proceeds from the sale of T-shirts, photographs and recyclables were donated to the MNS Green Fund.

Other activities running up to the WED included the following:

- o screening of a one-minute video clipping entitled 'Pencemar' (polluter) on the Malaysia Radio and Television network (RTM);
- o press releases on the global WED theme of 'Global Warming-Need for Global Partnership';
- o interviews pertaining to the environment on Radio 1 and 3 of RTM;
- o Environment-themed Poetry Writing Competition.

Briefing to visiting Foreign
Delegation - A regular
Development (International/
Information) activity



Environment Talk to students -
An Educational/Information
activity

Environment Day Campaign -
The Director General of Envi-
ronment, Dr Abu Bakar Jaafar
taking part in a tree-planting
exercise at a state-level
celebration of Malaysia Envi-
ronment Week, Johor Darul
Takzim, December 1991



Malaysia Environment Week

The Malaysia Environment Week (MEW) was celebrated for the first time throughout Malaysia on 21-27 October 1991. The objective of MEW was primarily to launch the Malaysia Environment Day in commemoration of the Langkawi Declaration on Environment that was made by the Commonwealth Heads of Government Meeting (CHOGM) on 21 October 1989, and to increase the awareness of the public on issues pertaining to the environment both at local and international levels. The theme for the celebration was "Alam ku Rumah ku" (My World, My Home).

Activities held in conjunction with the MEW at the National level included the following:

- o Environmental Exhibition on Clean Technologies and prize giving ceremony for various competitions held earlier (on poetry and essay writing and drawing amongst school children) at Subang Parade Shopping Complex, Subang Jaya;
- o Screening of 'Anak Alam', the enviro-sitcom docu-drama (mentioned within the WED celebration earlier) on network I of the Malaysia Radio and Television network;
- o Final Inter-university Debate at Universiti Kebangsaan Malaysia, Bangi;
- o Launching of the National Education Programme on Recycling, "Projek Bumiku", organised by the Ministry of Housing and Local Government
- o International Seminar on Carbon Cycle and Global Warming jointly organised by the United Nations Educational, Scientific and Cultural Organisation (UNESCO), International Hydrological Programme (IHP), United Nations Environment Programme (UNEP) and the Department of Environment at Holiday Inn City Centre, Kuala Lumpur;
- o Presentation of ENSEARCH Annual Better Environment Award at Holiday Villa, Subang Jaya;

- o Art Competition for school children at Lake Gardens, Kuala Lumpur;
- o Meeting of Ministers and State Executive Councillors in charge of Environmental Affairs;
- o National Workshop on Air Pollution Control through NO_x, SO_x and Combustion Technology jointly organised by Ministry of Trade and Industry (Japan) and Department of Environment, Malaysia

High points of the MEW, held on 27 October, the last day of the week, were as follows:

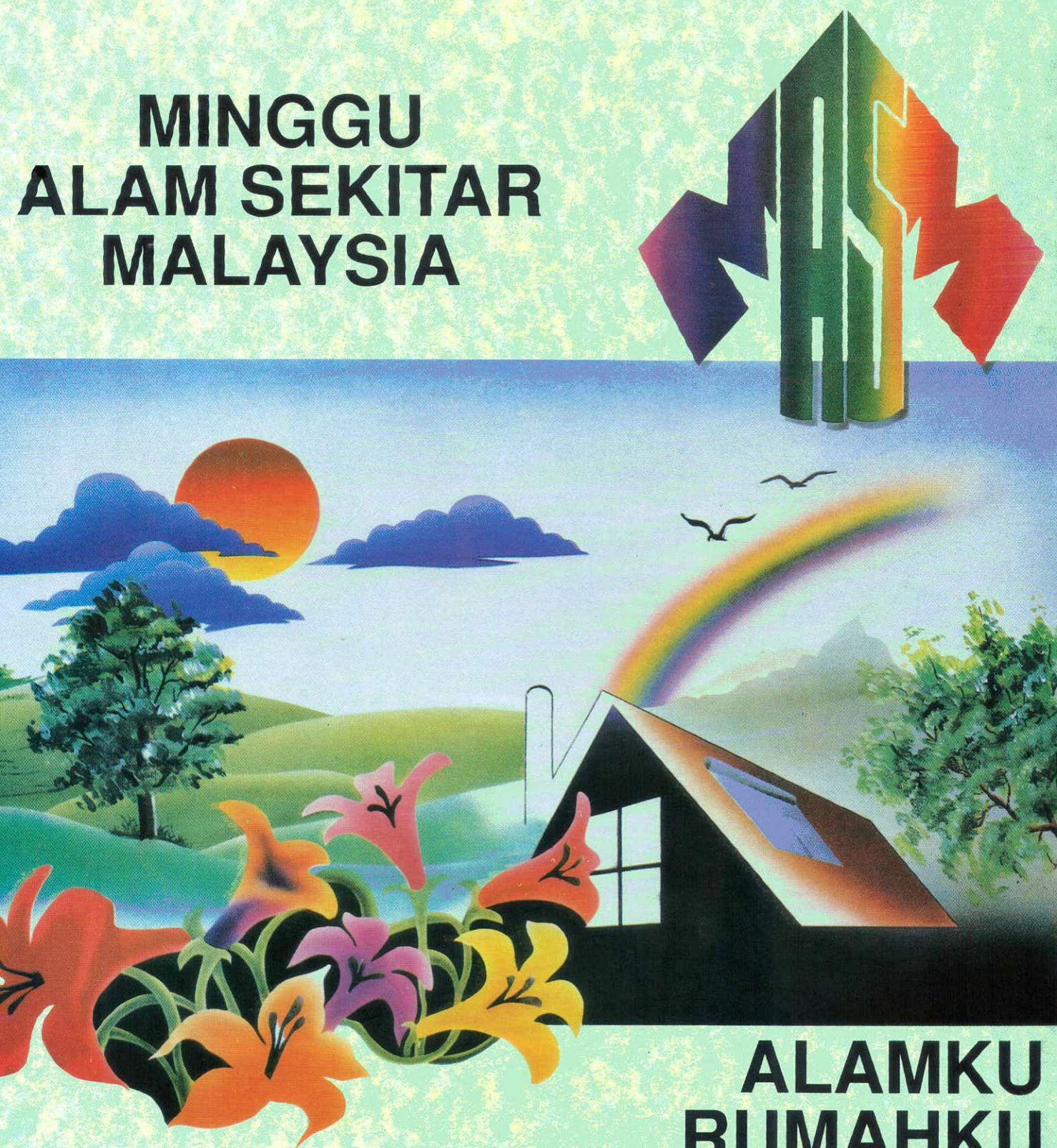
Launching of the Malaysia Environment Day (MED)

The ceremony to announce MED (to be celebrated on 21 October every year) was held at Lake Gardens, Kuala Lumpur on 27 October 1991, launched by His Majesty the Yang Di Pertuan Agong, Sultan Azlan Shah. Her Majesty the Raja Permaisuri Agong, Tuanku Bainun, his Excellency Dr. Ahmad Mattar, the Minister for Environment Singapore, and his Excellency Mr. Maurice Strong, Secretary General of the United Nations Conference on Environment and Development (UNCED) were amongst the distinguished guests attending the ceremony. Other guests included heads of state, government officials, representatives from the private sector, non-government organisations and the public at large.

Activities held during the launching ceremony were as follows:

- o Pledging allegiance to protection of the environment;
- o Medley of environment songs performed by a band-backed choir;
- o Environmental pantomime-dance entitled 'Recycle' and 'Malaysia has a Choice';
- o Exhibition of 'Lot 2020', a house with modern, technologically innovative, environment-friendly amenities.

MINGGU ALAM SEKITAR MALAYSIA



ALAMKU RUMAHKU

Jabatan Alam Sekitar, Kementerian Sains, Teknologi dan Alam Sekitar

Theme and Logo for the Malaysia Environment Week 21-27 October 1991

IKRAR ALAM SEKITAR

Bahawa kami rakyat Malaysia
Berikrar
Akan sentiasa berusaha
Dengan penuh dedikasi dan bertanggungjawab
Untuk mengekal dan meningkatkan
Kualiti alam sekitar
Dengan memperseimbangkan
Pembangunan negara
Dan melindungi alam sekeliling kita
Berdasarkan konsep Pembangunan Berterusan
Selaras dengan Deklarasi Langkawi
Semoga negara
Sentiasa bersih, indah
Disayangi
Serta dihormati

*[Translation:
We the citizens of Malaysia
Declare*

*That we shall continually strive
With utmost dedication and responsibility
To preserve and upgrade
The Quality of the environment*

*By maintaining balance
Between progress of the Nation
And protection of our environment
Guided by the concept of sustainable Development
In line with the Langkawi Declaration
So that the country
Shall always be clean, beautiful
Loved
and respected]*

Environment Pledge (Ikrar Alam Sekitar) read at the Launching of
Malaysia Environment Week, 21-27 October 1991

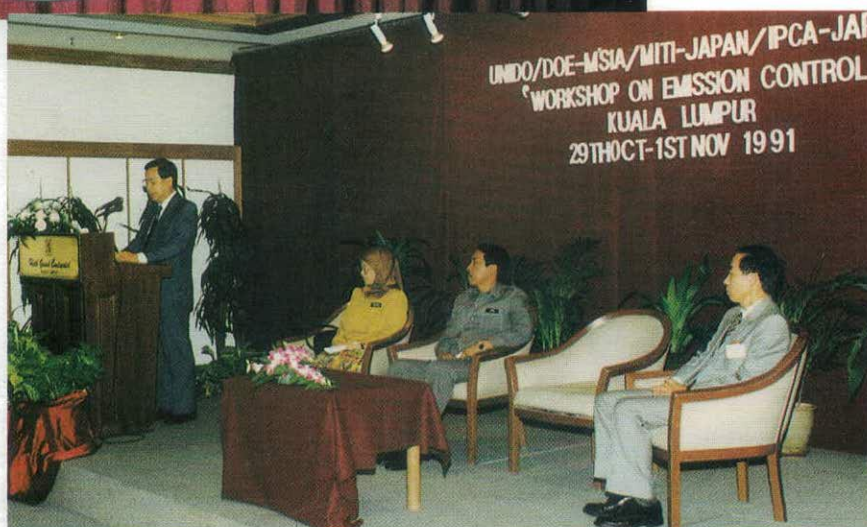
Malaysia Environment Week

Launching of Malaysia Environment Day
by His Majesty
the Yang Di Pertuan
Agong, Sultan Azlan
Shah, Lake Gardens,
27 October 1991



Inaugural Lectures on the
Environment to com-
memorate the Langkawi
Declaration, Kuala
Lumpur 27 October 1991
(Eminent Speakers
H.E. Maurice Strong,
Prof. E.F. Bruenig and
Dato' Dr Salleh Mohd Nor
seated with the Chairman,
Hon. Minister of Science,
Technology and the
Environment,
Mr Law Hieng Ding)

Opening of the
Workshop on
Emissions
Control,
Kuala Lumpur,
29 October 1991





Their Majesties the Yang Di Pertuan Agong, the Raja Permaisuri Agong, the Deputy Prime Minister, Minister of Science, Technology and the Environment and Director General of Environment viewing the Solar Panels of Lot 2020, with Lot 2020 designer, Zulkifli Haron, Lake Gardens, 27 October 1991



Lot 2020, an environment-friendly 'Dream house' of Vision 2020, Lake Gardens, 27 October 1991



Environmental Pantomime cum dance drama, Lake Gardens, 27 October 1991

The Royal Entourage
approaching the Dais
prior to Launching of
Malaysia Environment
Day, Lake Gardens,
27 October 1991



The Centre Band of
the Royal Military
Armour Corp accom-
panying the Choir in
Medley of Environ-
mental songs, Lake
Gardens,
27 October 1991



Selection of Winning entries,
Children's Art Competi-
tion, Lake Gardens,
26 October 1991



Launching of the Malaysia Environment Week and "Clean Technologies" Exhibition by the Hon. Minister of Science, Technology and the Environment, Mr Law Hieng Ding, Petaling Jaya, 21 October 1991

The Hon. Deputy Minister of Science, Technology and the Environment, Mr Peter Chin, giving away the prizes at the finals of the Inter-University Debates on the Environment, UKM, Bangi, 22 October 1991



The Hon. Minister of Science, Technology and the Environment Mr Law Hieng Ding officiating the Regional Workshop on Carbon Cycle and Global Climate, Kuala Lumpur, 24 October 1991.



His Majesty the Yang di Pertuan Agong, Sultan Azlan Shah, conferring the Langkawi Award to the recipient, Dato' Dr Salleh Mohd Nor, the Director General of FRIM, 27 October 1991



The Royal Table at the Langkawi Award Presentation Dinner, Parliament Banquet Hall, KL, 27 October 1991



The enviro-pantomime "Oh Bangau" performance at the Langkawi Award Presentation Dinner, 27 October 1991

Inaugural Lectures to Commemorate the Langkawi Declaration on the Environment (LDE)

Inaugural lectures to commemorate the LDE were held as a follow-up to the Malaysia Government's decision that Malaysia celebrate Malaysia Environment Day on the same day the LDE was adopted, and a series of environment lectures be held on that day, 21 October, annually.

The objectives of the inaugural lectures were as follows:

- (i) To pool resources of expertise including from foreign countries, in a review of:
 - o progress since the Langkawi Declaration on Environment was issued at Langkawi on 21 October 1989; and
 - o global issues on the environment pending the UN Conference on Environment and Development, (UNCED), Brazil, June 1992.
- (ii) To highlight sustainable development practices from the perspective of developing countries; and
- (iii) To promote and improve cooperation in environmental protection at national, regional and international levels.

The inaugural lectures session was officiated with an introductory remark by the Honourable Mr. Law Hieng Ding, Minister for Science, Technology and the Environment. His Excellency Mr. Maurice Strong, Secretary General to UNCED, Professor Dr. E.F. Bruenig and Dato' Dr. Salleh Mohd. Nor, the Director General, Forest Research Institute of Malaysia, were the three eminent speakers at the event. More than 100 participants comprising policy makers, planners, government officials, academicians, development officers from State Development Agencies, non-government organisations and the private sector attended the lectures.

Langkawi Award on the Environment

The MEW celebrations ended at the National level with the presentation of the Langkawi Award on the Environment by His Majesty the Yang Di Pertuan

Agong, Sultan Azlan Shah at the Banquet Hall, Parliament House. The Award, presented during dinner, was conferred upon Dato' Dr. Salleh Mohd. Nor, the Director General of the Forest Research Institute of Malaysia. A dance-drama with an environmental theme, entitled 'Oh Bangau' was also staged during the dinner. This presentation was produced by the Department and choreographed as well as performed by the dance group from Petroliaam Nasional Bhd.

The MEW was also celebrated at State level, as follows:

<u>Date</u>	<u>States</u>
21 October 1991	Melaka, Negeri Sembilan Darul Khusus Perlis Indra Kayangan Pulau Pinang
26 October 1991	Perak Darul Ridzuan
28 October 1991	Selangor Darul Ehsan
29 October 1991	Sabah
16 November 1991	Kedah Darul Aman
23 November 1991	Terengganu Darul Iman
30 November 1991	Pahang Darul Makmur
8 December 1991	Johor Darul Ta'zim

Activities held at the State Celebrations included among others a launching ceremony, tree planting, art and essay writing competitions, environmental exhibitions and lectures on the environment.

Poetry Recital Night

A poetry recital night on themes pertaining to the environment, entitled 'Malam Puisi', was held on 31 May 1991. The main aim of the event was to inculcate environmental awareness through traditional artistic media as well as to launch a poetry writing competition in conjunction with the then approaching World and Malaysia Environment Days. The Honourable Mr. Law Hieng Ding, Minister for Science, Technology and the Environment officiated the event which saw leading poetry writers Rahman Shaari, Siti Zainon Ismail, Lim Swee Tim, Khalid Salleh,

Zurina Hassan, Julfekar Ahmad Shah, A.Ghaffar Ibrahim and Zubir Ali recite poems; and a dance troupe led by Ramli Ibrahim perform dances on environment themes.

Environmental Films and Videos

The major accomplishment of the year in terms of film or video was the Malaysia Environment Day (21 October) screening of 'Anak Alam', the production of which had been completed the year before. Apart from that, two video trailers entitled 'Green World' and 'Pencemar' were produced with the assistance of local studio companies in Kuala Lumpur. Both one-minute videos were produced in Bahasa Malaysia and English on a VHS format. Work on an environmental song entitled 'Recycle' and a 20-minute documentary video entitled 'Environmental Impact Assessment' was also initiated. The production of the song and documentary video is expected to commence in 1992.

Talks to Students and Other Target Groups

Officers from the Headquarters and the State Offices delivered talks to 15,937 students from 118 secondary schools on various subjects on the environment (Table 6.10). These figures show a marked increase over the performance in 1990, ie 12,672 students and 94 schools. A similar trend is observed in the number of talks given to various institutes and agencies as summarised in Table 6.11, ie. 61 compared to 34 in 1990, a near two-fold increase. This surge in public interest had been anticipated judging from the prominence of environment in the media, accelerated further by Malaysia's pro-active involvement in global environmental affairs.

Environmental Exhibitions

The Department continued to organise its own as well as participate in exhibitions organised by other institutes and agencies. A total of 28 exhibitions were held in 1991 covering areas all over Peninsular Malaysia as shown in Table 6.12. Of the DOE's own exhibitions, the one on 'Clean Technologies' organised for Malaysia Environment Week on 21 October 1991 was most memorable in pooling the resources of the public and private sectors.

Environmental Information

Dissemination of Air and Water Quality Data

The Department obligatorily releases data on air and water quality upon request and from time to time in the form of reports such as this, press statements and papers presented at related fora. Such data, the outcome of sampling and analytical work performed by the Pollution Control Division and more specifically the Monitoring section of the Department, is procured either directly from those involved in the collection and collation, the Electronic Data Processing(EDP) Environmental Quality Monitoring software or through the Information section.

Publications

Environmental publications, such as the Environmental Quality Annual Report, SEKITAR Magazines, pamphlets and posters continued to be distributed to various target groups. In 1991, a total of 1400 local and foreign agencies and individuals comprising decision-makers, educational institutions, libraries, non-governmental organisations and others received the Department's publications (Figure 6.5).

A newly published newsletter entitled "BERITA EIA" was added to the list of departmental publications to meet the needs of local and foreign investors in Malaysia.

Environmental information kits comprising the SEKITAR and BERITA EIA newsletters, pamphlets and posters were also made available to the general public during exhibitions and World Environment Day celebrations. To date, the Department's mailing list has grown to 1,216 addresses.

Query-Response Services

Queries on environmental information are serviced alongside collecting and collating information for dissemination. The demand for environmental information has increased by 23.3 per cent from the previous year. Figures 6.6 and 6.7 respectively reflect major channels of information and categories of users for the queries received in 1991.

A high percentage of queries came through the usage of the Department's library, followed by requests through letters and INFOTERRA services. Students were found to be the major users of the library (**Figure 6.8**). A comprehensive evaluation of subject distribution of query is shown in **Figure 6.9**.

Library Services

Information sources available within the library itself comprise more than 14,720 books, reports and papers; 440 titles of magazines, journals and brochures; 43 titles of newspaper cuttings; 50 titles of video films and a collection of slides. **Figure 6.8** indicates the rapid increase in the number of outside users of DOE's library since 1983.

INFOTERRA

A total of 26 queries were received and processed in 1991 under the INFOTERRA network. Out of this, 8 queries were received from other countries. Queries received were from China, Gambia, Iran, Mongolia, New Guinea, U.K. (Scotland), U.S.A (Hawaii) and INFOTERRA PAC in Nairobi, while local users were from the Department. The diagrammatical breakdown of INFOTERRA services in terms of user is illustrated in **Figure 6.9**.

International and Regional Affairs

International Cooperation

United Nations Conference on Environment and Development (UNCED)

The Department continued to participate in preparations towards the above conference by attending regularly organised meetings of the National Steering committee (NSC) on UNCED, the secretariat to which is the Ministry of Foreign Affairs. The Malaysian delegation, of which the Department's representative is a core member, participated actively in the second and third meetings of the UNCED Preparatory Committee. The Delegation played an effective and leading role in contributing towards the formulation of Agenda 21, especially in areas relating to forest, atmosphere, toxic chemicals, toxic and dangerous products, hazardous wastes, coastal

zone management, oceans and seas, freshwater resources, solid wastes, sewage-related issues; and equitable representation of NGOs from developing countries. Meetings and developments pertaining to UNCED have already been reflected in previous related subchapters, particularly on the Montreal Protocol; and further reported below in the context of UNEP activities.

United Nations Environment Programme (UNEP)

As the focal point of UNEP, the Department of Environment undertook the following activities in 1991:-

- (i) Implementation of the project on Sustainable Development whereby the Institute of Advanced Studies, University of Malaya was commissioned to undertake the project on 31 October 1991.
- (ii) Organization of a National Training Workshop on Hazardous Waste Management, at INTAN, Kuala Lumpur from 16-21 December 1991, with the cooperation of INTAN, CDG-South East Asia Program Office and ENSEARCH; to cover topics of storage, transportation, treatment, disposal, institutional, administrative and various other aspects of hazardous waste management.
- (iii) INFOTERRA services, whereby the Department continues to be the National Focal Point for INFOTERRA. In 1991, the number of INFOTERRA queries processed by the Department was 2290.
- (iv) Development and dissemination of information on Chemicals under the International Register of Potentially Toxic Chemicals (IRTPC).
- (v) Participation in meetings on global issues including:
 - 2nd Meeting of UNCED Preparatory Committee, Geneva, 18 March-5 April 1991,
 - Ad Hoc Working Group of Experts on the Implementation of the Amended London Guidelines, Geneva, 8-10 April 1991,

- 2nd Meeting of the Parties to the Vienna Convention for the Protection of Ozone Layer and 3rd Meeting of the Parties to Montreal Protocol, Nairobi, 10-21, June 1991,
- 3rd Meeting of UNCED Preparatory Committee, Geneva, 12 August-4 September 1991,
- Meeting of Experts to Formulate a Draft Strategy for the Reduction of the Degradation of the Marine Environment from Land-Based Sources of Pollution and Activities in Coastal Areas, Nairobi, 9-12 December 1991.
- Technical Meeting of Experts on Proposals for an Intergovernmental Mechanism for Chemical Risk Assessment and Management, London, 16-19 December 1991,
- Ad Hoc Group Meetings of Legal Experts on Non-Compliance with the Montreal Protocol.

United Nations Educational, Scientific and Cultural Organisation (UNESCO)

A UNESCO/UNEP/DOE regional Workshop on the Carbon Cycle and Global Climate Change was organised in Kuala Lumpur from 24-26 October 1991.

The aim of the workshop was to analyse and evaluate available data on past, present and future atmospheric chemical composition with emphasis on CO₂, the response of marine and terrestrial ecosystems to enrichment of atmospheric carbon, and to recommend actions to be taken in order to counteract the anticipated global climatic change.

Commonwealth Consultative Group on Technology Management (CCGTM)

The IDEA or Institutional Development for Environmental Action project continued into the final stages of Phase II as part of the CCTGM programme. There are 5 components of IDEA : management and action projects, research methodology, networking and information services, environmental

advisory services and training. Projects are carried out by teams from Ghana, Guyana, Malaysia, Mauritius, Nigeria, Zambia and Zimbabwe. Malaysia's project is entitled "An Innovative Cooperative Arrangement for Common Wastewater Treatment Facilities among Small Metal-Finishing Industries in the Kelang Valley". Many of these, which are small and medium-sized operations, have faced problems of treating effluents containing heavy metals.

Although the Malaysian project generated a lot of interest because the problem of managing pollution from small industries is common to many countries, the response from the metal finishers themselves have been less than encouraging. The Malaysian Metal Finishing Society (MMFS) faced difficulty in recruiting more members and decided to employ the 'wait and see' attitude when faced with the choice of opting for a cooperative facility or strict enforcement action by the Department. One of the concerns of the cooperative system is the legal aspect, including liability.

In 1991 the third meeting of the IDEA project teams was held in Georgetown, Guyana on 8-12 February, 1991. For the Malaysian project it was recommended that efforts towards getting the metal finishers to work as a cohesive group should continue and more publicity be given about the benefits of the project.

The fourth meeting was held in Accra, Ghana, 30 July-3 August 1991 to review the seven projects and to discuss project proposals for Phase III of the programme.

Regional Cooperation

ASEAN Senior Officials on the Environment (ASOEN)

In 1991, Malaysia continued to be the chairman of ASOEN for the second year. The Second Meeting of ASOEN was convened in Singapore 17-19 June 1991. Amongst the major deliberations of the second ASOEN Meeting were the components of an ASEAN Common Stand on major global environmental issues as part of preparations for ASEAN's participation in the negotiating process of the 1992 UNCED. The meeting also deliberated on the new environmental strategies and plan of action for the

ASEAN region to take ASEAN into the twenty-first century. Also proposed was the establishment of an ASEAN Sub-regional Environment Trust (ASSET) Fund for the implementation of ASEAN Environment programmes.

In 1991, four of the Working Groups established under ASOEN held their meetings as follows:

- (i) First Meeting of ASEAN Working Group on ASEAN Seas and Marine Environment, Bandar Seri Begawan, 19-20 February 1991;
- (ii) First ASEAN Working Group on Environmental Management, Manila, Philippines, 21-22 March 1991;
- (iii) First Meeting of the ASEAN Working Group on Environmental Information, Public Awareness and Education, Bangkok, Thailand, 7-8 May 1991; and
- (v) Second Meeting of the ASEAN Working Group on Nature Conservation, Manila, 6-7 November 1991.

Technology Transfer within ASEAN

Also within the ASEAN Context, Malaysia played its part in appropriate technology transfer by hosting the ASEAN-UNDP Workshop on Pollution Control in the Palm Oil and Rubber Industries, 7-9 January 1991.

The Straits of Malacca and Singapore Revolving Fund Committee (RFC)

The Straits of Malacca and Singapore Revolving Fund Committee which was established in 1981 to combat oil pollution from ships in the Straits of Malacca and Singapore, was maintained and operated by the three countries bordering the Straits, namely, Indonesia, Malaysia and Singapore, on a rotational basis of a five-year period.

The management of the Fund was handed over to Singapore in March 1991, where the Twelfth Meeting of the RFC was convened on 6-17 September 1991. Among the issues deliberated during the twelfth Meeting was the administrative and operational budget for 1991/92.

The Fourth Technical Meeting of the RFC, which was convened in Pangkor Island, Malaysia, 28-29 January 1991, reviewed the Standard Operating Procedure, Memorandum of Understanding and the Procedure of Withdrawal from the Fund.

Economic and Social Commission for Asia and the Pacific (ESCAP)

The Department of Environment has been working closely with the Division of Industry, Human Settlements and Environment of ESCAP in the implementation of various activities and projects. These projects include:

- (i) Development of Methodologies, Guidelines and Human Resources for Hazardous Waste management in Developing Countries of the ESCAP region.
- (ii) Planning and Management of Environmental Technology in Asia and the Pacific.
- (iii) Integration of Environmental Considerations into Coastal Tourism Development Planning.

Officers of the Department also attended meetings and workshops organised by ESCAP as follows:

- ESCAP Project Meeting of Senior Officers on Environment and Development in Asia and the Pacific, 13-19 February 1991, Bangkok.
- ESCAP/UNDP Expert Group Meeting on Pollution, Environment and Sustainable Development, 13-18 May 1991, Pattaya, Thailand.
- ESCAP/UNDP/Workshop on the Implementation of the Regional Strategy on Environmentally Sound and Sustainable Development (ESSD), 1-5, July 1991, Rayong, Thailand.
- ESCAP/UNDP Workshop on Economic Issues and Sustainable Development, 16-21 September 1991, Bombay.
- ESCAP/UNDP Experts Group Meeting on Institutions, Legislation and Public Participation Relating to Environment, 9-13 December 1991, Bangkok.

ESCAP also established an Inter-agency Committee on Environment in Asia and the Pacific to enhance the coordination and strengthening of regional cooperation in the formulation, review, monitoring and reporting of activities and initiatives within the region for the promotion of environmentally sound and sustainable development. On behalf of ASEAN, Senior Officers from the Department of Environment attended the Committee's first and second meetings held in Bangkok on 17 July 1991 and 18 December 1991 respectively.

In addition, the services of an ESCAP consultant were engaged from 24 April to 13 May 1991 to review the ASEAN Environmental Programme (ASEP) III and to assist in the formulation of a National Policy on the Environment.

The Coordinating Body on the Seas of East Asia (COBSEA)

The Intergovernmental Meeting on the East Asian Seas Action Plan, held in Bangkok, 9-11 December 1981, established the Coordinating Body on the Seas of East Asia (COBSEA), to serve as the overall authority to determine the contents of the action plan, to review its progress and approve its programme of implementation through periodic meetings of governments. The Department of Environment is the national focal point for COBSEA in Malaysia.

The Ninth Meeting of COBSEA was convened in Kuala Lumpur, Malaysia, 13-15 November 1991. The meeting, besides reviewing the progress of the implementation of the action plan since the Eighth Meeting of COBSEA held in 1989, also discussed COBSEA strengthening its coordinating capabilities in the East Asian Seas region. The Meeting also agreed in principle to the establishment of a Regional Coordinating Unit (RCU) with the following broad Terms of Reference:

- (a) to facilitate the development and coordination of activities under the East Asian Seas action plan at national, sub-regional, and international levels in concert with other regional and international organizations;
- (b) to act as a supervisory body in the implementation and assessment of projects and activities carried out under the purview of the COBSEA; and

- (c) to serve as a focus for the collection and dissemination of information amongst member countries, as well as between the East Asian Seas region and other regional seas and relevant international organizations.

Apart from the above meeting, Malaysia also continued to implement Project EAS 19: Development of Management Plans for Endangered Coastal and Marine Living Resources in East Asia-training phase, by organising the second Regional Meeting of Senior Marine Park Managers to evaluate the project, in Langkawi on 11-14 March 1991.

ASEAN Cooperative Programmes on Marine Science

In 1991, the Department continued to provide the Chairmanship at national level besides being the secretariat of the National ASEAN Sub-Committee on Marine Science that is responsible for the coordination of the three on-going cooperative programmes, described below.

ASEAN-Australia Cooperative Programme on Marine Science

Project I : Regional Ocean Dynamics.

The Phase I of the Project, earlier known as Tides and Tidal Phenomena had been completed in June, 1990. The activity of data collection on tides is still continuing at 5 stations installed under the project from the remaining funds available.

Project II : Coastal Living Resources.

Phase I of the project concluded successfully on 30 June 1989. The project has gone into the second year of Phase II, coordinated by the Ministry of Science, Technology and the Environment. Research activities were carried out by the higher learning institutions with support from various Government agencies. Areas of research activities are as follows:

- (i) Coral Reef at Pulau Redang, Terengganu
- (ii) Soft Bottom communities at Pulau Redang, Terengganu and Matang, Perak

(iii) Mangroves, in terms of

- (a) Productivity at Matang, Perak
- (b) Fisheries connections at Matang, Perak and Sementa, Selangor.

The 3rd Meeting of the Project Management Committee for Phase II of the Project was held at Langkawi, Malaysia on 28-30 January 1991. The meeting aimed at :

- reviewing the activities of Phase II to date;
- discussing the implementation and the difficulties encountered in Phase II; and
- discussing and deliberating on the other matters as set out in the agenda.

A workshop on Mangrove Fisheries and Connections was held on 26-30 August 1991 at Tambun Inn, Ipoh, Perak. The objectives of the workshop were:

- to determine the degree and mode of connection between the major coastal ecosystems, viz, mangrove, soft bottom/sea grass communities with particular regard to commercial fisheries;
- to determine the importance of mangroves and seagrass communities as protected habitats and/or food sources supporting commercial fisheries; and
- to discuss progress made towards the above objectives during Phase II of the LCR component and conduct in-depth discussion/evaluation of the methodologies.

ASEAN-Canada Cooperative Programme on Marine Science

Phase II: Establishment of Environmental Criteria for the Development and Management of Living Marine Resources and Health Protection

The goal of the Project is to optimise the management and development of coastal resources while formulating criteria for the marine environment so as to provide environment protection and socio-economic upliftment of the people in the ASEAN countries.

The MOU for the ASEAN-Canada Cooperative Programme on Marine Science was signed by Canada and Negara Brunei Darussalam on behalf of ASEAN, on 24 July 1991 in Kuala Lumpur, Malaysia.

The first activity carried out under the project was the Inception Mission to ASEAN Countries from 17 November to 8 December 1991, to implement the following objectives:

- to brief the National Coordinating Agency of each ASEAN nation on the activities to be undertaken under CPMS-II as outlined in the Memorandum of Understanding and the management Plan,
- to discuss the extent of and current limitations to the Government of Canada's financial contributions to CPMS-II to be provided through the Canadian Executing Agency (EVS Environment Consultants),
- to review institutional roles, responsibilities and the current structural organization of CPMS-II; and
- to obtain information on the status of readiness of the participating ASEAN countries to undertake CPMS-II activities, including:
 - (a) designation of country program coordinator;
 - (b) identification of collaborating agencies with laboratory facilities, staff and equipment;
 - (c) collaborating agency counterparts for CPMS-II activities;
 - (d) logistical support and scheduling constraints;
 - (e) local costs support for counterpart activities; and
- to obtain information on national and international programmes which may influence or complement the nature of CPMS-II activities.

ASEAN-US Cooperative Programme on Marine Science Coastal Resource Management Project (CRMP)

The ASEAN-USAID Coastal Resource management Project (CRMP) was developed to assist ASEAN member countries in strengthening their capabilities to utilize their renewable resources on a sustainable basis. The project comprised 2 major components:

- (a) Phase I - Resource Assessment and Planning;
- (b) Phase II- Training and Information Dissemination;
 - (i) The key component of the Project Phase I ie. Resource Assessment Planning and Research in South Johor, a pilot site, has been completed and the Final Report of the Integrated Coastal Resource Management Plans was completed in January 1991. The project has been allowed to continue to 1992 for publication of project documents.
 - (ii) Phase II of the project which was expected to commence in 1991 had been cancelled in favour of the Environmental Improvement Project.

Bilateral Cooperation and Assistance

The Department of Environment received technical assistance from foreign countries under bilateral arrangements and assistance in the form of experts attachment, sponsorships to attend workshops/seminars/ courses, study tours etc, in the following spheres of cooperation:

Malaysia-Denmark

The Hon. Minister of Science, Technology and the Environment, Malaysia, was official guest to the Hon. Minister of Environment, Denmark, on 24-29 May 1991. Areas of discussion during the Hon Minister's visit to Denmark included bilateral cooperation on Toxic and Hazardous Waste Management.

Malaysia-France

Under the Technical Assistance Programme for the Development of a Central Electronic Data Processing System for the Management of Toxic and Hazardous Wastes, a review mission was conducted on 10-22 June 1991, incorporating description of the software's main features and advice for end-users in order to allow a fast processing of Tracking and Monitoring of Scheduled Wastes.

Malaysia-Germany

Under the Technical Cooperation between Germany and Malaysia, a group of German experts was in Malaysia from 17 November to 1 December 1991. The experts were on a fact-finding mission on the development and perspective of the institutions of Standards, testing engineering and quality assurance with emphasis on standardization.

Malaysia-Japan

A workshop on Emission Control through Combustion Technology, De-Dusting/NOx/SOx Technology and Fuel Quality Improvement was convened in Kuala Lumpur 29 October 1991 to 1 November 1991, organised by the Department and United Nations Development Programme (UNDP) and funded by the Ministry of International Trade and Industry of Japan and the International Pollution Control Association of Japan. Resource persons included 5 experts from the International Pollution Control Association of Japan.

An Air Quality Management Study for Klang Valley was also initiated with technical assistance from JICA. The study aimed to prepare an implementable guideline for air pollution control in the Klang Valley Region with special emphasis on improving air quality monitoring capability, identification of major pollution sources, and the prediction of air pollution and its control measures.

Malaysia-New Zealand

Under the Overseas Visitor Programme, the Director General of Environment visited New Zealand from 18-24 November 1991, the objectives of the programme being to enhance mutual understanding of each country's background and aspirations, besides consideration of matters of mutual concern on the environment.

Malaysia-Singapore

The inaugural meeting of the Malaysia-Singapore Joint Committee on the Environment was convened in Johor Bahru, Johor Darul Ta'zim of 5 February 1991. The meeting was officially declared open by the Hon. Tan Sri Muhyiddin bin Haji Yassin, the Chief Minister of Johor. The Second meeting of the Committee was held in Singapore, 24-25 July 1991. This Joint Committee was established to provide a forum for the exchange of perspectives and experiences on environmental matters of mutual interest with a view for further cooperation. Areas of mutual concern of both countries include air pollution, both from industries and motor vehicles; pollution of the Straits of Johor; environmental standards and hazardous chemical management.

The working groups established thereunder to formulate programme areas, work procedures and strategy have started work.

Malaysia-Sweden

A Malaysia-Sweden Seminar on Environmental Technology was held in Kuala Lumpur 30-31 May, 1991. The seminar was organised by the Embassy of Sweden, the Swedish Trade Council and the Department of Environment, Malaysia, to provide the opportunity for both Sweden and Malaysia to share experiences in solving pollution problems.

In addition, work towards a Concessionary line of Credit for purchase of environmental technologies and services began in 1991 with negotiations between the Swedish government, BITS (a technical cooperation arm of the Swedish government) and the Malaysian government; whereupon part of the loan returns was proposed to be directly contributed to the

Department of Environment's Environmental Education Trust Fund.

A summarised listing of all international courses, workshops, conferences, seminar, fora, meetings, and visits attended by officers of the Department is detailed in **Appendices 6.1 to 6.7**.

ELECTRONIC DATA PROCESSING

The Computerisation Programme

The computerisation of the Department of Environment started, in late 1988, with the acquisition of miniform computer with a Local Area Network (LAN) hardwares and development of 8 software applications. Currently, the system is running on UNIX-based Super-mini computer HP 9000, Model 825S.

The first system to be implemented was the 'Office Administration system' which contains several modules covering the functions of filing, mailing list, contact persons, list of committees, and schedules of meeting.

In 1991 a total of six software applications had been completed and accepted softwares covering Pre-Siting Evaluation, Pollution Sources Inventory, Environmental Quality Monitoring, Enforcement and Licensing, Environmental Impact Assessment, and Environmental Input to Development Projects.

These systems are currently linked to one another, and allow sharing of data, information and other resources. The whole network of systems would be fully implemented in 1992.

Complementing this, the Department of Environment was also involved in preparations to acquire a Geographical Information System (GIS). The offering of tenders was done in August 1991 and the evaluation of the tender proposals was finalised in December 1991. The installation of the system is expected to be completed in May 1992.



Bilateral Cooperation on Environmental Affairs - First Meeting of the Malaysia-Singapore Committee on the Environment (MSJCE), 5 February 1991

Table 6.1

Malaysia: Potentially Significant Air Pollution Sources, 1991

Type of Sources	Number of Sources				
	1987	1988	1989	1990	1991
1. Stationary Sources					
a. Chemical Industries					
- Pesticides and Fertilizer	5	5	5	5	5
- Acid Manufacturing	6	6	6	6	6
- Chemical Manufacturing	198	198	196	192	194
- Paint and Varnish	19	19	19	19	20
- Plastics and Resin	88	92	92	90	91
- Soaps and Detergents	9	9	9	9	9
	325	329	327	321	325
b. Food and Agriculture					
- Animal Feed		4	4	6	6
- Fishmeal Mill	189	189	185	185	182
- Palm Oil Mill	250	250	250	260	258
- Rice Mill	250	373	352	318	301
- Rubber Mill	209	209	209	211	209
- Rubber Products Manufacturing	69	77	78	82	91
- Smoke House	700	700	682	655	627
	1667	1802	1760	1717	1674
c. Metal Industries					
- Aluminium Works	19	19	18	19	19
- Foundries	295	297	295	277	261
- Iron and Steel Mill	24	24	24	24	24
- Lead Smelter and Related Works	4	4	4	11	11
- Tin Smelting	4	4	4	5	5
	346	348	345	336	320
d. Mineral Products					
- Asbestos Works	5	5	5	5	5
- Asphalts and Concrete Batching	60	62	62	56	57
- Bricks Work Clay and Clay Works	94	98	96	82	82
- Cement Products	176	178	178	178	180
- Glass Work	28	29	27	27	27
- Lime and Plaster Works	321	321	320	319	315
- Portland Cement Manufacturing	5	5	5	5	5
- Stone Quarrying	305	355	324	293	285
	994	1053	1017	964	956

Continuation...

e. Petroleum Industry					
- Petroleum Refineries	5	5	5	5	5
- Miscellaneous Petroleum Process	28	28	28	28	32
- Gas Processing	24	24	24	24	25
	57	57	57	57	62
f. Woodbased Products and Others					
- Charcoal Making	520	547	522	493	484
- Pulp and Paper Recycling	6	6	6	6	7
- Paper Products	51	54	53	54	58
- Sawmills	1047	1079	1066	1014	1006
	1624	1686	1647	1567	1555
g. Fuel Combustion Sources					
- Thermal Power Station	14	14	14	14	14
- Boiler and Furnaces	2040	2141	2209	2374	2526
- Incinerator	214	223	234	250	279
	2268	2378	2457	2638	2819
Sub Total I	7281	7653	7610	7600	7711
2. Mobile Sources					
- Motor Vehicles					
- Petrol Powered	4211566	3974845	4208947	4461275	4844932
- Diesel Powered	353508	274913	298177	350158	366990
Sub Total II	4565074 (a)	4249758 (b)	4507124 (c)	4811433 (d)	5211922 (e)
3. Solid Waste Disposal					
- Municipal Waste Disposal Site *	89	38	29	43	78
- Municipal Incinerator	2	2	2	2	2
Grand Total III	91	40	31	45	80
Grand Total	4572446	4257451	4514765	4795049	5212002

Note:

* : Open Burning Practice detected at Solid Waste Disposal Sites.

(a) : Number of Motor Vehicles Until December, 1987 for Peninsular Malaysia

(b) : Number of Motor Vehicles Until December, 1988 for Peninsular Malaysia only.

(c) : Number of Motor Vehicles Until December, 1989 for Peninsular Malaysia only.

(d) : Number of Motor Vehicles Until October, 1990 for Peninsular Malaysia only.

(e) : Number of Motor Vehicles Until November, 1991 for Peninsular Malaysia only.

Table 6.2

Peninsular Malaysia: Number of Motor Vehicles Until November, 1991

Type of Vehicle	No. of Vehicles			Percentage
	Petrol-Powered	Diesel-Powered	Total	
Motorcycle	3036863	-	3036863	58.3
Taxi	9576	16932	26508	0.5
Private Car	1633352	44719	1678071	32.2
Van & Lorry	151774	175451	327225	6.3
Bus	1420	21339	22579	0.4
Others	11947	108549	120496	2.3
TOTAL	4844932	366991	5211922	100.0
Percentage	92.9	7.1	-	-

Source : Road Transport Department, Malaysia.

Table 6.3

**Malaysia : Summary of Emission of Pollutant (Uncontrolled) to the Atmosphere
by Sources ('000 MT), 1987-1991**

Sources Emission	Mobile	Stationary Sources				Open Burning Practice	
		Power Station	Industrial Fuel	Domestic	Industrial Processes	Municipal Disposal	Industrial Waste
Particulate							
1991	3.6	2.60	7.40	1.12	15.76	18.3	13.60
1990	5.0	2.57	9.64	1.126	15.58	4.6	9.20
1989	3.7	2.42	6.44	0.88	15.4	1.3	5.96
1988	3.3	2.44	8.9	0.001	23.7	3.0	1.21
1987	3.0	1.1	10.4	0.002	-	4.4	1.88
SOx							
1991	4.4	32.00	33.78	3.21	0.05	1.1	0.72
1990	3.2	31.24	39.21	3.0	0.04	0.1	0.01
1989	3.0	30.31	31.79	2.64	0.03	0.1	0.0009
1988	2.7	182.1	53.3	0.06	9.5	0.2	0.086
1987	2.7	195.0	54.1	0.04	-	0.1	0.084
NOx							
1991	47.2	38.40	26.00	1.7	1.23	3.4	0.72
1990	43.2	40.02	26.55	1.6	1.15	1.0	0.01
1989	29.4	38.47	21.37	1.23	1.1	0.5	0.004
1988	35.9	36.9	21.6	0.008	1.9	1.0	0.523
1987	35.6	41.9	25.9	0.011	-	1.0	0.442
CO							
1991	595.5	1.10	5.45	0.169	0.32	26.3	7.1
1990	551.4	3.28	7.35	0.166	0.31	8.2	4.2
1989	510.9	1.67	1.75	0.13	0.3	6.4	0.6
1988	475.9	0.3	1.8	0.004	1.2	4.7	17.0
1987	506.1	0.2	4.7	0.016	-	8.2	21.5
HC							
1991	30.3	2.7	5.48	0.18	0.15	20.4	9.60
1990	28.0	1.13	1.667	0.177	0.14	4.0	2.10
1989	25.94	0.29	1.59	0.12	0.2	3.2	0.03
1988	24.3	1.7	1.7	0.02	0.2	14.2	2.21
1987	23.7	1.9	3.0	0.02	-	16.9	0.45
TOTAL							
1991	681.0	76.8	78.11	6.378	17.51	19.5	31.94
1990	630.8	78.24	84.41	6.069	17.22	17.9	15.52
1989	572.7	73.26	62.94	5.0	17.0	11.5	6.59
1988	542.1	223.4	87.3	0.093	36.5	23.1	20.976
1987	571.1	240.1	98.1	0.089	-	30.6	26.24
Percentage							
1991	70.9	8.0	8.1	0.7	1.8	7.2	3.3
1990	74.20	9.2	9.9	0.8	2.0	2.1	1.8
1989	76.5	9.8	8.4	0.7	2.3	1.5	0.9
1988	58.1	23.9	9.4	0.001	3.9	2.5	2.2
1987	59.1	24.8	10.2	0.009	-	3.2	2.7
Percentage Compared 1987	+11.8	-16.8	-2.1	+0.8	+1.8	+4.0	+0.6

Table 6.4

Malaysia: Inventory of Fuel Burning Equipment (FBE) Approval, 1991

Type of FBE	Fuel Consumption (tonnes/year)	Approvals	
		Number	Percentage
I. BOILER			
1. Solid Fuel	772.66	50	15.0
2. Liquid Fuel	99.44	116	34.8
II. INCINERATOR			
1. Wood Based	2.20	9	2.7
2. Palm Oil Mill	20.86	2	0.6
3. Others	4.21	4	1.2
III. OTHER FBE			
1. Kiln	26.20	3	0.9
2. Furnace	9.31	11	3.3
3. Heater			
- Solid Fuel	4.00	3	0.9
- Liquid Fuel	10.00	24	7.2
4. Generator	61.21	101	30.3
5. Dryer	1.00	4	1.2
6. Burner	3.20	4	1.2
7. Reactor	-	-	-
8. Oven	0.01	2	0.6
9. Cupola	-	-	-
TOTAL	1014.30	333	100.0
TOTAL			
1987	257.3	196	-
1988	260.6	183	-
1989	1157.2	134	-
1990	887.06	303	-

Table 6.5

**Malaysia: Pollutant Emission Load From Major Fuel Burning
Equipment by Industrial Sectors, 1991⁽¹⁾**

Industry	Emission Load (metric tonnes)						Total
	Liquid Fuel - SOx	Solid Fuel					
		Particulate	SOx	NOx	CO	HC	
Rubber Factory	-	-	-	-	-	-	-
Palm Oil Mill	90.00	1420.00	-	92.60	-	-	1602.60
Quarry	12.60	-	-	-	-	-	12.6
Textile	642.00	-	-	-	-	-	642.00
Food	572.00	41.20	4.00	32.60	70.00	120.4	840.20
Leather	10.00	-	-	-	-	-	10.00
Woodbased	266.20	333.30	12.70	280.60	600.00	1411.00	2903.80
Paper and Printing	321.00	-	-	-	-	-	321.00
Chemicals	567.00	-	-	-	-	-	567.00
Rubber Product	612.00	-	-	-	-	-	612.00
Metal Fabric	2.40	-	-	-	-	-	2.40
Non Metal	244.00	21.60	2.40	47.10	401.00	92.00	808.10
Iron & Steel	577.40	-	-	-	-	-	577.40
Electrical	361.60	-	-	-	-	-	361.60
Commercial Building	312.80	-	-	-	-	-	312.80
Institution	544.80	-	-	-	-	-	544.80
TOTAL	5135.80	1816.10	19.10	452.90	1071.00	1623.40	8675.90
Total 1988	1717.10	172.10	396.00	187.00	693.00	1207.00	4185.20
1989	1844.85	512.91	9.61	105.26	141.60	256.27	2843.32
1990	5382.28	2142.61	53.34	552.89	1138.70	1490.46	10760.28

Note:

¹ Approved by the Department of Environment in 1991

Table 6.6

**Malaysia: Estimated Emission Loads From Various
Industrial Processes, 1991**

Industry	Emission Load (metric tonnes/year)				
	Particulate	SOx	NOx	HC	CO
Sea Food	1.1	-	-	-	-
Sago Tapioca	600.0	-	-	-	-
Paper and Pulp	421.6	50.0	-	150.0	320.0
Fertilizer and Pesticides	744.2	-	1200.0	-	-
Chemical Products	1500.0	-	31.2	-	-
Clay Products	3.0	-	-	-	-
Cement and Cement Products	7662.0	-	-	-	-
Quarrying	4820.0	-	-	-	-
Iron, Steel Foundries and Tin	7.0	-	-	-	-
Total	15758.9	50.0	1231.2	150.0	320.2
Total					
1988	23701.1	9521.5	1863.4	203.0	1136.0
1989	16438.1	26.0	1079.8	133.0	301.9
1990	15582.4	48.0	1153.7	142.0	312.6

Table 6.7

Malaysia: Estimated Emission of Air Pollutants from Fuel-Burning Sources, 1991

Sources	Fuel Burning	Consumption ¹ (000 tonnes/ year)	Major Pollutants (000 tonnes/year)				
			Particulates	SOx	NOx	HC	CO
Power Station	Natural Gas	1950	0.60	11.00	13.00	0.10	0.60
	Fuel Oil	2000	2.60	20.00	25.40	1.00	2.10
	Diesel	235	-	-	-	-	-
Total I		4269(50.4)	2.60	32.00	38.40	1.10	2.70
Industry	Natural Gas	390	1.50	5.00	3.00	1.10	2.10
	LPG	60	0.02	0.010	1.60	0.066	1.11
	Kerosene	10	0.03	0.10	0.02	0.002	0.002
	Diesel	1850	3.92	18.59	13.84	0.74	1.05
	Fuel Oil	600	1.72	5.68	4.50	0.35	0.22
	Coal	500	0.60	4.00	3.00	2.10	1.00
Total II		3485(40.2)	7.40	33.78	26.00	5.458	5.48
Domestic & Commercial	Natural Gas	60	0.10	0.70	0.20	0.05	0.05
	LPG	400	0.20	0.04	0.60	0.03	0.06
	Kerosene	248	0.73	2.10	0.60	0.10	0.06
	Diesel	39	0.08	0.39	0.29	0.02	0.02
	Fuel Oil	50	0.01	0.01	0.01	0.007	0.006
Total III		797(9.4)	1.12	3.21	1.7	0.18	0.169
Grand Total		8473 (100)	11.12 (6.9)	68.99 (42.8)	66.1 (40.9)	6.74 (4.2)	8.35 (5.2)
Grand Total							
1987		6323	10.4	252.9	58.7	1.5	3.0
1988		6809	10.9	234.0	38.1	1.6	3.2
1989		7016	9.24	63.243	61.37	1.535	3.389
1990		7747	11.096	68.02	67.62	5.165	9.658

Note:

1

Source: Ministry of Energy, Telecommunications and Post

(): Indicate percentage value

Table 6.8

Malaysia: Distribution of Major Stationary Industrial Sources of Water Pollution, 1991

State	Major Water Pollution Sources/Industries							
	Palm Oil	Raw Natural Rubber	Rubber Product	Food and Beverage	Textile and Leather	Paper	Chemicals	Total
Selangor	29	13	132	94	22	15	109	414
Johor	67	41	36	136	59	11	34	384
Pulau Pinang	5	9	35	164	58	14	43	328
Perak	36	26	28	133	13	5	12	253
Kedah	3	29	22	98	9	2	8	171
Terengganu	11	3	6	84	16	-	-	120
Pahang	58	20	3	33	-	1	1	112
Wilayah Persekutuan	-	4	26	21	10	13	31	105
Sabah	27	4	3	49	5	11	5	104
Negeri Sembilan	12	22	13	15	2	22	9	95
Melaka	3	12	17	21	7	3	11	74
Kelantan	8	11	1	28	4	1	3	56
Sarawak	6	4	1	38	-	3	4	56
Perlis	-	-	1	14	1	-	-	16
Total	265	198	324	928	206	101	270	2292
Percentage	11.6	8.6	14.1	40.5	9.0	4.4	11.8	-

Table 6.9

Malaysia: Organic Pollution Load Discharged According to Sector, 1987 - 1991

Year	1987		1988		1989		1990		1991	
	1 BOD Load	2 Population Equivalent	BOD Load	Population Equivalent	BOD Load	Population Equivalent	BOD Load	Population Equivalent	BOD Load	Population Equivalent
1. Agro-based Industries (Palm Oil and	11	0.22	11	0.22	11	0.22	15	0.30	12	0.24
2. Manufacturing Industries	20	0.40	19	0.38	21	0.42	25	0.50	25	0.50
3. Agriculture (Animal Husbandary)	55	1.10	55	1.10	60	1.20	65	1.30	65	1.30
4. Population (Sewage)	348	6.96	358	7.16	366	7.32	380	7.60	385	7.70
Total	434	8.68	443	8.86	458	9.16	500	10.00	487	9.74

Note:

1

BOD Load in tonnes/day

2

Population equivalent (in million) using BOD Load of 0.05 kg/capita/day

Table 6.10

**Department of Environment: Environment Talks To Secondary Schools,
1988-1991**

State	Number of Schools				Number of Students			
	1988	1989	1990	1991	1988	1989	1990	1991
Kedah	12	1	)	10	1390	50	)	1390
Perlis	1	1	)19	1	150	60	)2400	80
Pulau Pinang	7	-	)	6	870	-	)	850
Perak	13	10	17	18	2690	1135	2368	3000
Melaka	4	6	8	8	500	2180	2460	2460
Negeri Sembilan	-	-	1	4	-	-	150	580
Selangor	13	5	12	12	1187	360	1629	1629
Wilayah Persekutuan	11	3	-	6	690	500	-	500
Johor	6	3	6	5	900	844	930	850
Kelantan	1	-	-	-	200	-	-	-
Terengganu	6	5	2	2	1150	220	115	115
Pahang	1	7	3	7	80	1015	160	489
Sabah	7	4	13	26	1015	547	350	1884
Sarawak	3	8	13	13	920	550	2110	2110
TOTAL	85	53	94	118	11742	7461	12672	15937

Table: 6.11

Department of Environment: Talks to Target Groups, 1991

Date	Agency/Institute	Target Group	Number of Attendees
25 January	State Economic and Development Corporation, Selangor	Local Authorities	20
29 January	MARA Institute of Technology Shah Alam	Engineering Students	15
31 January	Public Health Institute	Students of Master in Public Health	21
23 January	Royal Malaysian Air Force Kuala Lumpur	Safety Officers	25
2 February	National Film Development Corporation, Malaysia	Staff Members	40
6 February	University of Malaya Kuala Lumpur	Engineering Students	20
6 March	Shell Malaysia Trading Sdn. Bhd. Kuala Lumpur	Staff Executives	80
9 March	National Library, Kuala Lumpur	Students	30
21 March	University of Agriculture Serdang	Second Year Undergraduates	20
22 March	Taylors College Subang Jaya	Students	30
26 March	Teachers Training College Kuala Lumpur	Trainee Teachers	200
2 April	MARA Institute of Technology	Second Year Students	20
24 April	Raja Melewar Teachers's Training College	Trainee Teachers	100
25 April	Federation of Malay Consumers Association, Kuala Lumpur	Participants of Workshop on Environmental Reporting	40
26 April	Consolidated Engineering Sdn.Bhd.	Staff Members	100
8 May	INTAN, Bukit Kiara, Kuala Lumpur	Kenya Senior Officers	20
21 May	Public Health Institute, Kuala Lumpur	Second Year Health Inspectors	20
13 June	Curriculum Development Centre, Kuala Lumpur	Resource Teachers	40
21 June	Malaysia Scientific Association/ Ministry of Science, Technology and the Environment, Johor Bahru	Students	200

Continuation...

Date	Agency/Institute	Target Group	Number of Attendees
27 June	Asra Pacific Institute for Broadcasting	Participants of the Workshop on Integrated Media Planning and Production of Environmental Programmes	20
1 July	INTAN, Bukit Kiara, Kuala Lumpur	Participants of Planning & Project Management Course	24
2 July	Water Supply Department, Seremban	Local Authorities and Industries	100
2 July	Universiti Kebangsaan Malaysia, Bangi	Participants of the 7th Chemical Engineers Symposium	40
3 July	Universiti Kebangsaan Malaysia Bangi	Participants of the 7th Chemical Engineers Symposium	40
19 July	Palm Oil Research Institute of Malaysia, Bangi	Participants of Training Course for Palm Oil Mill Personnel	30
20 July	INTAN, Sg. Petani	Local Authorities	30
27 July	International Islamic Society Kuala Lumpur	Law Students	50
28 July	The Institute of Engineers Malaysia, Johor Bahru	Engineers	40
2 August	Curriculum Development Centre	Teachers	75
6 August	Institute for Policy Research Kuala Lumpur	Lecturers	20
9 August	Public Health Institute, Kuala Lumpur	Trainee Nurse	35
12 August	Malaysian Professional Centre, Petaling Jaya	Members	40
13 August	Petroleum Nasional Berhad, Permata, Bangi	Petronas Staff & Industries	30
14 August	Malaysian Institute of Chemistry (Southern Branch), Johor Bahru	Local Authorities, Chemists	40
17 August	The Institute of Certified Engineers, Malaysia, Kuala Lumpur	Engineers	30
22 August	Kesatuan Pekerja-Pekerja Syarikat Telekom Malaysia, Bhd. Kuala Lumpur	Union Members	50

Continuation...

Date	Agency/Institute	Target Group	Number of Attendees
25 August	Special Teachers Training College, Kuala Lumpur	Trainee Teachers	40
28 August	INTAN, Bukit Kiara, Kuala Lumpur	Decision makers	103
2 September	Seri Kota Teachers Training College, Perak	Trainee Teachers	200
7 September	Sarawak Consumers Association, Sibu	Members	40
7 September	Malaysian Scientific Association Kuala Lumpur	Johore students Government Officers Private Sector	200
9 September	Pertama, Bangi	Participants of the EIA Course	30
9 September	NEC Semi Conductors, Kelang	Staff Members	100
15 September	Malaysian Scientific Association Kuala Lumpur	Kuala Terengganu Students, Government Officers Private Sector	432
16 September	Environmental Management and Research Association of Malaysia Kuala Lumpur	ENSEARCH Members	60
17 September	Ministry of Youth and Sports, Kuala Lumpur	Participants for the 'Ship for South East Asia Youth Programme/	45
18 September	Dewan Bandaraya, Kuala Lumpur	Participants of Pacific-Asian Congress on Municipalities	200
27 September	Public Health Institute, Kuala Lumpur	Staff Nurses	30
9 October	Marine Training School, Tampoi	Marine Police Inspectors	25
12 October	Persatuan Anak Melaka (Pesaka), Kuala Lumpur	Melaka People	100
15 October	Police Field Force, Kuala Lumpur	Rescue Officers	130
14 October	Malaysian Scientific Association, Kuala Lumpur	Penang Students, Government Officers and Private Sector	200

Continuation...

Date	Agency/Institute	Target Group	Number of Attendees
14 October	Malaysian Scientific Association, Kuala Lumpur	Penang Students, Government Officers and Private Sector	200
31 October	Malaysian Institute of Chemistry, Kuala Lumpur	Participant of the Seminar 'Green Challenge'	120
7 November	Regional Centre for Education in Science and Mathematics, Penang	SEA Science Teachers	20
19 November	Ministry of Defence, Kuala Lumpur	Rescue Officers	40
14 November	Malaysian Agriculture Research and Development Institute, (MARDI) Johor Bahru	Participants of the National Seminar on Integrated Agriculture	120
26 November	Public Health Institute, Kuala Lumpur	Students of Post-Graduate Course in Environmental Health	20
22 December	Perwaja Steel Sdn. Bhd. Kemaman, Terengganu	Students and Staff	200
27 December	HAWA, Ministry of National Unity and Social Development, Kuala Lumpur	Members of Women Association	60
29 December	National Union of Malaysian Muslim Students, Kuala Lumpur	Course Participants of the National Symposium of Caring Students	100

Table 6.12

Department of Environment: Environmental Exhibitions, 1991

Date	Event and/or Venue	Organiser
21 February	Universiti Kebangsaan Malaysia (UKM) Campus, Bangi	UKM Life Sciences Society (Persatuan Sains Hayat)
23 February	Johor State Library, Johor Bahru	Johor State Library
4 April	Universiti Pertanian Malaysia (UPM) Serdang	Fourth College, UPM
6 May	Seremban Municipality Council	NPE Expo
12 May	Melewar Teachers' Training College Seremban	Melewar Teachers' Training College
18 May	Forestry Museum, Telok Bahang	Department of Forestry, Pulau Pinang
2 June	Science Week, Universiti Teknologi Malaysia (UTM) Skudai, Johor Bharu	Ministry of Science, Technology and the Environment
7 June	St. Francis Xavier Church, Petaling Jaya	St. Francis Xavier Catholic Association
9 June	Specialist Teachers' Training College, Cheras	Specialist Teachers' Training College
30 June	Inti College, Subang Jaya	Inti College Students Association
15 July	Universiti Malaya (UM) Kuala Lumpur	UM Colleges
24 July	Universiti Kebangsaan Malaysia, (UKM) Bangi	UKM Colleges
13 August	Art & Design Faculty, Institute Technology MARA (ITM) Shah Alam	ITM Art & Design Students Association
20 August	Karang Kraf Kuala Lumpur	Karang Kraf
10 September	Sime-UEP Subang	Sime UEP

Continuation...

Date	Event and/or Venue	Organiser
13 September	NEC Petaling Jaya	NEC
14 September	Pacific Asia Congress of Municipalities (PACOM) City Hall Kuala Lumpur	City Hall, Kuala Lumpur
14 September	Science Week, Dewan Tunku Abdul Rahman, Kuala Terengganu	Department of Forestry, Kuala Terengganu
16 October	World Food Day, Kuala Lumpur	Department of Agriculture
20 October	Universiti Sains, Malaysia (USM) Pulau Pinang	Pulau Pinang State Government
21 October	"Clean Technologies" Exhibition and Launching of Malaysia Environment Week, Subang Parade, Selangor	Department of Environment (DOE), Ministry of Science, Technology and the Environment
26 October	Petronas Dagangan, Dayabumi Complex, Kuala Lumpur	Petronas Dagangan
16 November	State-Level Celebration of Malaysia Environment Week, Alor Star	Kedah Darul Aman State Government
21 November	State-Level Celebration of Malaysia Environment Week, Kuala Terengganu	Terengganu Darul Iman State Government
30 November	State-Level Celebration of Malaysia Environment Week, Kuantan	Pahang Darul Makmur State Government
9 December	Petronas Library, Dayabumi Complex, Kuala Lumpur	Petronas
21 December	Pewaja Steel, Kemaman	Pewaja Steel
26 December	Sime Darby Library 12th Floor, Wisma Sime Darby	Sime Darby Library

Figure 6.1 Peninsular Malaysia: Number of Significant Mobile Sources by State as at November, 1991

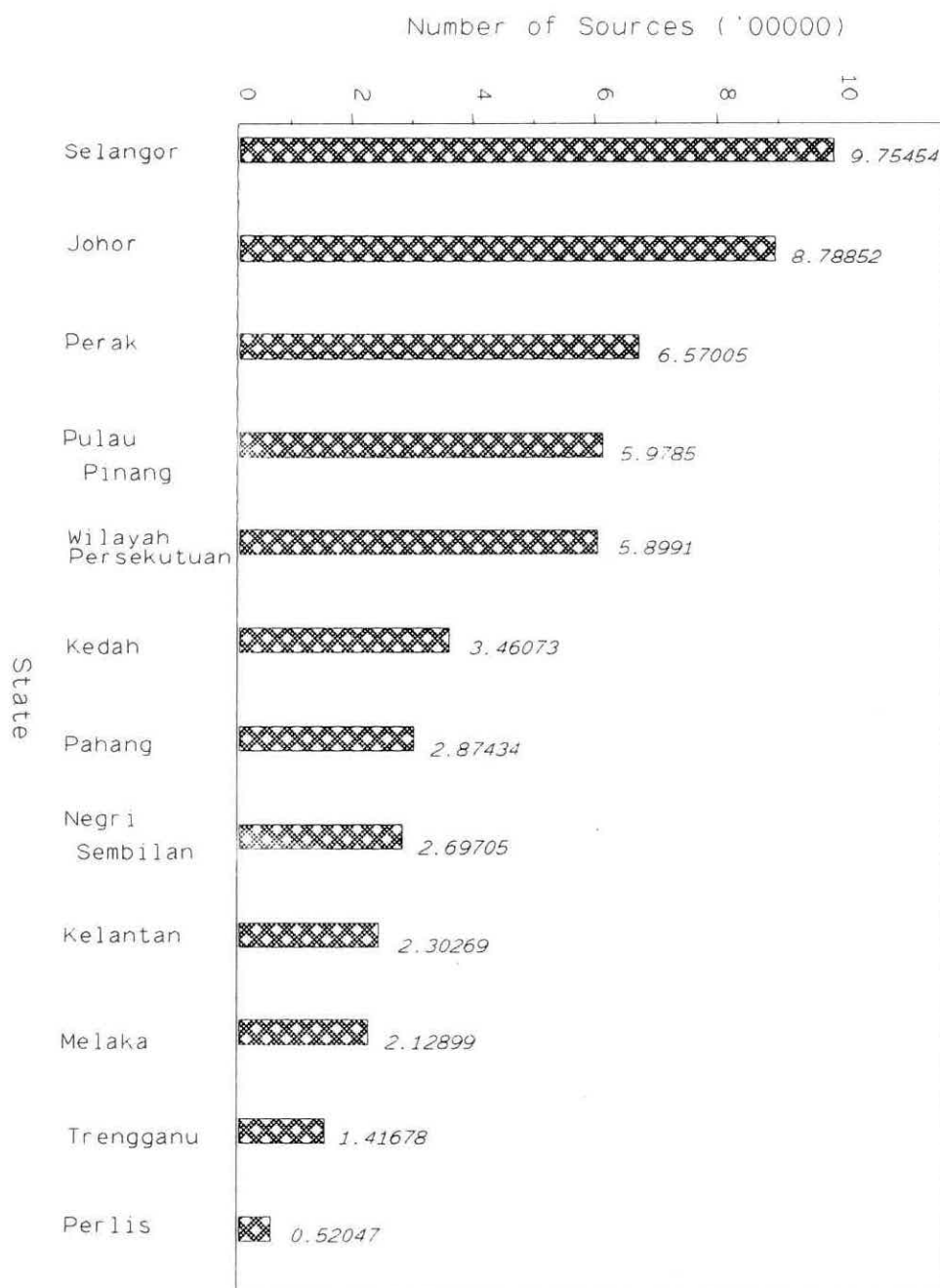


Figure 6.2 Malaysia: Number of Significant Stationary Air Polluting Sources by State, 1991

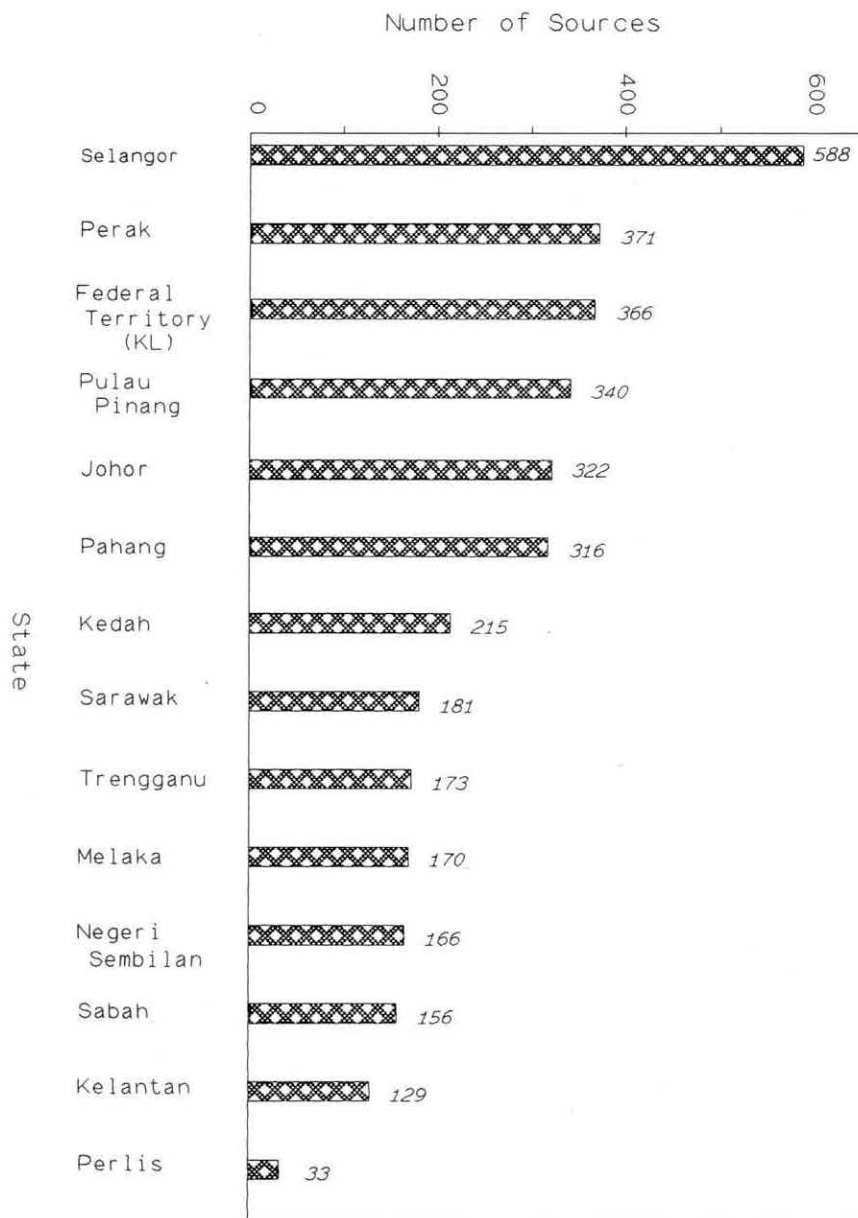


Figure 6.3 Malaysia: Trend of Emission of Pollutants to the Atmosphere by Various Sources, 1987-1991

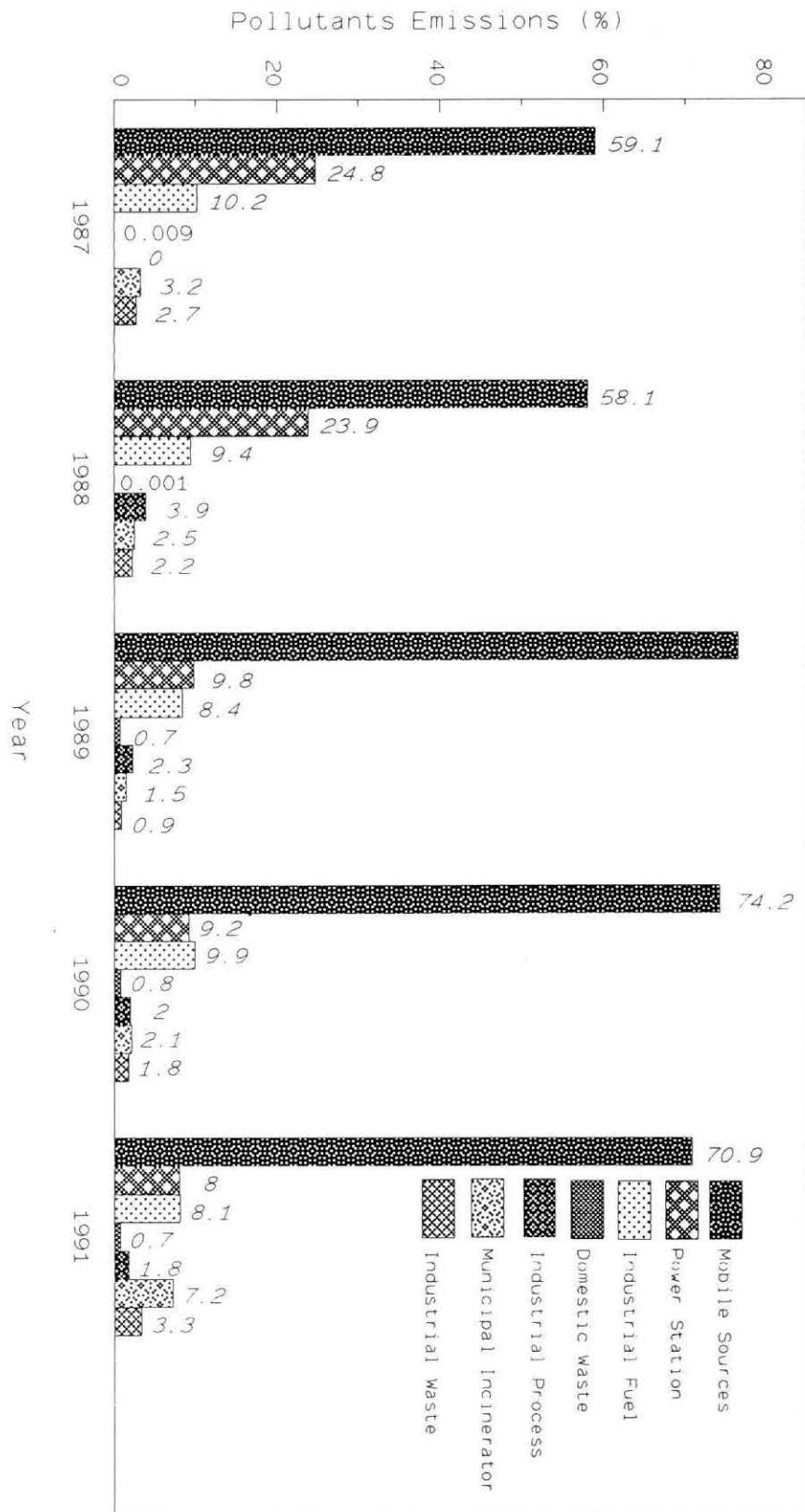
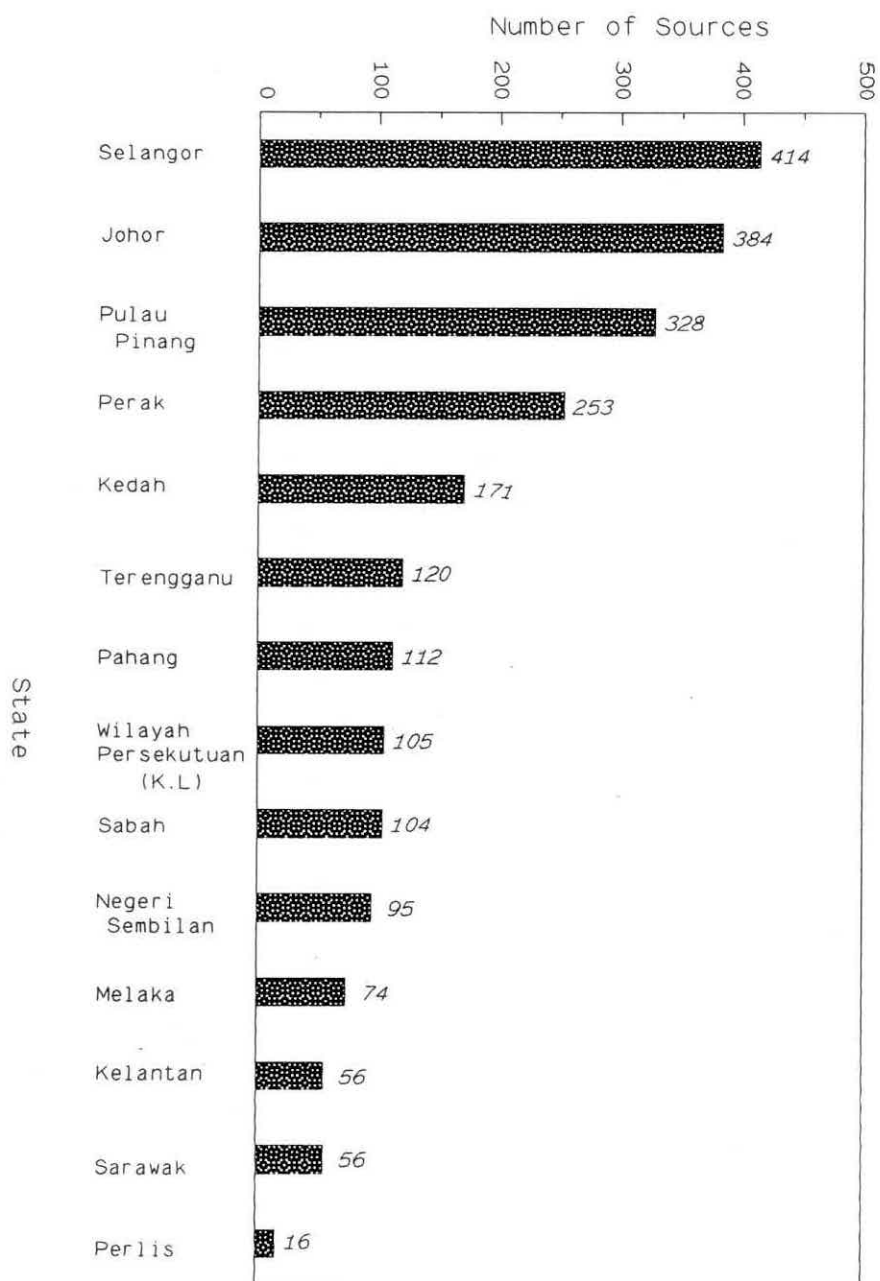


Figure 6.4 Malaysia: Distribution of Major Industrial Sources of Water Pollution, 1991



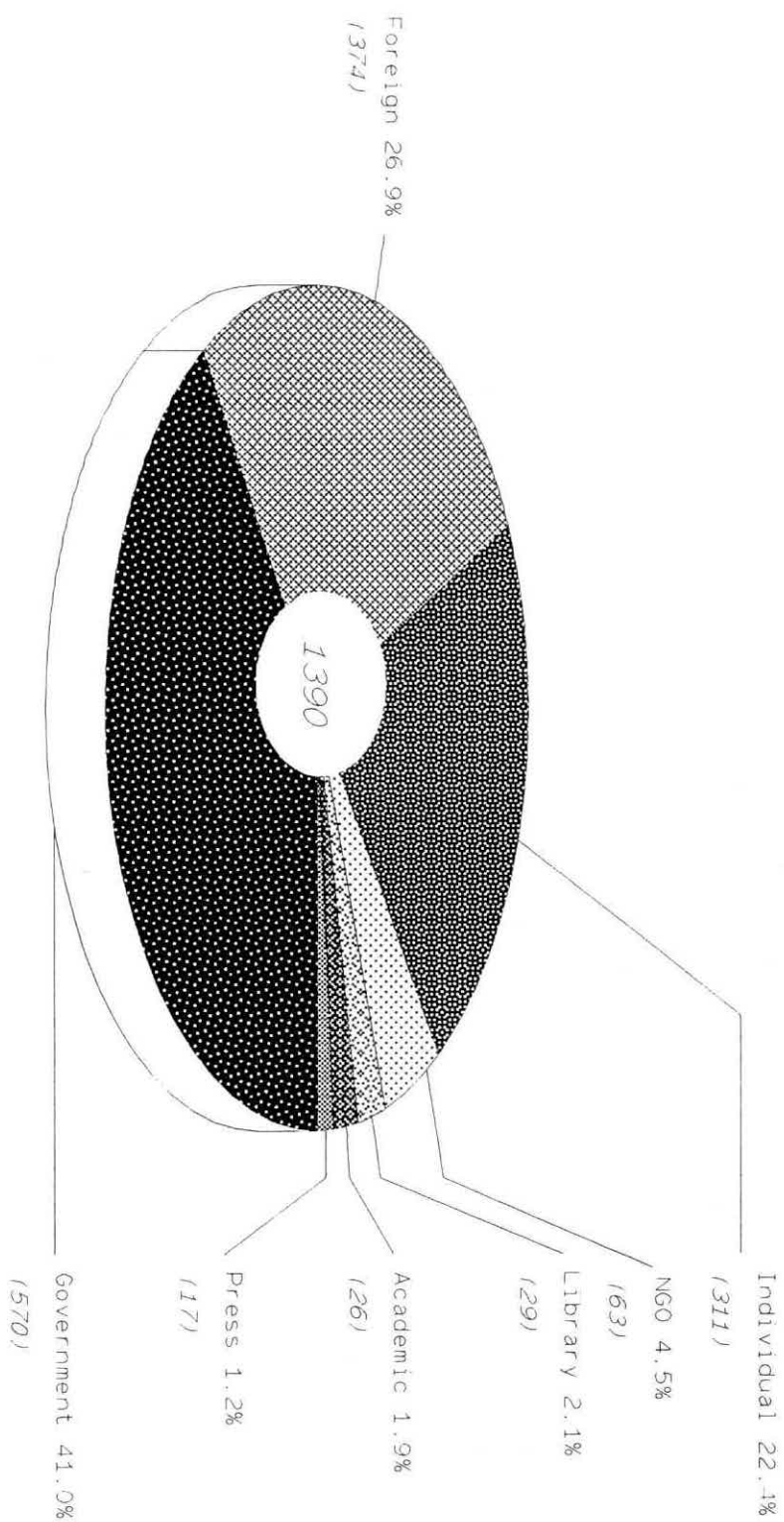


Figure 6.5 Department of Environment: Dissemination of Environment Publications, 1991

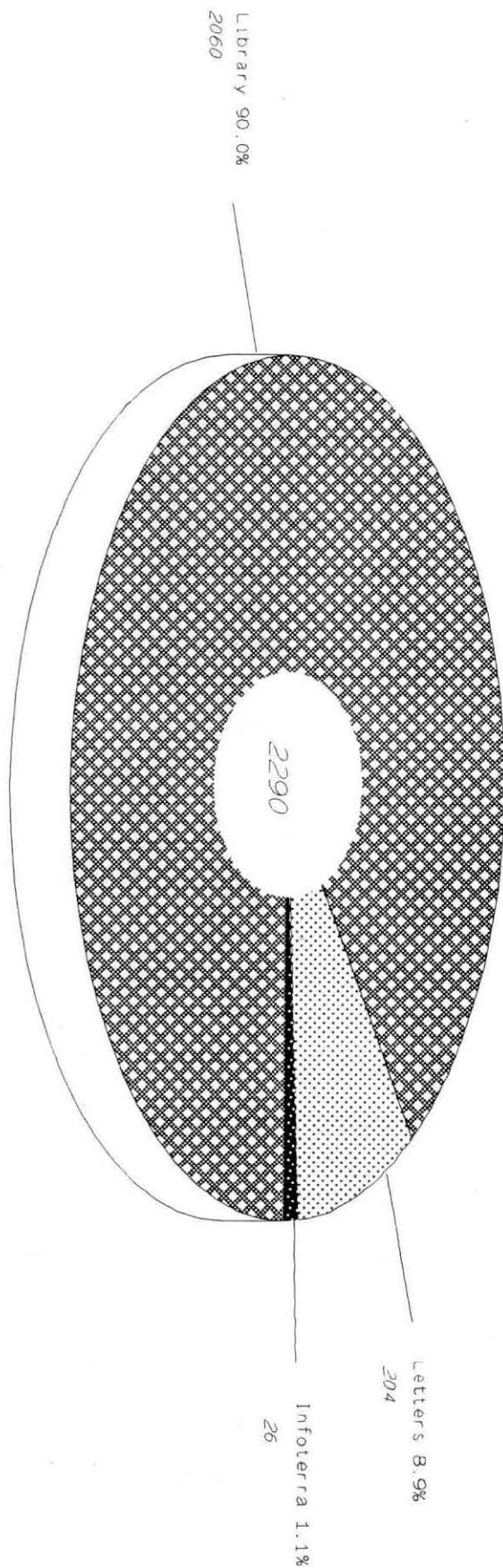


Figure 6.6 Department of Environment: Channels of Information Queries, 1991

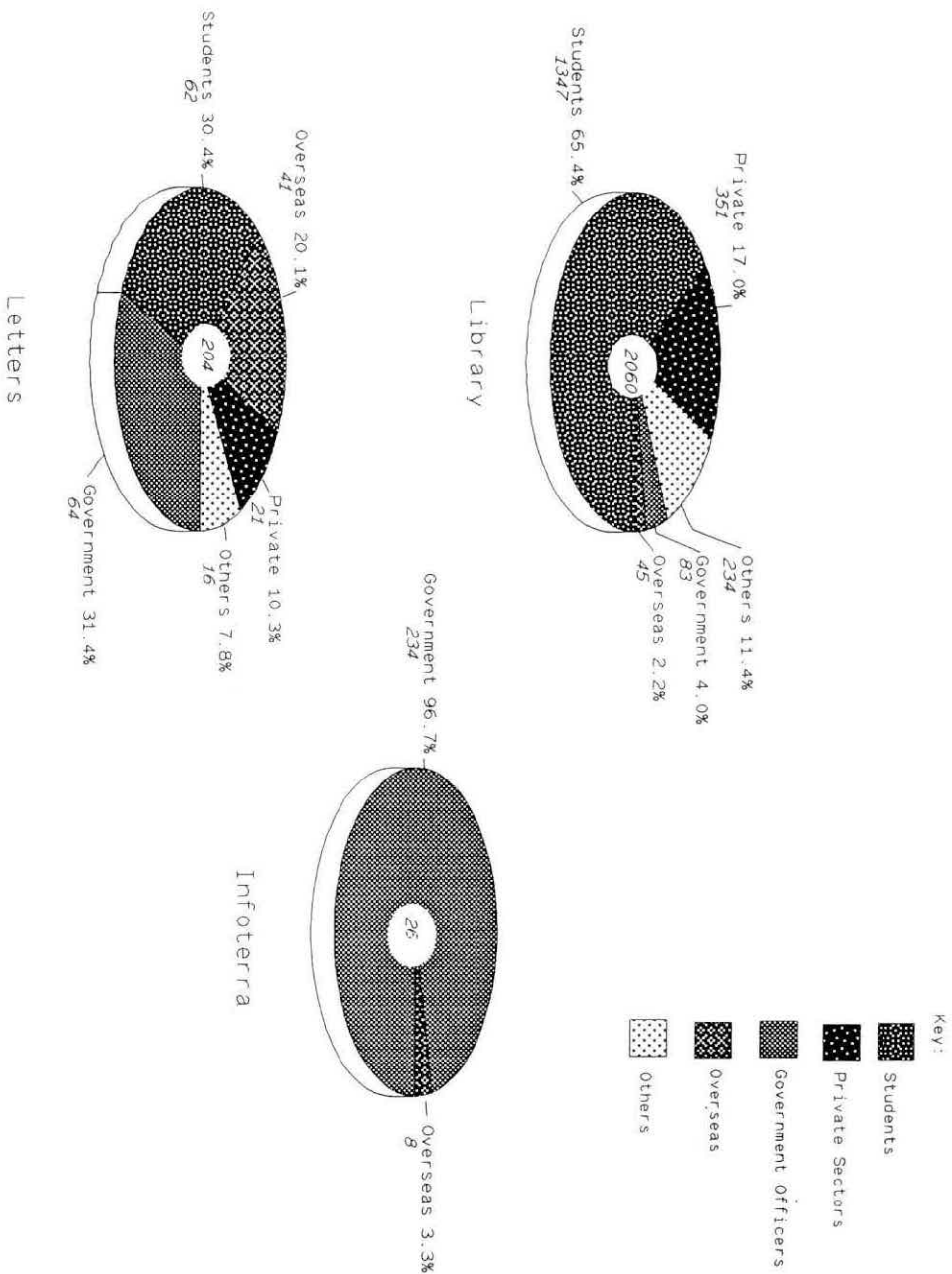


Figure 6.7 Department of Environment: Category of Information Users, 1991

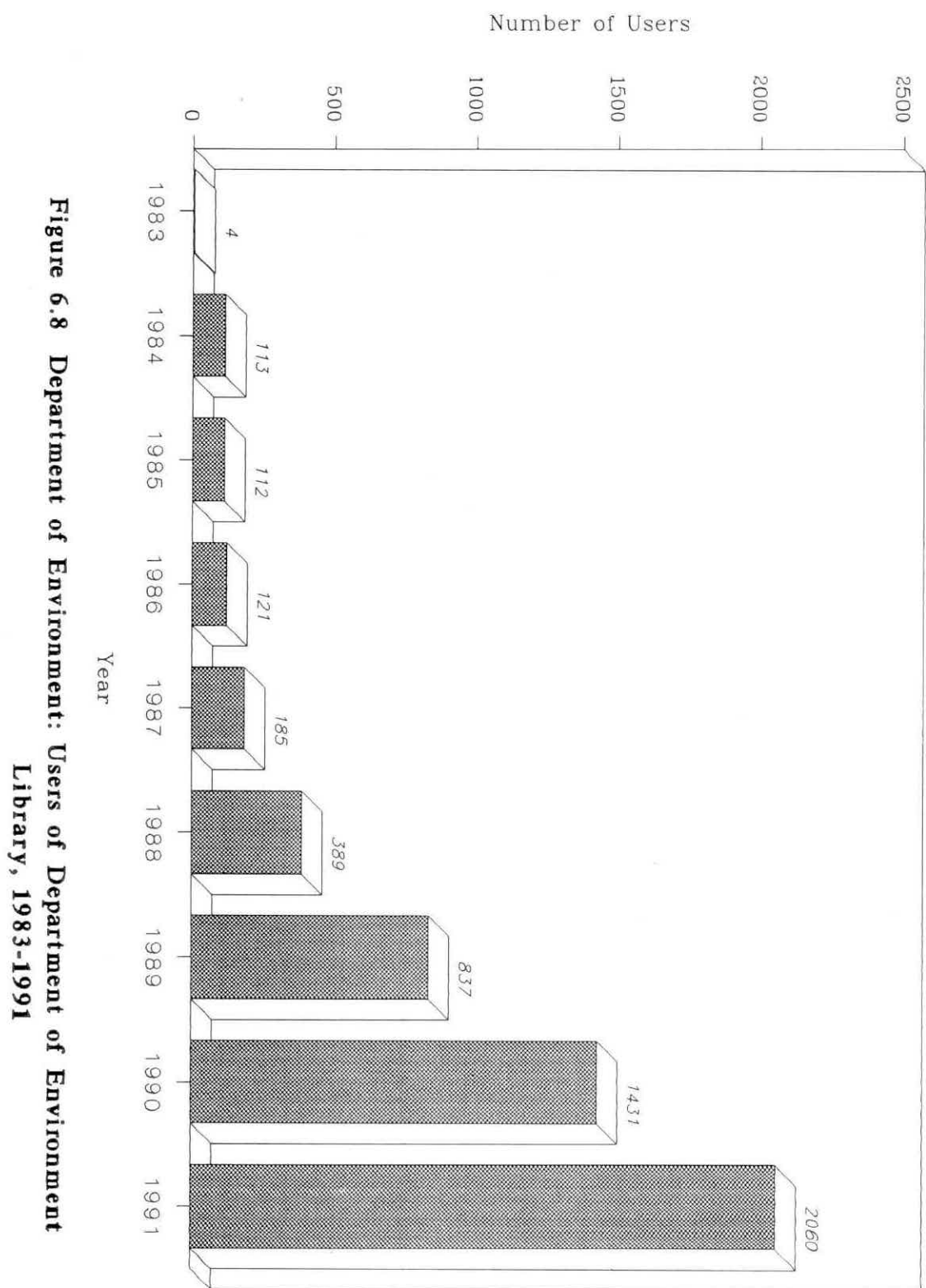
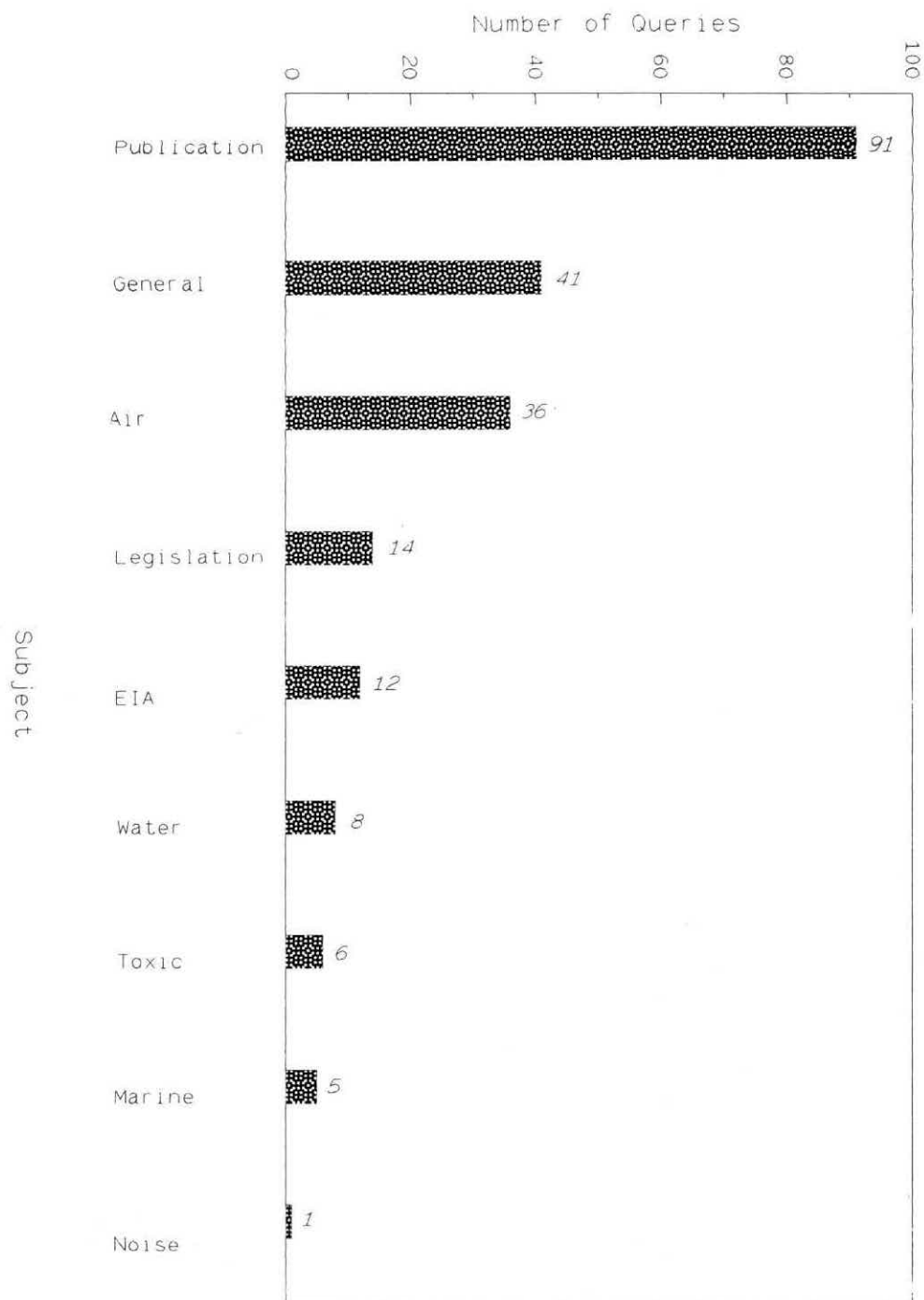


Figure 6.9 Department of Environment: Subject Distribution of Queries, 1991



Appendix

Appendix 3.1
Local Training Courses
Attended by the Department of Environment
Officers, 1991

Name	Title of Course	Venue	Date	Organiser
Norhisah Md. Nor	Store Management Course	INTAN	21-31/1/91	INTAN
Md. Yusah Wandii	Basic Course for Technician	INTAN	12-16/1/91	INTAN
Rokiah Md. Idris	Course on UNIX Operation System	INTAN	4-8/3/91	INTAN
Azman Yusof	Course on UNIX Operation System	INTAN	11-15/3/91	INTAN
Ishak Abd. Rauf	Training Course on Radio Telephony Restricted (MRT)	Marine Academy Melaka	4-9/3/91	Maritime Academy Malaysia
Kalsom Abd. Ghani	Course on Tools For Industrial and Trade Policy Analysis	INTAN	12-14/3/91	INTAN
Charanpal Singh	Training Session on the Use of Software "Energy and Power Evaluation Programme (ENPEP)"	Tenaga Nasional Bhd.	12-14/3/91	Ministry of Energy, Telecommunications and Post
Noor Alshuridin Md. Salleh Ahmad Ibrahim Mohamed	Course on Legal and Court Procedures	Police College Kuala Kubu Baru	22/4-11/5/91	Royal Malaysia Police

Name	Title of Course	Venue	Date	Organiser
Ahmad Kamarul Najuib	English Immersion Course 2/91	INTAN	22/4-18/5/91	INTAN
Rosman Khalid Sae'irah Abd. Rahman	Course on Environmental Impact Assesment from Development Project	INTAN Kemaman	18-26/5/91	INTAN
Adam Ariffin Roshadah Hashim Saari Che Lah Che Ani Hashim	Integrated Environmental Planning and Management	INTAN	17/6-12/7/91	INTAN
Radzuan Yunus Kamarudin Abd. Rahman	Basic Course on Maritime Surveillance	DCA College	29/7-2/8/91	TUDM
Mohamad Jaafar	The Hongkong Bank-OBS Leadership Programme	Lumut, Perak	3-12/8/91	Hongkong Bank
Razali Zakaria Razali Khalid	Basic Electronics Course	Kuala Lumpur International Airport Terminal, Subang	26/8-14/9/91	Meteorological Services Department

Appendix 3.2
Local Workshops
Attended by the Department of Environment
Officers, 1991

Name	Title of Seminar	Venue	Date	Organiser
Zaimah Ghazali Muhammad Saberi Abdul Hamid	ASEAN-UNDP Workshop on Pollution Control in the Palm Oil and Rubber Industries	Grand Continental Hotel Kuala Lumpur	7-9/1/91	ASEAN-UNDP/ DOE
Ismail Ithnin	Workshop on Management of International Conference and Protocol	INTAN	22-26/4/91	INTAN
Norlin Jaafar	Workshop on Remote Sensing	Kuala Lumpur	6-25/5/91	MACRES
Abd. Aziz Abd. Rasol	Management Training on Environment Dimensions of the UN System Development Assistance to Malaysia (Workshop)	Wisma UN Kuala Lumpur	8/91	UNDP
Fauziah Mahmud	Workshop on Toxic & Hazardous Waste	Ming Court Hotel Kuala Lumpur	1-2/7/91	ENSEARCH
Kalsom Abd. Ghani	Workshop on Environmental Impact Assessment	Petaling Jaya	5-6/8/91	IEM
Ibrahim Abd. Majid	Marine Geology and Geophysics Workshop	Geological Research Laboratory	5-6/8/91	Geological Research Laboratory

Appendix 3.3
Local Seminars
Attended by the Department of Environment
Officers, 1991

Name	Title of Seminar	Venue	Date	Organiser
Ibrahim Abd. Majid Shamsuddin Abd. Latif	Seminar on River Management and Irrigation in Urban Areas	Pulau Pinang	21-23/1/91	MPSP
Norlin Jaafar	Seminar on National Forestry Policy - Sustainable Forest Management	Melia Hotel Kuala Lumpur	21-22/1/91	Forestry Department
Hassan Mat Tan Meng Leng	Seminar on the Role of Petroleum in Sustainable Development	Pulau Pinang	7-11/1/91	PETRAD
Noorhashimah Hj. Manaf Yahya Othman	Seminar on Plymouth Anti Pollution Fume Extraction System and Fans	Kuala Lumpur	31/1/91	Kumpulan Edaran Logam Sdn. Bhd.
Noorberi Yusoff	Seminar on the Development of Oyster Culture in Malaysia	Hotel Holiday Inn, Kuala Lumpur	26-28/2/91	Dept. of Fisheries Malaysia
Mariana Md. Nor Mohd. Hashim Malek Nor Ali Za Omar Mohd Fauzi Ali Ibrahim Shafii Zainuldin Yakob	Seminar on Environmental Monitoring and the Analysis and Screening of Toxic Inorganics and Chemical Residues in Soil	Melia Hotel Kuala Lumpur	4/2/91	Bio-Focus Sdn. Bhd.
Dr. Abu Bakar Jaafar Tan Meng Leng Hashim Daud Abd. Aziz Abd. Rasol Rahmah Tahir	Lecture on 'Climate Change and its Impacts and Response Strategies' by Y.B. Prof. G.O.P. Obasi	Grand Continental Hotel	9/2/91	Meteorological Department

Name	Title of Seminar	Venue	Date	Organiser
Rokiah Idris	Seminar on Computer Management Analytical Methodology and Structural Design System	INTAN Kuala Lumpur	18-22/3/91	INTAN
Johan Sohaili Ibrahim Abd. Majid	Lecture on Environmental Protection Works on Rivers and Coastal Areas	Department of Irrigation and Drainage	7/3/91	Department of Irrigation & Drainage
Mohd. Izzuddin Ghani Mohd Zailani Kordi Mohamad Yusof Mei Abu Hassan Md. Isa Abd. Malek Ahmad Muhammad Zamil Yusof Maulud Hashim Mohd. Sani Daud	Seminar on Noise Pollution and Acoustic Insulation	Bankers Club	21/3/91	G&H Montage
Siti Zaleha Ibrahim Robert Lim	Welfare Effects of Environmental Regulations in an Open Economy- A Case of Malaysian Palm Oil Industry	Bangunan ISIS	12/3/91	Institute of Strategic and International Studies (ISIS)
Mariana Md. Nor Ibrahim Shafii Hashim Malek Noorhasimah Abd. Manaf Yahya Othman Muhammad Zamil Yusof	Seminar by BP on Incinerator	Park Royal Kuala Lumpur	11/4/91	BP/Bumi Wangsa Sdn. Bhd.

Name	Title of Seminar	Venue	Date	Organiser
Aminuddin Ishak Suhaimi Hanafi	Seminar on Vehicle Type Approval	SIRIM	23/4/91	SIRIM
Tengku Bakry Shah	Seminar on Quality Management From Concept to Reality HP Experience	INTAN	25/4/91	INTAN/HP
Mohamad Jaafar Haliza Abd. Aziz Zalilah Nordin Razali Yaakub	British Water Industries Group Seminar in Kuala Lumpur	Kuala Lumpur	13-14/5/91	British Council
Hasmah Harun Abd. Aziz Abd. Rasol	Seminar on the Privatisation Master Plan	INTAN	13/5/91	INTAN
Tengku Bakry Shah	Seminar on Open Systems	The Paddock Kuala Lumpur Hilton	17/5/91	Hewlett-Packard Sales Malaysia
Hashim Daud Hanili Ghazali Ismail Ithnin Razali Yaakub Ahmad Samsudin Che Asmah Ibrahim Norazian Abd. Hamid Zamrudah Yeop Hassan Mat Rahani Husin Abd. Aziz Abd. Rasol	Sweden-Malaysia Seminar on Environmental Technology	Raintree Club Kuala Lumpur	30-31/5/91	Embassy of Sweden and Swedish Trade Council/DOE

Name	Title of Seminar	Venue	Date	Organiser
Rokiah Idris	Seminar on Computer Management (Quality Management in Information Technology)	INTAN	26-27/6/91	INTAN
Abd. Aziz Abd. Rasol Abd. Razak Manap Mohamad Jaafar	Policy Seminar on Environmental Management of Water Resources	Park Royal Hotel Kuala Lumpur	10-14/6/98	Water Supply/ Economic Develop. Institute
Ibrahim Abd. Majid	The 4th Malaysian Oil, Gas and Petrochemical Engineering Exhibition	PWTC Kuala Lumpur	11-13/6/91	Malaysian Exhibition Services Sdn.Bhd.
Abd. Aziz Abd. Rasol	Roundtable Conference for Promoting New Energy and Energy Conservation	Hilton Hotel Kuala Lumpur	18-19/6/91	Ministry of Energy Telecommunications and Post
Ibrahim Abd. Majid Radzuan Yunus	Seminar on Maritime Sea Surveillance Radar System	Regent Hotel Kuala Lumpur	17/7/91	Japan Radio Company (JRC)/ TLDM
Ishak Abd. Rauf	Seminar on Radar Surveillance Equipments	Kuala Lumpur	18/7/91	Bharat Electronics Ltd. (India)
Rokiah Idris	Seminar & Workshop on Open Systems	PWTC	22-23/7/91	MIMOS/MAMPU/ INTAN
Mariana Md. Nor	Seminar on Combustion of Water in Oil/Bitumen in Water Emulsion Technology	UTM	9/7/91	UTM

Name	Title of Seminar	Venue	Date	Organiser
Ibrahim Abd. Majid	Oil Spill Response Seminar	Hilton Hotel Kuala Lumpur	8/8/91	Briggs Marine and Environmental Services
Soo Ah Kan Abu Hassan Md. Isa	Seminar on Burning of Waste	Holiday Villa Subang	12/8/91	Ministry of Housing and Local Government, Enercon Holding (M) Sdn. Bhd.

Appendix 4.1

Malaysia: Air Monitoring Stations for Total Suspended Particulate and Respirable Particles, 1991

STATE	AIR MONITORING STATIONS		
	STATION NUMBER	LOCATION	TYPE OF LAND USE
KEDAH	5604210	Sharp Roxy, Bakar Arang Ind. Est. Sg. Petani	Industrial
PULAU PINANG	5303210	ITI Prai Ind. Est. Seberang Prai	Industrial
	5304212	MPSP Hall, Desa Damai, Bukit Mertajam*	Residential
	5403150	Bagan Ajam Clinic, Butterworth	Traffic
	5503210	Bumbong Lima Agriculture Institute, Kepala Batas	Rural
	5403210	AIA Building, Pulau Pinang	Commercial
PERAK	4510150	Asean Rare Earth, Lahat Road, Ipoh	Industrial
	4510151	Central Market Rooftop, Ipoh	Commercial
SELANGOR	3116153	Johnson & Johnson, Petaling Jaya	Industrial
	3015150	SIRIM, Shah Alam	Residential
WILAYAH PERSEKUTUAN (KL)	3116150	Bangsar Dental Clinic, Kuala Lumpur	Traffic
	3117150	Pudu Post Office, Kuala Lumpur	Traffic
	3116154	Science Centre, Kuala Lumpur*	Traffic
	3116151	Kuala Lumpur City Hall	Commercial
	3116152	University of Malaya	Residential
NEGERI SEMBILAN	2518210	Vocational School, Port Dickson	Residential
	2719210	Lembaga Padi dan Beras Negara, Senawang	Industrial
MELAKA	2221211	Tootal Thread, Tangga Batu Ind. Est.	Industrial
	2222211	Taman Muzafar Shah, Air Keroh	Industrial
JOHOR	1437151	Mara Institute of Skill Learning, J. Bahru	Industrial
	1439150	Port Authority, Pasir Gudang	Industrial
	1437210	Majidee Camp, Johor Bahru*	Residential
	1437152	Tampoi Police Station, Johor Bahru	Traffic
	1437150	Telecoms Interchange Centre, Johor Bahru	Commercial
PAHANG	3833151	Public Works Department Laboratory, Kuantan	Industrial
	3833210	Maktab Rendah Sains Mara, Kuantan*	Residential
	3833211	Risda Headquarters, Kuantan	Residential
	3833150	Syarikat Telekom Malaysia, Kuantan	Traffic
TERENGGANU	5331211	Permint Jaya Park, Kuala Terengganu	Residential
	5331210	Kuala Terengganu District Council	Commercial
	4234211	Supply Base, Kemaman	Industrial
	4234210	Waterworks Department, Kemaman	Residential
SARAWAK	1503151	Chin Liang Leong Workshop, Kuching	Industrial
	1503210	Tabuan Laru, Kuching	Residential
SABAH	5961210	Vocational School, Likas, Kota Kinabalu	Residential

Note :

* Monitoring Stations for Respirable Particles

Appendix 4.2

Malaysia: Air Monitoring Stations for Dust Fallout, 1991

STATE	AIR MONITORING STATIONS		
	STATION NUMBER	LOCATION	TYPE OF LAND USE
PERLIS	6402102	Taman Jejawi Utara Kangar	Industrial
	6502102	Kg. Datuk Kayaman Chuping	Industrial
	6501100	Batu 2 3/4 Jalan Sungai Batu Pahat Kangar	Industrial
	6402101	Balai Bomba Kangar	Commercial
KEDAH	5405100	Kg. Paya Besar Kulim	Industrial
	5804100	Pejabat MADA Guar Cempedak	Industrial
	5604100	Sharp Roxy Bakar Arang Ind. Est. Sungai Petani	Industrial
	5804101	Sekolah Menengah Gurun	Industrial
	5504100	Armstrong Auto Parts Tikam Batu Industry Estate Sungai Petani	Industrial
	6103103	Ibu Pejabat MADA Alor Star	Industrial
	6103102	LLN Alor Star	Commercial
PULAU PINANG	5403105	Hospital Besar Pulau Pinang	Residential
	5403104	Jabatan Perkhidmatan Haiwan Pulau Pinang	Industrial
	5403101	Taman Cantik Mak Mandin Seberang Prai	Industrial
	5303102	Kawasan Perumahan Bayan Baru Pulau Pinang	Industrial
	5503100	Institusi Pertanian Bumbung Lima Seberang Prai	Rural
	5403100	Klinik Desa Bagan Ajam Seberang Prai	Commercial
	5303100	ITI Prai Ind. Est. Seberang Prai	Industrial
	5403103	Ibu Pejabat Polis Pulau Pinang	Commercial
	5405101	Sekolah Menengah Penanti Seberang Prai	Industrial
	5403102	Imatek Mak Mandin Ind. Est. Seberang Prai	Industrial
	5302100	Sekolah Kebangsaan Sungai Ara Pulau Pinang	Industrial
	5402100	Perumahan Tanjung Bunga Pulau Pinang	Industrial
	5304101	Dewan MPSP Desa Damai Bkt Mertajam Sbg. Prai	Residential
	5403106	Bangunan AIA Pulau Pinang	Commercial
PERAK	4610104	Taman Meru Jelapang Ipoh	Industrial
	4510100	Bumbong Pasar Besar Ipoh	Commercial
	4510101	Anika Klinik Menggelembu Ipoh	Industrial
	4510102	Taman Badlishah Menggelembu Ipoh	Industrial
	4510103	Kg. Changkat Larang Pengkalan Pegoh Ipoh	Industrial
	4511100	Taman Perumahan Awam Simpang Pulai Ipoh	Industrial
	4511101	Kg. Tanjung Sungai Raya Simpang Pulai Ipoh	Industrial
	4610100	No. 18 Hala Bekor 3 Taman Pertama Ipoh	Industrial
	4610101	Taman Che Wan Ipoh	Industrial
	4610103	Taman Star Ipoh	Industrial
	4611100	Taman Tasek Ipoh	Industrial
	4611101	Marbonyx Tasek Industry Est. Ipoh	Industrial
	4611102	Taman Ipoh Timur Ipoh	Industrial
	4708100	Kg. Gapis Padang Rengas Kuala Kangsar	Industrial
	4709100	Sek. Keb. Paya Salak Padang Rengas K. Kangsar	Industrial
	5005100	Kg. Eow Seng Simpang Lima Parit Buntar	Industrial
	5105100	Namye Food Parit Buntar Ind. Est. Parit Buntar	Industrial
	4511102	Kg. Sengat Simpang Pulai Ipoh	Industrial
	4711100	Pusat Latihan Ternakan Sungai Siput	Industrial
	4807100	Tupai LLN Substation Tupai Ind. Est. Taiping	Industrial
	4907100	Kemunting Textiles Kemunting Ind. Est. Taiping	Industrial
	4907101	Sekolah Menengah Kemunting Taiping	Industrial
	4611103	Kg. Kepayang Fair Park Ipoh	Industrial
	4907102	Taman Aun Say Taiping	Industrial

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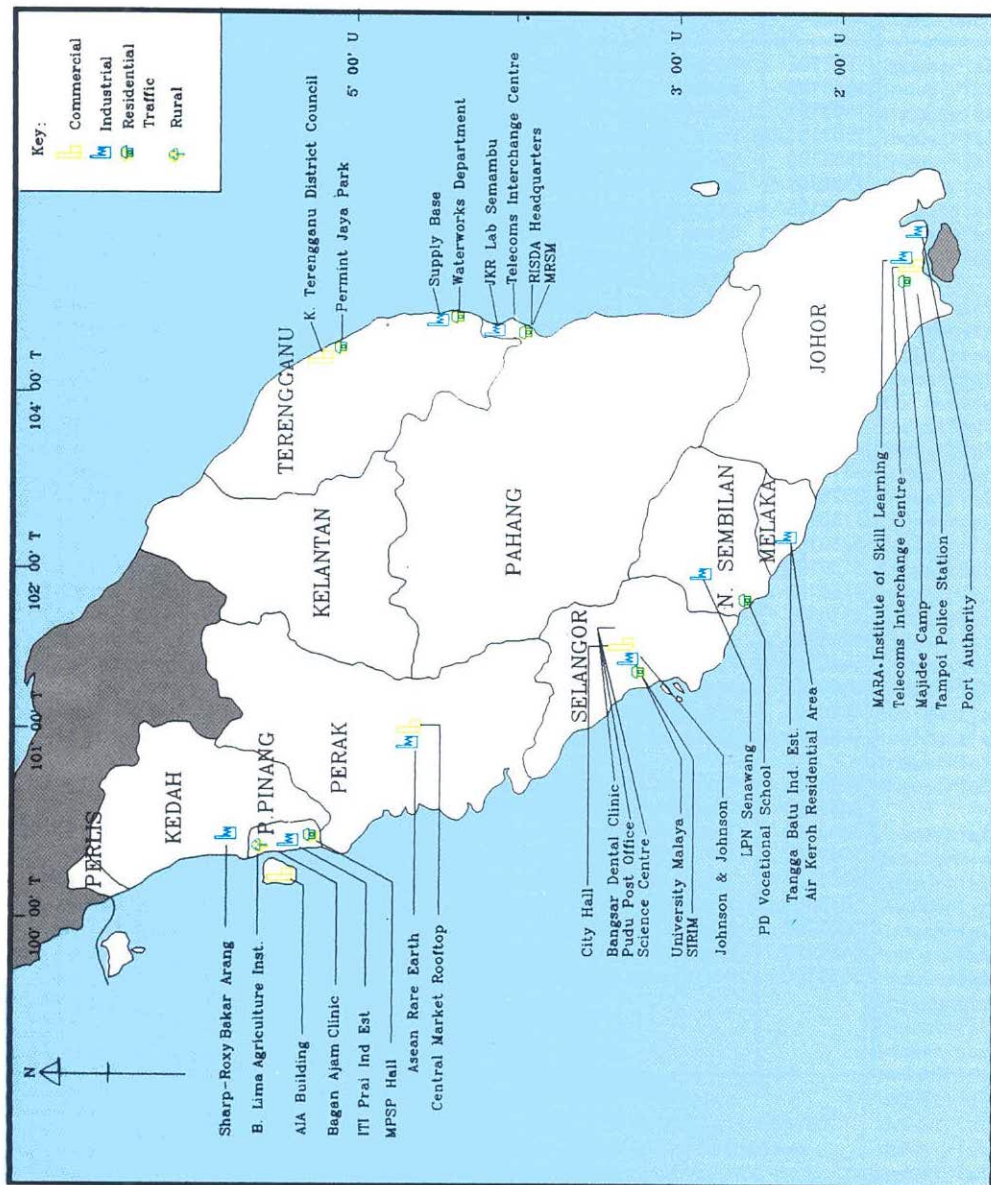
STATE	AIR MONITORING STATIONS		
	STATION NUMBER	LOCATION	TYPE OF LAND USE
SELANGOR	2917101	Sek. Ren. Bandar Baru Bangi, Bangi	Industrial
	2917100	No. 20 Jalan 6B/7 Bandar Baru Bangi, Bangi	Industrial
	3014100	Kg. Sri Kenangan Batu 1 3/4 Klang	Industrial
	3014101	No. 10 Kawasan 17 Jalan Meru Klang	Industrial
	3014102	No. 40 Kawasan 17 Jalan Meru Klang	Industrial
	3014103	F.E. Wire Magnetic Bukit Rajah Klang	Industrial
	3015100	Sek. Ren. Shah Alam, Shah Alam	Industrial
	3015101	SIRIM Shah Alam	Residential
	3015102	SRJK (T) Sg. Renggam Seksyen 18 Shah Alam	Industrial
	3017101	Lot 5049 Jalan Coop Ceupacs 3F Cheras	Industrial
	3116101	Johnson & Johnson Petaling Jaya	Industrial
	3117100	Kg. Tengah Ampang	Industrial
	3117101	Makmal Petronas Ulu Klang	Residential
	3216100	Sek. Menengah Selayang Baru Batu Caves	Residential
	3216101	Mobil oil (M) Jalan Perusahaan Batu Caves	Industrial
	3315100	Sekolah Menengah Agama Kg. Kenangan Rawang	Industrial
	3019100	Empangan Semenyih Kajang	Rural
WILAYAH PERSEKUTUAN (KL)	3116100	Klinik Pergigian Bangsar Kuala Lumpur	Commercial
	3216102	Jinjang Community Hall Kuala Lumpur	Industrial
NEGERI SEMBILAN	2518100	Lot 3095 Taman Kian Yap Port Dickson	Industrial
	2518101	Pejabat Kadi Daerah Port Dickson	Residential
	2518102	Rumah Kakitangan LLN Port Dickson	Industrial
	2719100	Pusat Sembelihan J. Haiwan Senawang Seremban	Industrial
	2719101	Taman Bukit Emas Senawang Seremban	Industrial
	2620100	Surau Taman Marida Senawang Seremban	Residential
	2719103	Taman Indah Seremban	Residential
MELAKA	2221100	B 676 Pantai Kundor Melaka	Industrial
	2221101	Perumahan Awam Datin Fatimah Bukit Rambai	Industrial
	2222100	Jalan Sri Raya 4 Taman Muzaffar Shah Air Keroh	Industrial
	2222101	SRK Tengkeri 1 & 2 Jalan Tengkeri Melaka	Residential
	2221101	Tootal Thread Tangga Batu Ind. Est., Melaka	Industrial
	2221102	Substation LLN Bukit Rambai Melaka	Industrial
	1124100	Taman Merlimau Baru Merlimau Melaka	Industrial
	1222100	Taman Melaka Baru Melaka	Residential
JOHOR	2321100	Perumahan Sri Kelemak Alor Gajah	Industrial
	1437100	STM Jalan Datok Dalam Johor Bharu	Commercial
	1437101	Rumah Kakitangan KTM Johor Bharu	Residential
	1437102	Sekolah Menengah Foon Yew Johor Bharu	Residential
	1437103	JKR Jalan Bukit Senyum Johor Bharu	Industrial
	1437104	Sekolah Kebangsaan Taman Melodies Johor Bharu	Residential
	1437105	IKM Larkin Johor Bharu	Industrial
	1437106	UMW Larkin Johor Bharu	Industrial
	1437107	Rumah Kebajikan Masyarakat Johor Bharu	Residential
	1437108	Sekolah Menengah Taman Uda Johor Bharu	Industrial
	1437109	Hospital Sultanah Aminah Johor Bharu	Residential
	1439100	Tan How Industries Pasir Gudang	Industrial
	1439101	Institusi Latihan Perindustrian Pasir Gudang	Industrial
	1439102	Malayan Vegetable Oil Pasir Gudang	Industrial

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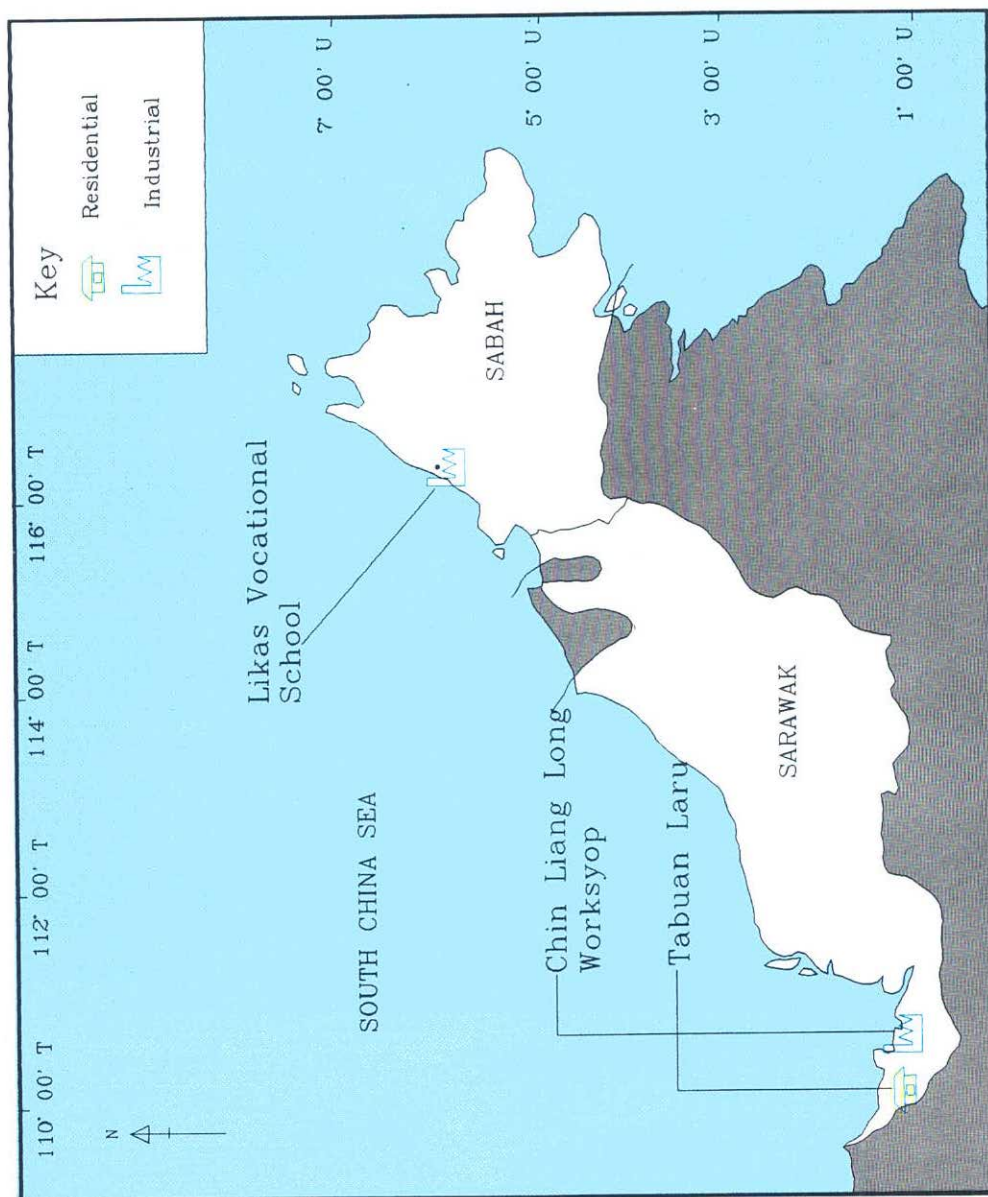
STATE	AIR MONITORING STATIONS		
	STATION NUMBER	LOCATION	TYPE OF LAND USE
PAHANG	1439103	Felda Oil Product Pasir Gudang	Industrial
	1635100	Kg. Sri Paya Kulai	Industrial
	2033101	Loji Air Sg. Semberong Kluang	Industrial
	2025100	Khaw Tai Food Tanjung Agas Ind. Est. Muar	Industrial
	1829100	Batu 3 Jalan Minyak Beku Batu Pahat	Industrial
	1929101	Hwa Tai Food Tongkang Pecah Ind. Est. Bt Pahat	Industrial
	1829102	Sekolah Menengah Tun Aminah Batu Pahat	Industrial
	2528100	Kg. Sermin Jabi Segamat	Industrial
	2033100	Fancy Plywood Kluang	Industrial
	3527100	Taman Sri Chendong Maran	Industrial
	3726100	Bandar Pusat Jengka	Residential
	3923100	Unit Kawalan Keselamatan Jerantut	Industrial
	3523100	Kem Batu 5 Mentakab	Industrial
	3224100	Balai Bomba Triang	Residential
	3123100	Balai Polis Kemayan	Industrial
	3224101	Balai Polis Mengkuang	Industrial
	2928100	Masjid Keratung 2 Rompin	Industrial
	3029100	Sekolah Rendah Ladang Kota Bahagia Rompin	Industrial
	3129100	Balai Polis Bukit Ibam	Industrial
	3030100	Bandar Muadzam Shah	Residential
	3030101	Stesen Bas Muadzam Shah	Commercial
	3329100	Sekolah Rendah Cini 1&4 Cini	Industrial
	3533100	Loji Air Peramu Pekan	Industrial
	3533101	Perumahan 100 Peramu Pekan	Industrial
	3533102	IKM Peramu Pekan	Industrial
	3833104	Sekolah Rendah Tanah Putih Baru Kuantan	Industrial
	3833101	STM Tanah Putih Kuantan	Residential
	3833102	Sekolah Rendah Kebangsaan Raja Abdulah Kuantan	Residential
	3833103	JKR Semambu Kuantan	Industrial
	3833100	Taman Sentosa Kuantan	Industrial
TERENGGANU	5331102	Jabatan Laut Kuala Trengganu	Commercial
	5331104	RTM Kuala Trengganu	Residential
	5331103	Majlis Perbandaran Kuala Trengganu	Commercial
	5231100	Taman Permin Jaya Kuala Ibai Kuala Trengganu	Residential
	4634100	Pusat Penyelidikan Porim Paka Dungun	Industrial
	4634101	Petronas Penapisan Kertih Kemaman	Industrial
	4234100	Perwaja Point 1 Kemaman	Industrial
	4234104	JBA Kemaman	Residential
	4234103	Kg. Geliga Kemaman	Industrial
	4234105	Perwaja Point 2 Kemaman	Industrial
	5331101	LLN Gong Badak Kuala Trengganu	Industrial
	5331100	Perumahan Gong Badak Kuala Trengganu	Industrial
	5330100	Sekolah Kebangsaan Tok Jiring Kuala Trengganu	Industrial
	5430100	Sek. Men. Agama Batu Rakit Kuala Trengganu	Industrial
	4234106	Pengkalan bekalan Kemaman	Industrial
KELANTAN	5823100	Taman Aman Pasir Putih	Industrial
	5722100	Sekolah Rendah Pulau Chondong Machang	Industrial
	6122101	Pejabat KADA Kota Bharu	Industrial
	6122102	Sekolah Rendah Datok Hashim Pengkalan Chepa	Industrial
	5821100	Taman Tanah Merah	Industrial
	5821101	Hospital Daerah Tanah Merah	Industrial

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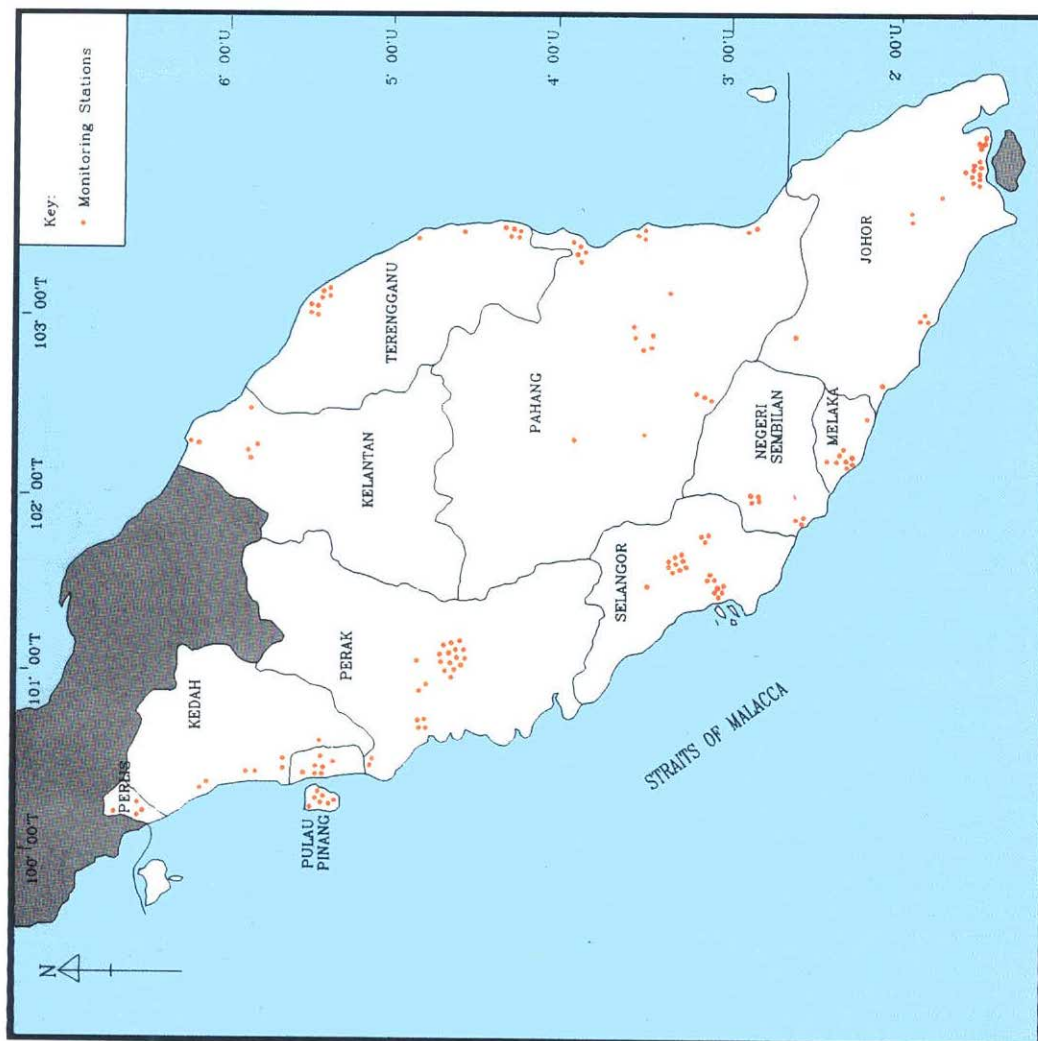
STATE	AIR MONITORING STATIONS		
	STATION NUMBER	LOCATION	TYPE OF LAND USE
SARAWAK	1503102	Bengkel Chin Liang Long Kuching	Industrial
	1503100	Makmal Ubat dan Setor Negeri Bintawa Kuching	Industrial
	1503101	Ibu Pejabat Kastam Bintawa Kuching	Industrial
	1503103	Sarawak Boat Club Kuching	Industrial
	1503104	Springville Corporation Bintawa Kuching	Industrial
	1503105	Majlis Bandaran Kuching Selatan Kuching	Industrial
	1503106	Marine Base Bintawa Kuching	Industrial
	1503107	Setor Syarikat Telekom Bintawa Kuching	Industrial
	1503108	Peoples Mirror Tabuan Laru Kuching	Residential
	1503109	Rumah Sakit Peringatan Normah Kuching	Industrial
	1403100	Rumah Sakit Otak Batu 7 Kuching	Industrial
	2115100	Majlis Daerah Sarikei	Residential
	2115101	Pejabat Pelajaran Sarikei	Residential
	2115102	Rumah Rehat Sarikei	Residential
	2318101	Rejang Park Sibul	Industrial
	2318100	RTM Sibul	Industrial
	2318102	LPN Jalan Lanang Sibul	Industrial
	2318103	Shell Timur Malaysia Berhad Sibul	Industrial
	2318104	Jabatan Silbikultur Sibul	Industrial
	3130100	Sekolah Menengah Kebangsaan Bintulu	Industrial
	3230100	Sekolah Menengah Vokasional Bintulu	Industrial
	3130102	Ibu Pejabat Polis Bintulu	Industrial
	3130103	Lapangan Terbang Bintulu	Residential
	3130104	Pejabat Residen Bintulu	Commercial
	4440100	JPT Miri	Industrial
	4440101	Perpustakaan Piasau Miri	Industrial
	4440102	Rumah No. 80 Kem Piasau Miri	Industrial
	4440103	Rumah Rehat Piasau Miri	Industrial
	4440104	Rumah No. 77 Piasau Miri	Industrial
SABAH	5961100	Sekolah Menengah Vokasional Likas Kota Kinabalu	Residential
	6061100	Taman Richdar Menggatal Kota Kinabalu	Residential
	5961101	Taman Kelombong Inanam Kota Kinabalu	Industrial
	5961102	Oriental Park Penampang Kota Kinabalu	Residential
	6061101	Teluk Sepanggar Menggatal Kota Kinabalu	Industrial
	5860100	Taman Lok Kawi Kota Kinabalu	Industrial
	5083100	Urusetia Kecil Lahat Datu	Industrial
	5452100	Power Plant Ranca-Ranca SGI Labuan	Industrial
	5252100	Perumahan Ranca-Ranca Labuan	Industrial



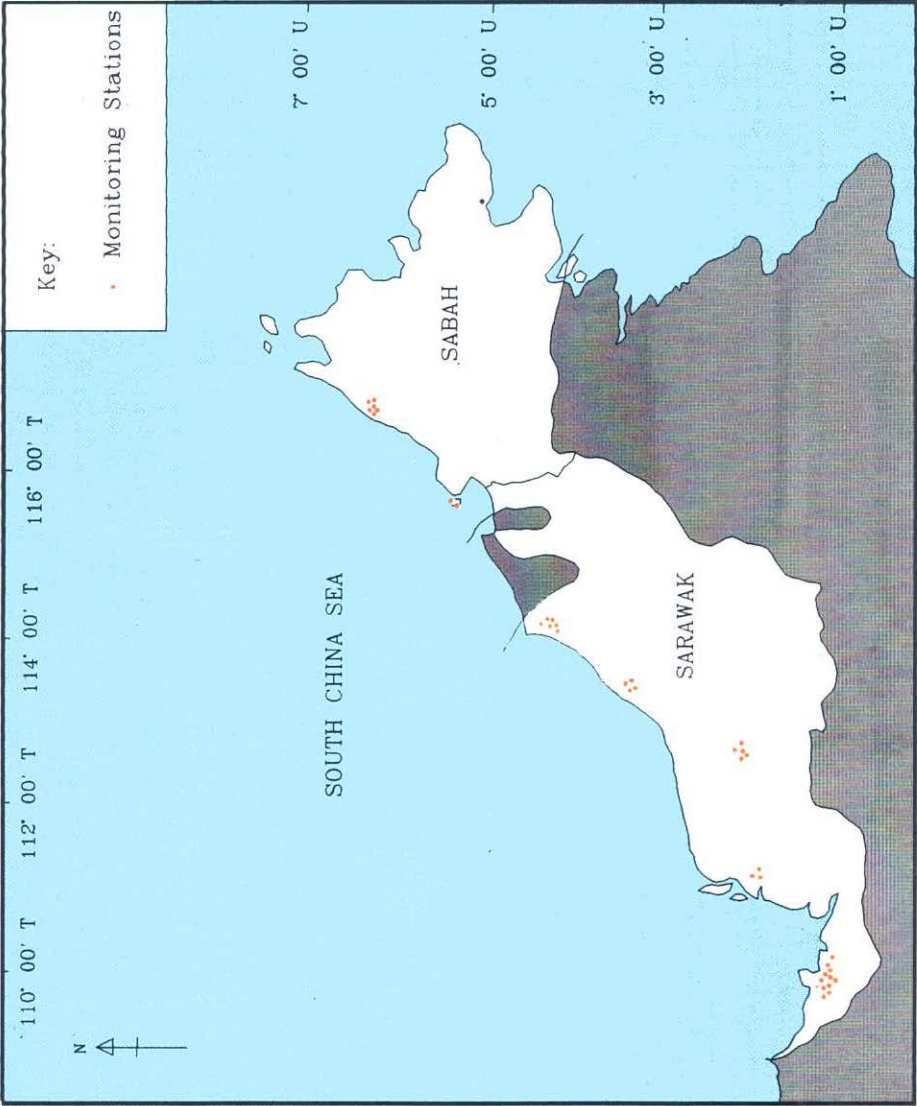
Appendix 4.3. Peninsular Malaysia: Distribution of Air Monitoring Stations for Total Suspended Particulates and Respirable Particles, 1991



Appendix 4.4. Sabah and Sarawak: Distribution of Air Monitoring Stations for Total Suspended Particulates, 1991



Appendix 4.5. Peninsular Malaysia: Distribution of Air Monitoring Stations for Dust Fallout, 1991



Appendix 4.6. Sabah and Sarawak: Distribution of Air Monitoring Stations for
Dust Fallout, 1991

Appendix 4.7

Malaysia: List of Parameters for Analysis

Parameter	Measurement Unit	Parameter	Measurement Unit
Colour	Hazen	Cadmium (Cd)	mg/l
Turbidity	FTU	Chromium (Cr)	mg/l
Conductivity	Umhos/cm	Copper (Cu)	mg/l
pH		Iron (Fe)	mg/l
BOD at 20 oC		Lead (Pb)	mg/l
COD		Magnesium (Mg)	mg/l
Ammoniacal Nitrogen		Manganese (Mn)	mg/l
Nitrate Nitrogen		Mercury (Hg)	mg/l
Nitrite Nitrogen		Nickel (Ni)	mg/l
Total Nitrogen		Sodium (Na)	mg/l
Chloride		Zinc (Zn)	mg/l
Fluoride		Potassium (K)	mg/l
Cyanide		Aluminium (Al)	mg/l
Sulphate		Silica (Si)	mg/l
Phosphate		E. Coli	MPN/100 ml
Hardness		Pre. Coliform	MPN/100 ml
Alkalinity		Dissolved Oxygen	mg/l
Suspended Solids		Temperature	oC
Dissolved Solids		Salinity	%
Total Solids		Pesticides :	
Oil and Grease		- Organochlorine	mg/l
Phenol		- Organophosphate	mg/l
Detergents (MBAS)		- Dieldrin	mg/l
Arsenic (As)		- Aldrin	mg/l
Boron (B)		- PCB	mg/l
Calcium (Ca)		- DDT	mg/l
		- BHC	mg/l

Appendix 4.8

Malaysia: Water Quality Classification Based on Index Values

Parameter	Index Range (%)		
	Clean	Slightly Polluted	Very Polluted
BOD	> 90	80 - 90	< 80
Ammoniacal Nitrogen	> 71	71 - 91	< 91
Suspended Solids	> 75	70 - 75	< 70

Appendix 4.9

General Rating Scale for the Water Quality Index (WQI) %

U S A G E	10	20	30	40	50	60	70	80	90	100%	
GENERAL	VERY POLLUTED										
PUBLIC WATER SUPPLY	NOT ACCEPTABLE					DOUBTFUL	NECESSARY TREATMENT BECOMING MORE EXTENSIVE	MINOR PURIFIC REQUIRED	PURIFICATION NOT NECESSARY		
	NOT ACCEPTABLE					DOUBTFUL ONLY FOR BOATING	DOUBTFUL FOR WATER CONTACT	BECOMING POLLUTED STILL ACCEPTABLE NEED BACTERIA COUNT	ACCEPTABLE FOR ALL WATER SPORTS		
FISH, SELFISH AND WILDLIFE	NOT ACCEPTABLE					COARSE FISH ONLY	HANDY FISH ONLY	DOUBTFUL FOR SENSITIVE FISH	MARGINAL FOR TROUT	ACCEPTABLE FOR ALL FISH	
NAVIGATION	NOT ACCEPTABLE					OBVIOUS POLLUTION APPEARING	ACCEPTABLE				
TREATED WATER TRANSPORTATION	NOT ACCEPTABLE	ACCEPTABLE									
U S A G E S	10	20	30	40	50	60	70	80	90	100%	

Proposed Interim National Water Quality Standards
for Malaysia

PARAMETERS	CLASSES				
	I	IIA	IIB	III#	IV
Ammoniacal Nitrogen	0.1	0.3	0.3	0.9	2.7
BOD (mg/l)	1	3	3	6	12
COD (mg/l)	10	25	25	50	100
DO (mg/l)	7	5 - 7	5 - 7	3 - 5	3
pH	6.5 - 8.5	6.5 - 9.0	6.5 - 9.0	5 - 9	5 - 9
Colour (TUC)	15	150	150	-	-
Elect.Conductivity (umhos/cm) **	1000	1000	-	-	6000
Floatables	NV	NV	NV	-	-
Odour	N00	N00	N00	-	-
Salinity (%) **	0.5	1	-	-	2
Taste	NOT	NOT	NOT	-	-
Total Dissolved Solids (mg/l)	500	1000	-	-	4000
Total Suspended Solids (mg/l)	25	50	50	150	300
Temperature (C)	-	Normal 2	-	Normal 2	-
Turbidity (NTU)	5	50	50	-	-
Faecal Coliform (counts/100 ml)	10	100	400	5000 (20000)a	5000 (20000)a
Total Coliform (counts/100 ml)	100	5000	5000	5000	5000
Al (mg/l)	-	-	-	0.056	0.5
As (mg/l)	-	0.05	-	0.045 (0.44)	0.1
Ba (mg/l)	-	1	-	-	-
Cd (mg/l)	-	0.005	-	0.001 (0.011**)	0.01

(Continued)

Proposed Interim National Water Quality Standards
for Malaysia

CLASSES						
PARAMETERS	I	IIA	IIB	III#	IV	V
Cr (IV) (mg/L)		0.05		0.054 (1.45)	0.1	
Cr (III) mg/L)		-		- (2.53)	-	L
Cu (mg/L)	N	1		0.01 (0.012*)	0.2	E
Hardness (mg/L)	A	100		-	-	V
Ca (mg/L)	T	-		-	-	E
Mg (mg/L)	U	0.05		-	-	L
Na (mg/L)	R	-		-	3 SAR	S
K (mg/L)	A	-	NR	-	-	A
Fe (mg/L)	L	0.3		1	1 (Leaf) 5 (Others)	B
Pb (mg/L)	L	0.05		0.01 (0.014*)	5	O
Mn (mg/L)	E	0.1		0.1	-	V
Hg (mg/L)	V	0.001		0.0001 (0.004)	0.2	E
Ni (mg/L)	E					
	L	0.05		- (0.9*)	0.2	
	S					
Se (mg/L)		0.01		0.037 (0.25)	0.02	
Ag (mg/L)		0.05		- (0.0002)	-	
Sr (mg/L)		NR		0.05		
U (mg/L)		NR		-	-	
Zn (mg/L)		5		- (0.35)	2	

(Continued ...)

Proposed Inetrim National Water Quality Standards
for Malaysia

PARAMETERS	CLASSES				
	I	IIA	IIB	III#	IV
B (mg/l)		1		3.4	0.75
Cl (mg/l)		200		-	79
Cl2 (mg/l)		-		0.022	-
CN (mg/l)	N	0.02		0.0023 (0.058)	L
F (mg/l)	A	1		-	E
	T			(11)	V
NO3/NO2 (mg/l)	U	7/3		0.028 (0.37)	E
P (mg/l)	R	0.1		0.1	L
Silica (mg/l)	A	50	NR	-	S
SO4 (mg/l)	L	200		-	A
S (mg/l)	L	0.05		0.001	B
CO2 (mg/l)	E	-		-	O
Gross- (Bql)	V	0.1			V
Gross- (Bql)	E	1		-	E
Ra-226 (Bql)	L	+0.1		-	IV
Sr-90 (Bql)	S	+0.1		-	-
CCE (ug/l)		500		-	-
MBAS/BAS (ug/l)		500		200	-
O & G (Mineral) (mg/l)		40;NF		NL	-
O & G (Emulsified edible) (ug/l)		7000;NF		NL	-
PCB (mg/l)		0.1		0.044 (6.1)	-

(Continued ...)

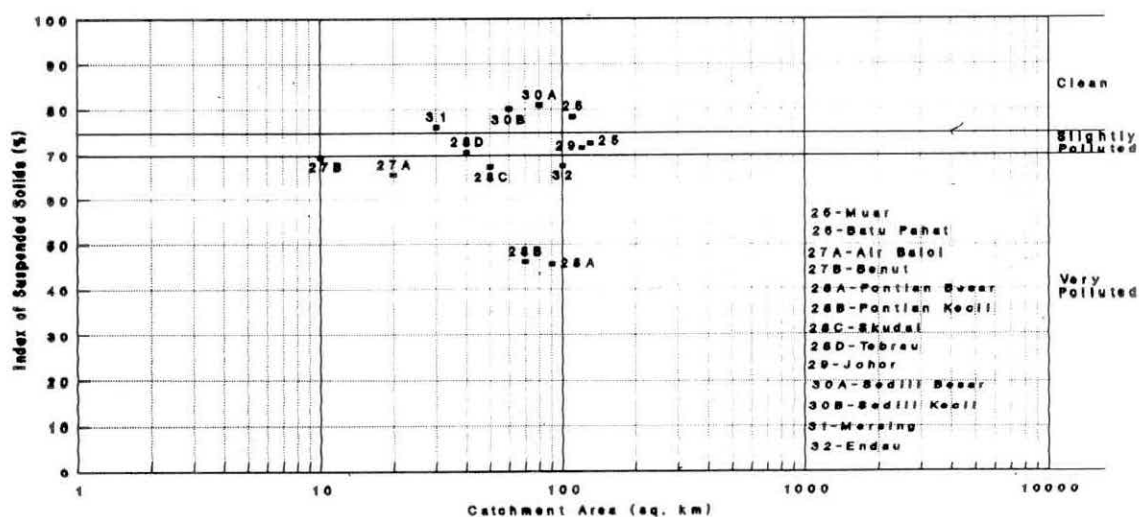
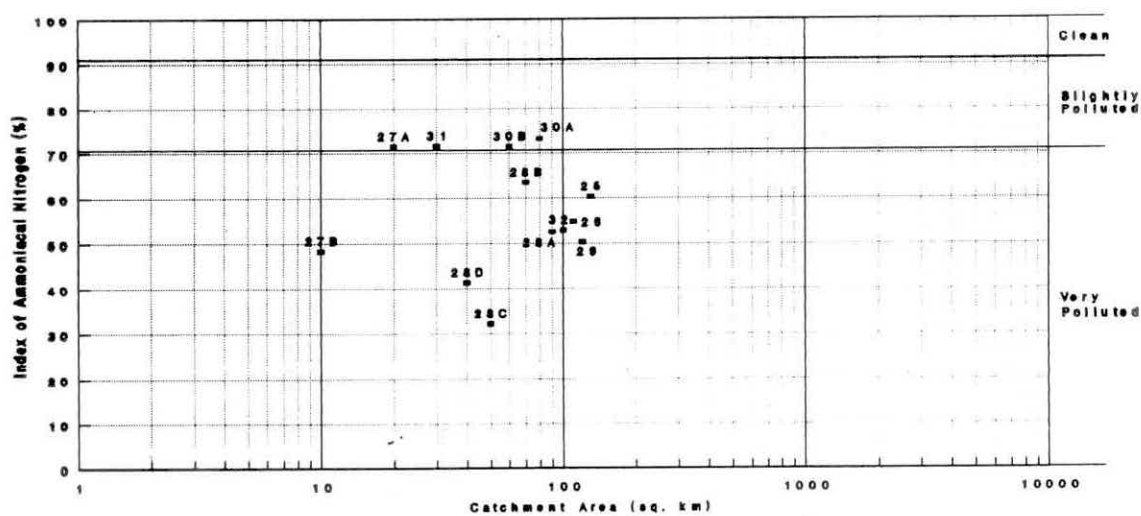
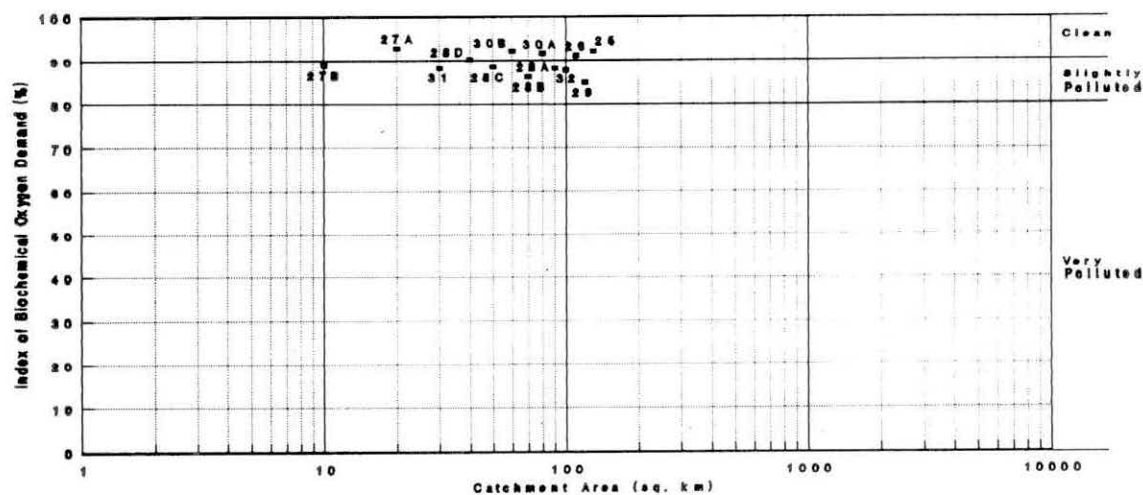
**Proposed Interim National Water Quality Standards
for Malaysia**

PARAMETERS	CLASSES					
	I	IIA	IIB	III#	IV	V
Phenol (ug/L)	A	10	NR	- (9900)	NR	NR
Aldrin/	B	0.02		0.008		
Dieldrin (ug/L)	S			(0.2) 0.13		
	E			(9.9)		
BHC (ug/L)	N	2		(2.2) 0.004		
Chlordane (ug/L)	T	0.08		(1)		
t-DDT (ug/L)		0.1		- (0.01)		
Endosulfan (ug/L)		10		0.06		
Heptachlor /	A	0.05		(0.91)		
Epoxide (ug/L)	B			0.38 (2.9)		
Lindane (ug/L)	S	2		(450)		
	E		NR	(160)	NR	NR
2, 4-D (ug/L)	N	70		(850)		
2, 4, 5-T (ug/L)	T	10		(1800)		
2, 4, 5-TP (ug/L)		4				
Paraquat (ug/L)		10				

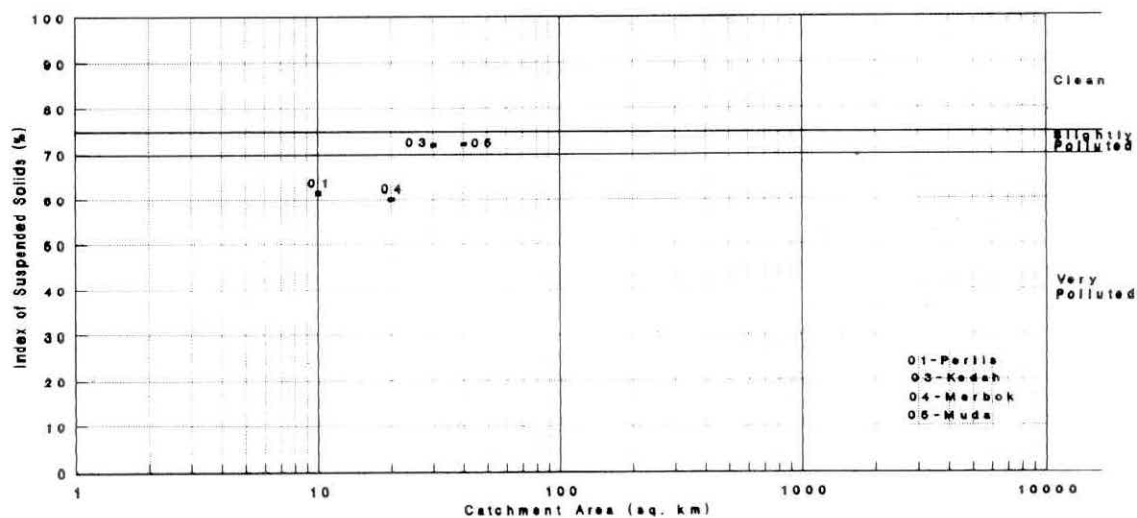
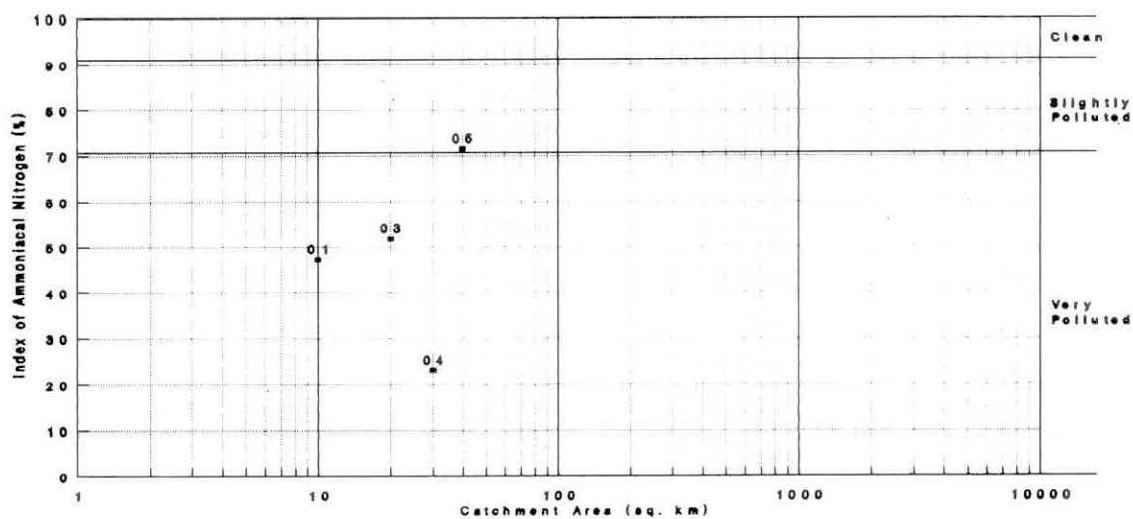
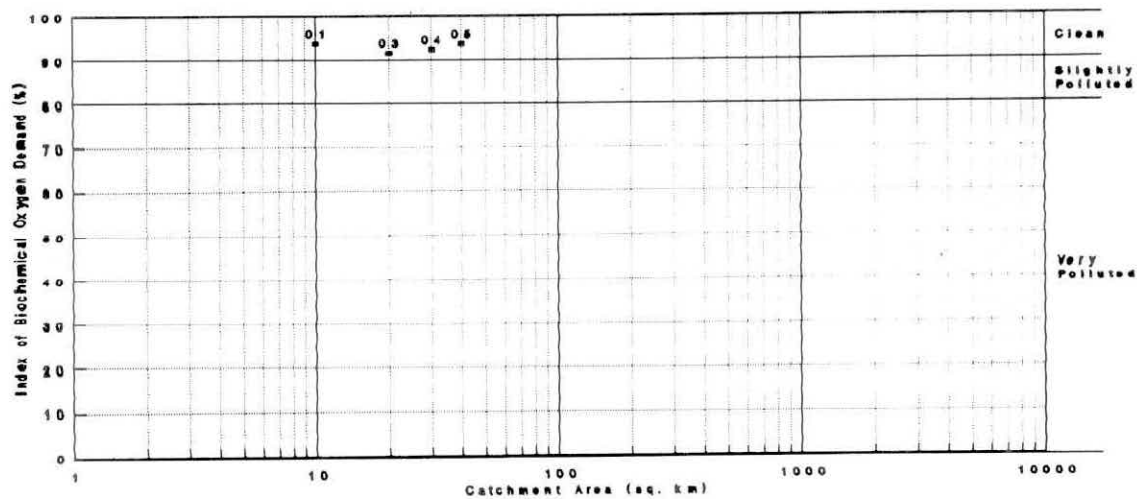
(Continued ...)

Proposed Interim National Water Quality Standards for Malaysia

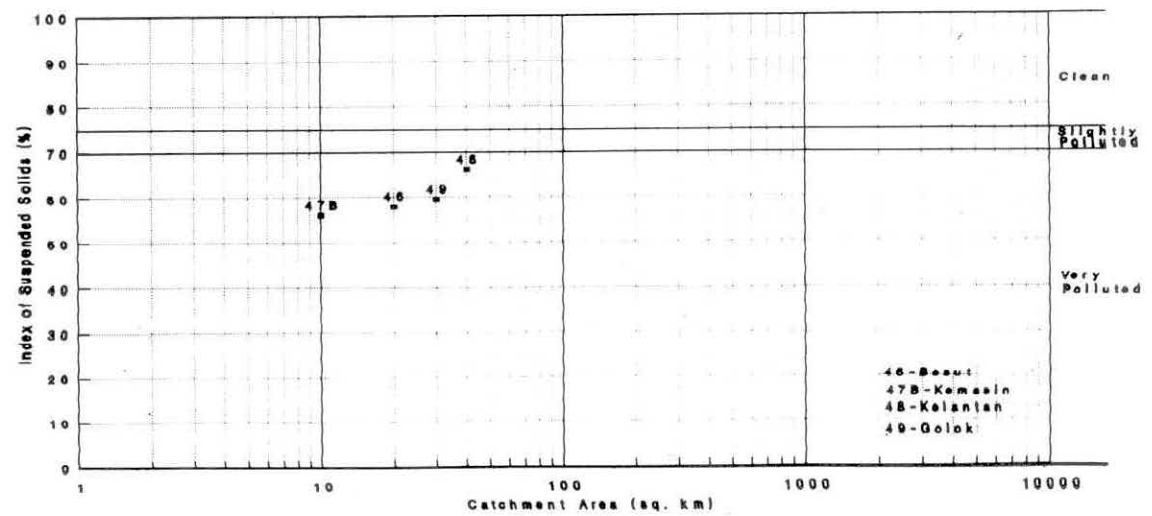
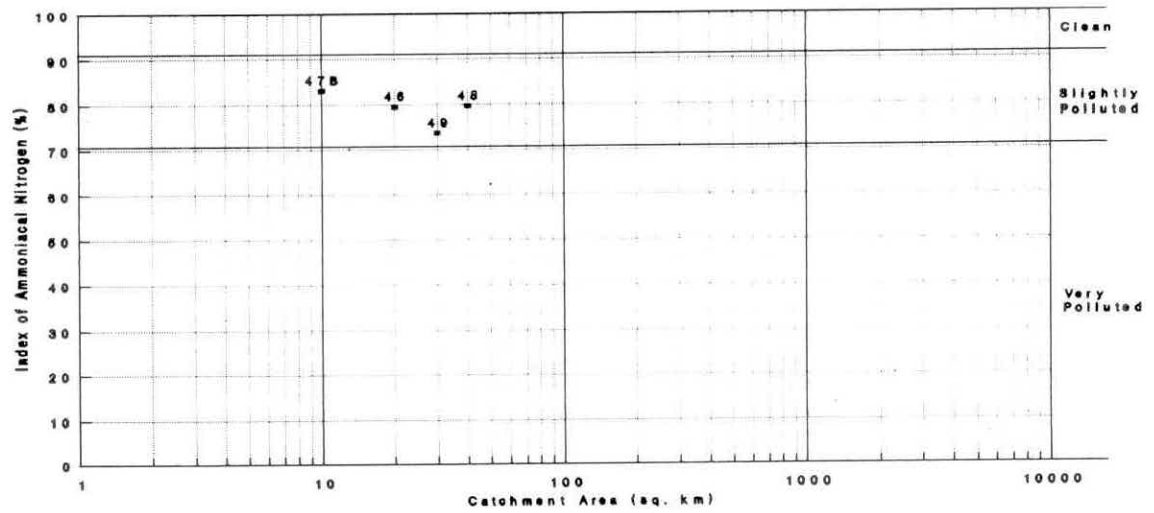
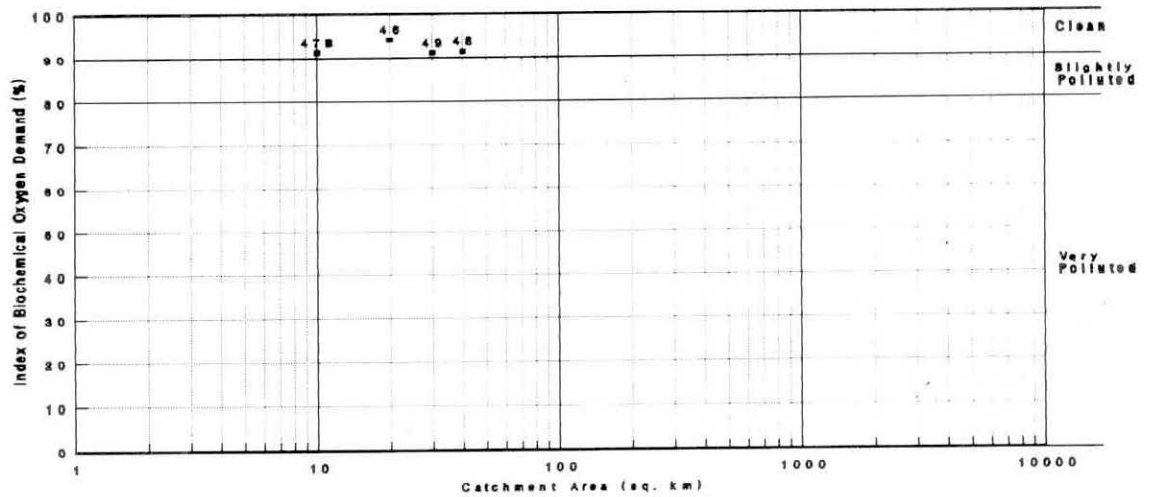
NOTES	
CLASS I :	Conservation of natural environment Water Supply I - practically no treatment necessary. Fishery I - very sensitive aquatic species
CLASS IIA :	Water Supply II - conventional treatment required Fishery II - sensitive aquatic species
CLASS IIB :	Recreational use with body contact
CLASS III :	Water Supply III - extensive treatment required Fishery III - common, of economic value, and tolerant species Livestock drinking
CLASS IV :	Irrigation
CLASS V :	None of the above
NV -	No Visible floatable materials or debris
NOO -	No Objectionable odour
NOT -	No Objectionable taste
** -	Related Parameters, only one recommended for use
a -	Maximum not to be exceeded
NR -	No Recommendation
* -	At hardness 50 mg/l CaCO ₃
# -	24-hr average and maximum (bracketed) concentrations are shown
NF -	Free from visible film, sheen, discoloration and deposits
NL -	Free from visible layer, discoloration and deposits
# -	24-hr average and maximum (bracketed) concentration are shown



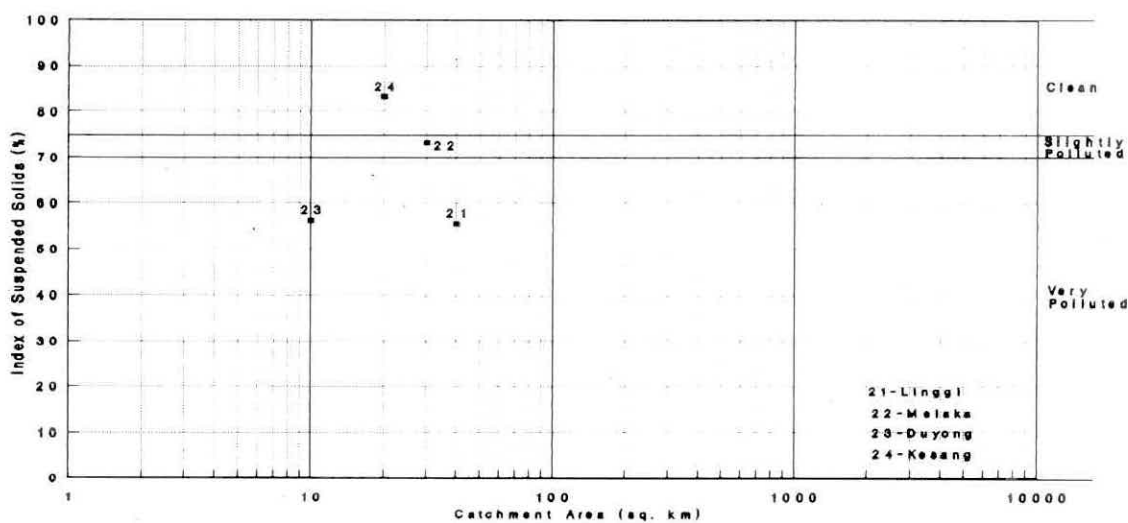
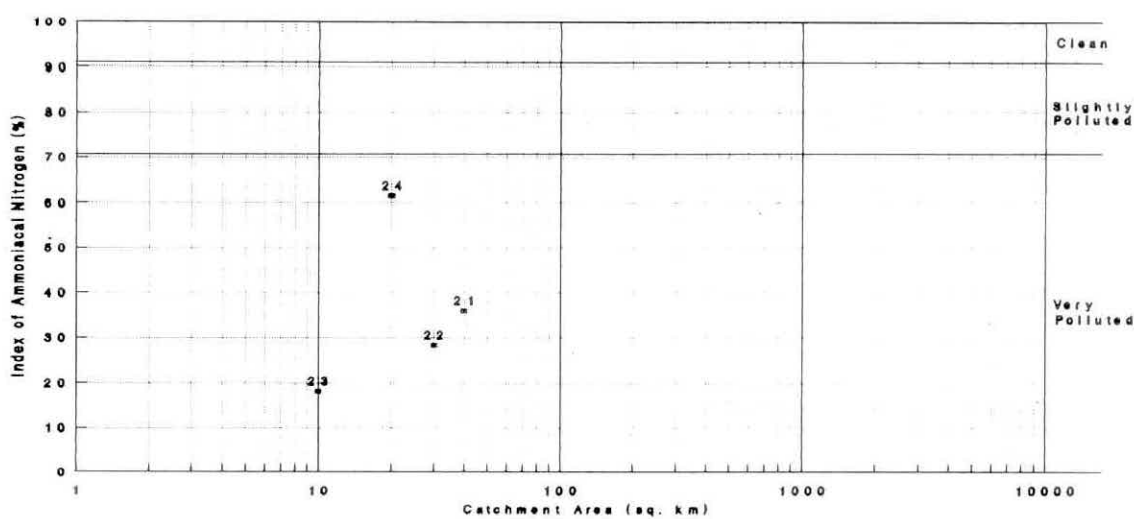
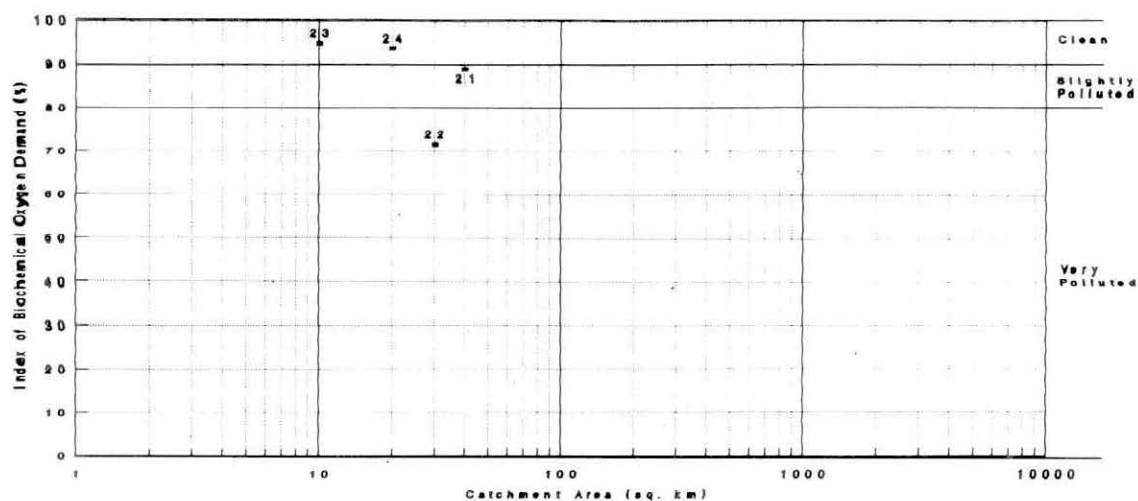
Appendix 4.11 Johor: Status of River Water Quality, 1991



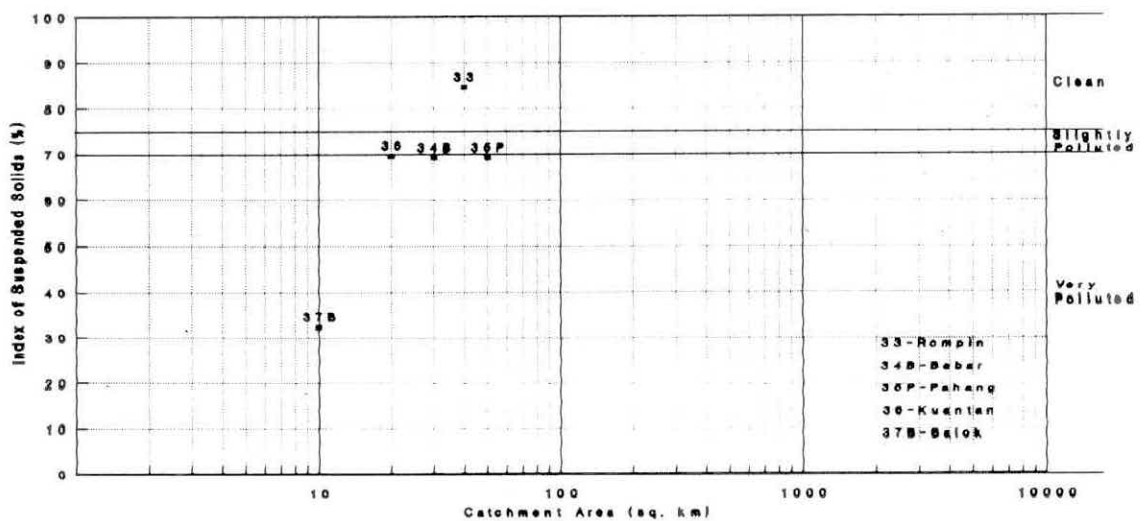
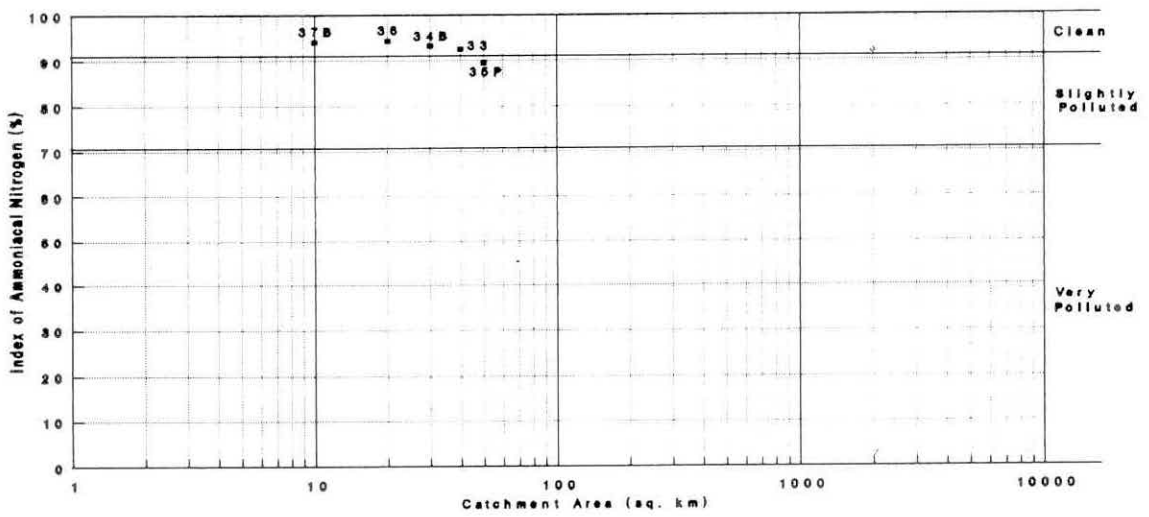
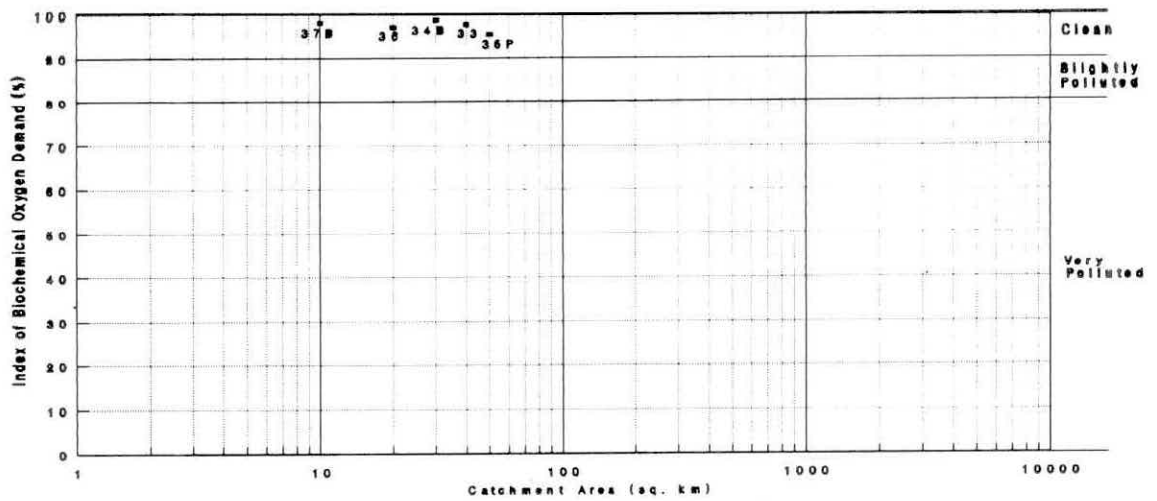
Appendix 4.12 Kedah/Perlis: Status of River Water Quality, 1991



Appendix 4.13 Kelantan: Status of River Water Quality, 1991

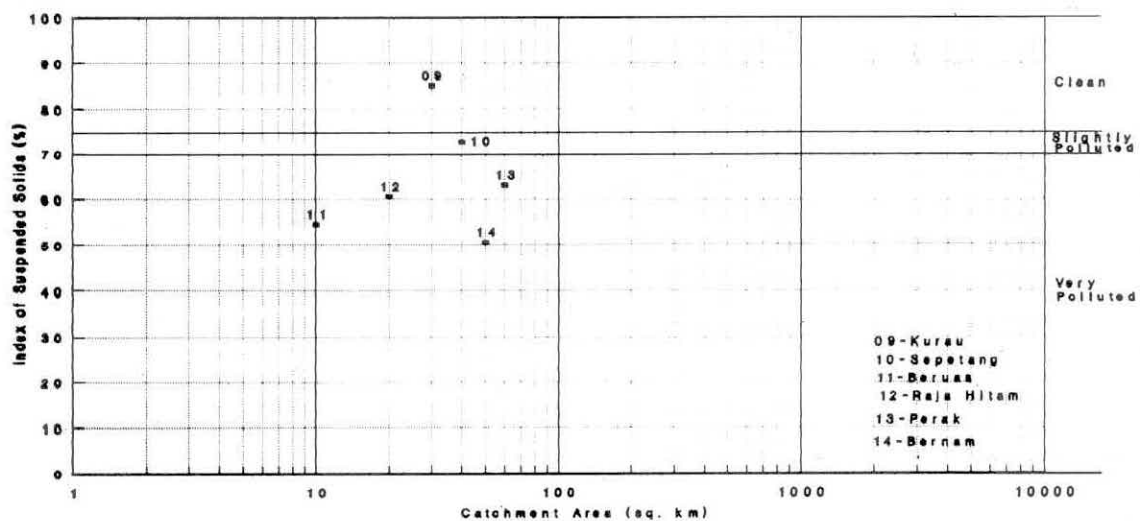
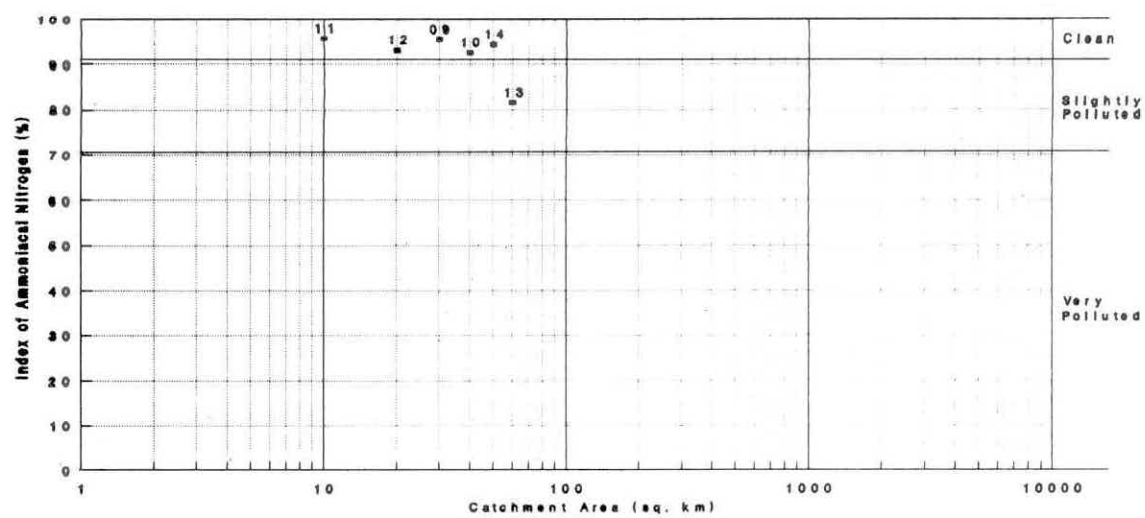
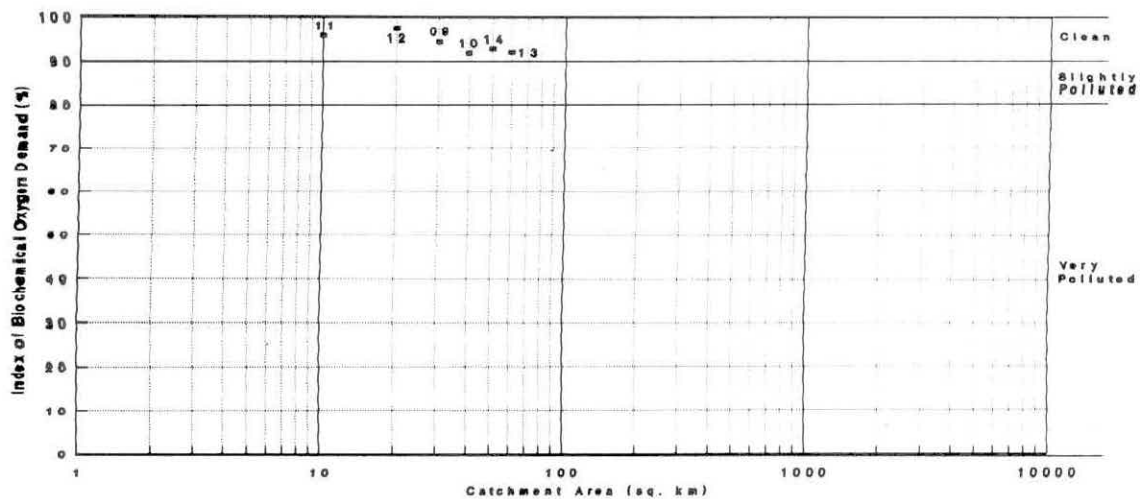


Appendix 4.14 Negeri Sembilan/Melaka: Status of River Water Quality, 1991

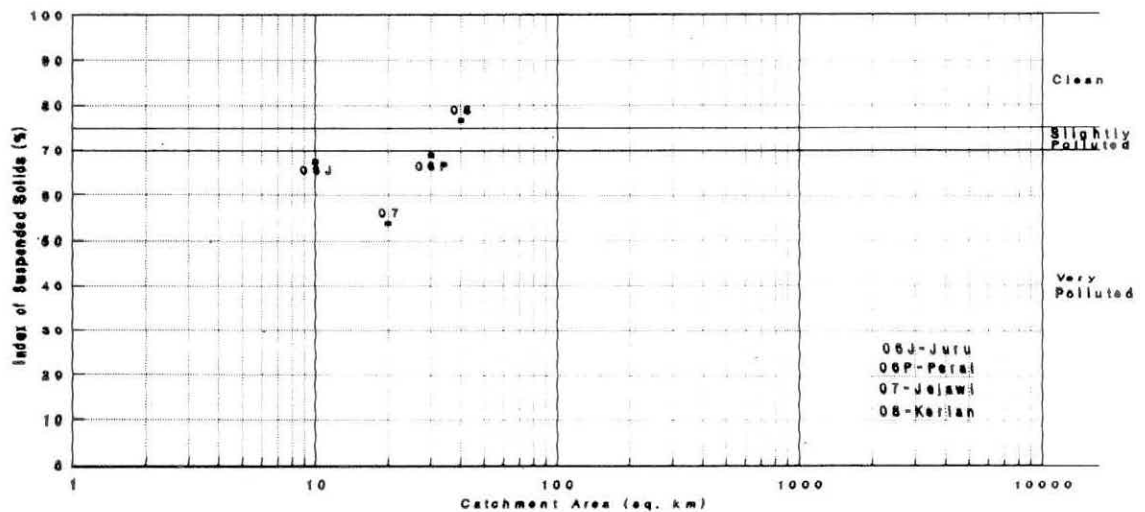
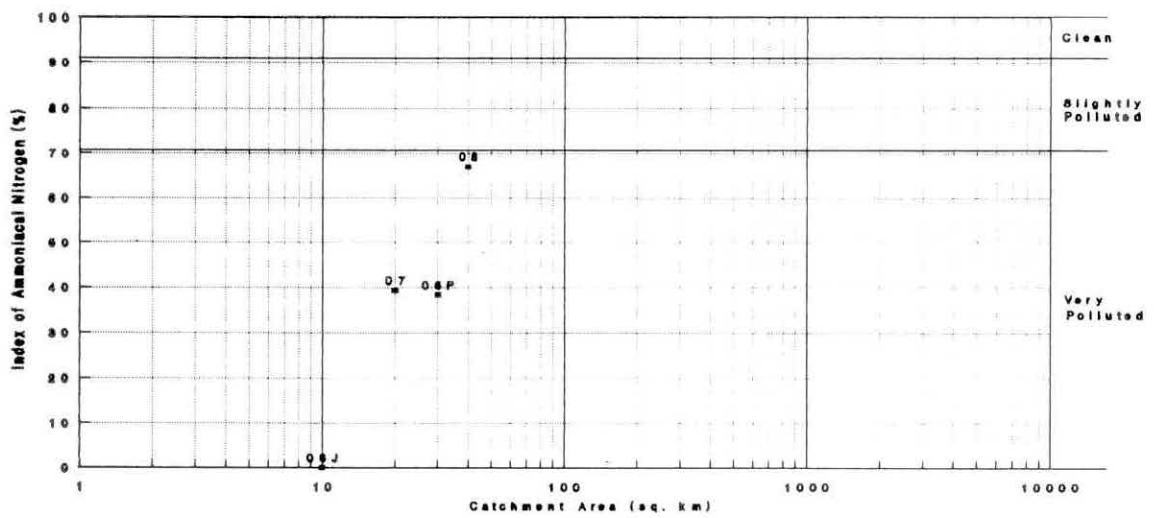
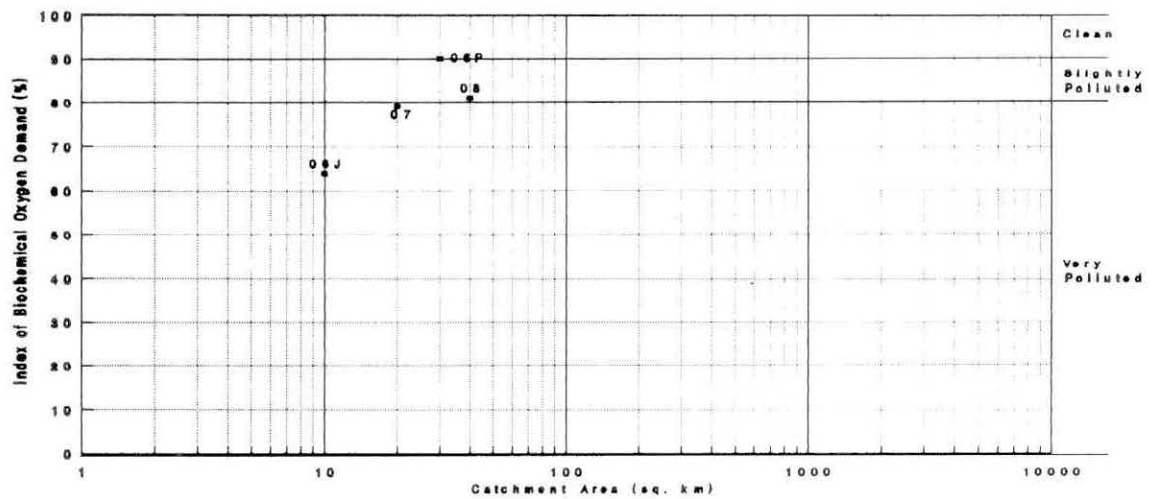


33-Rompin
34B-Bebar
36P-Pahang
36-Kuantan
37B-Selangor

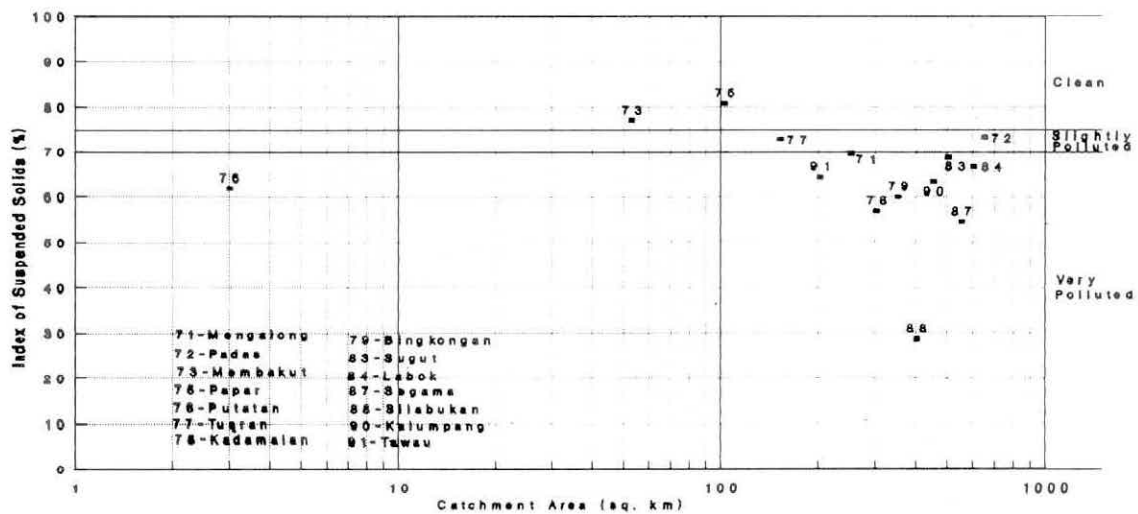
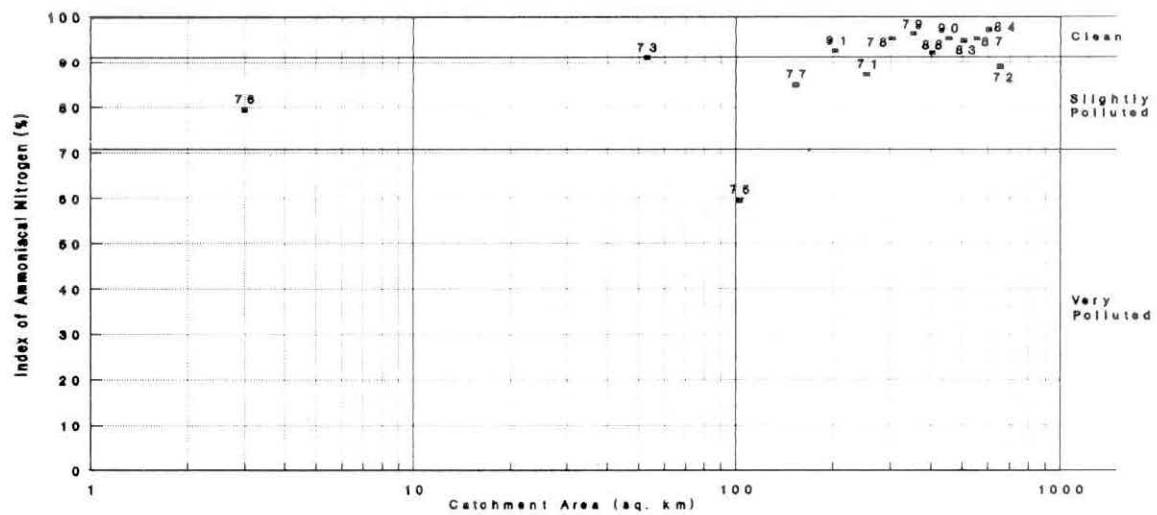
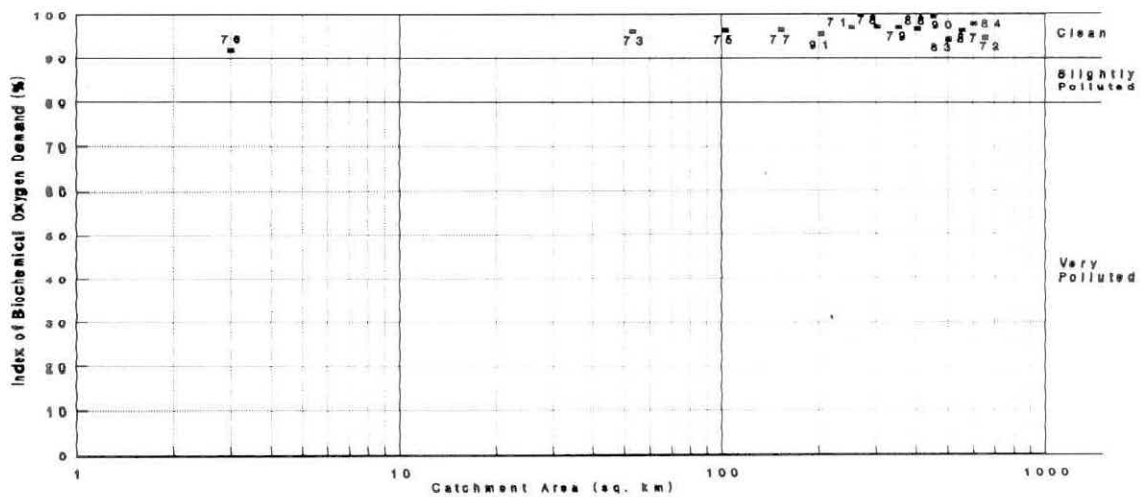
Appendix 4.15 Pahang: Status of River Water Quality, 1991



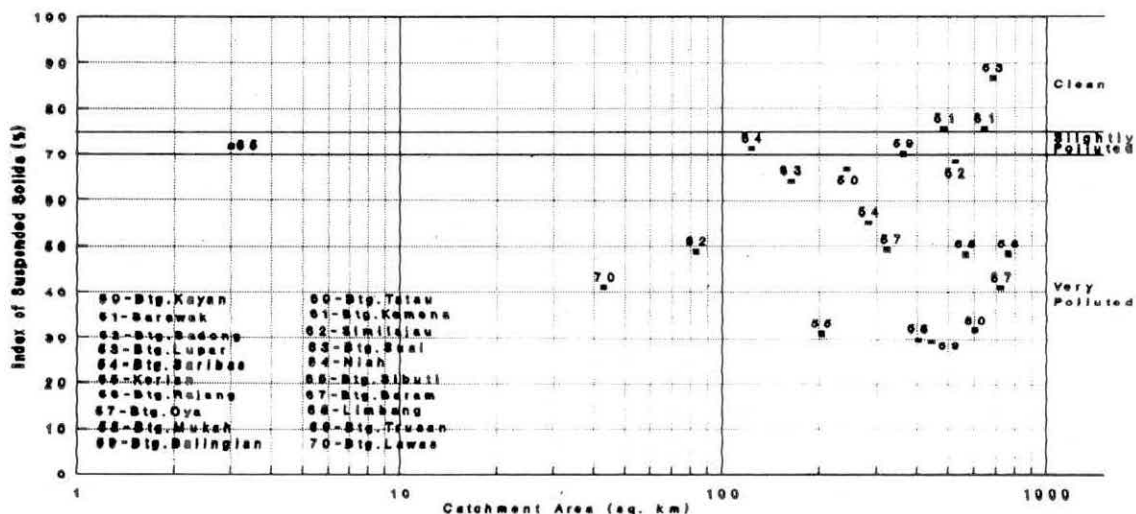
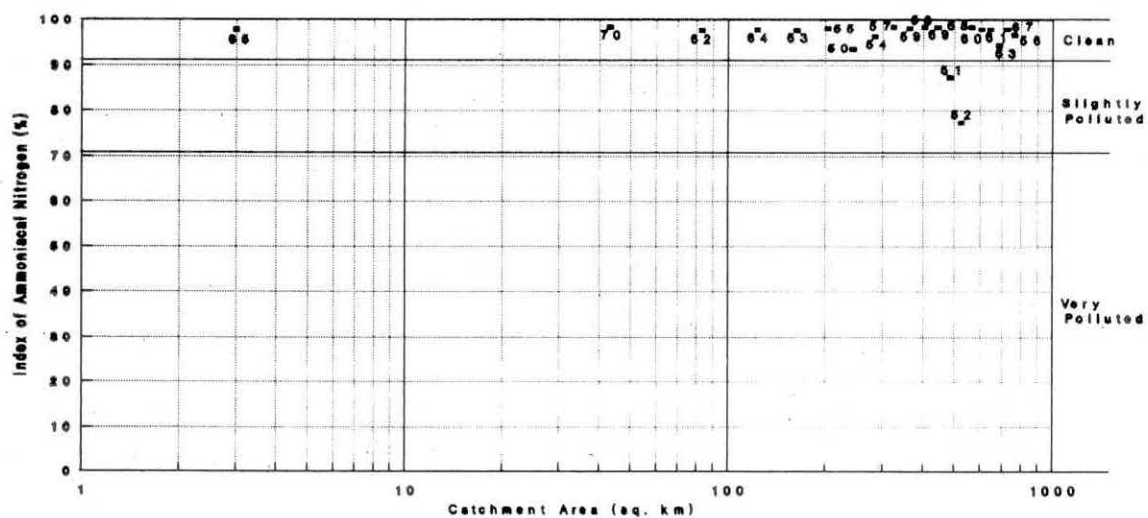
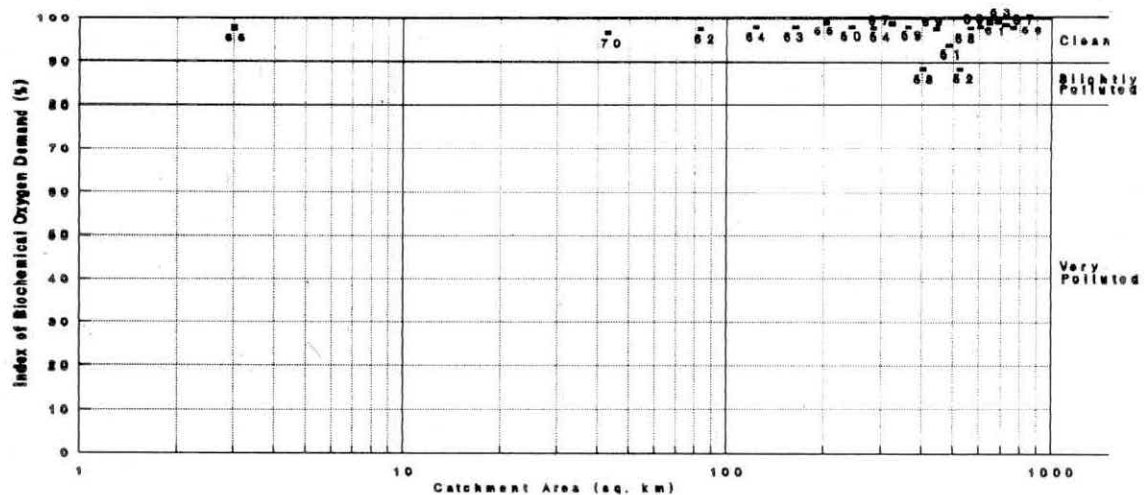
Appendix 4.16 Perak: Status of River Water Quality, 1991



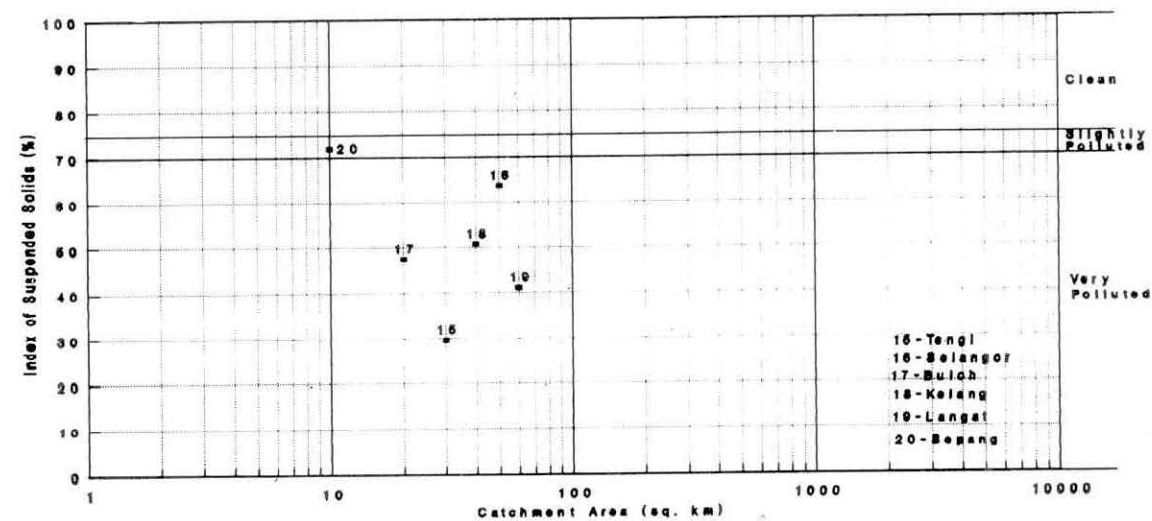
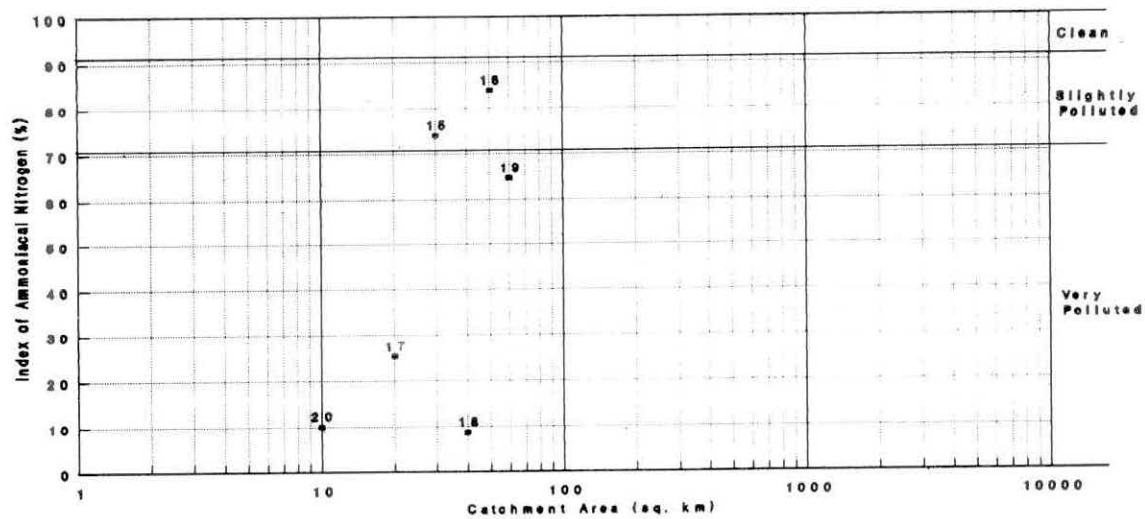
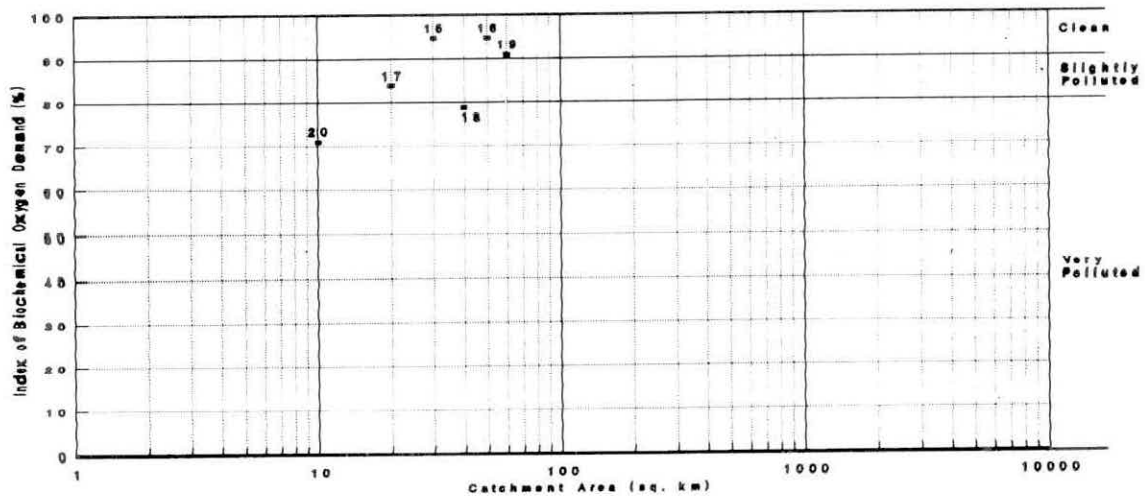
Appendix 4.17 Pulau Pinang: Status of River Water Quality, 1991



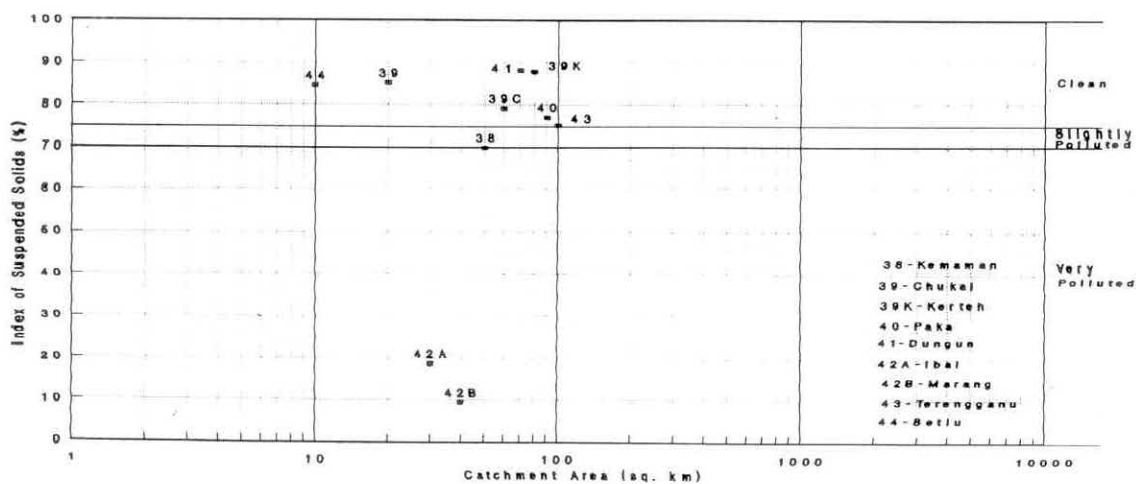
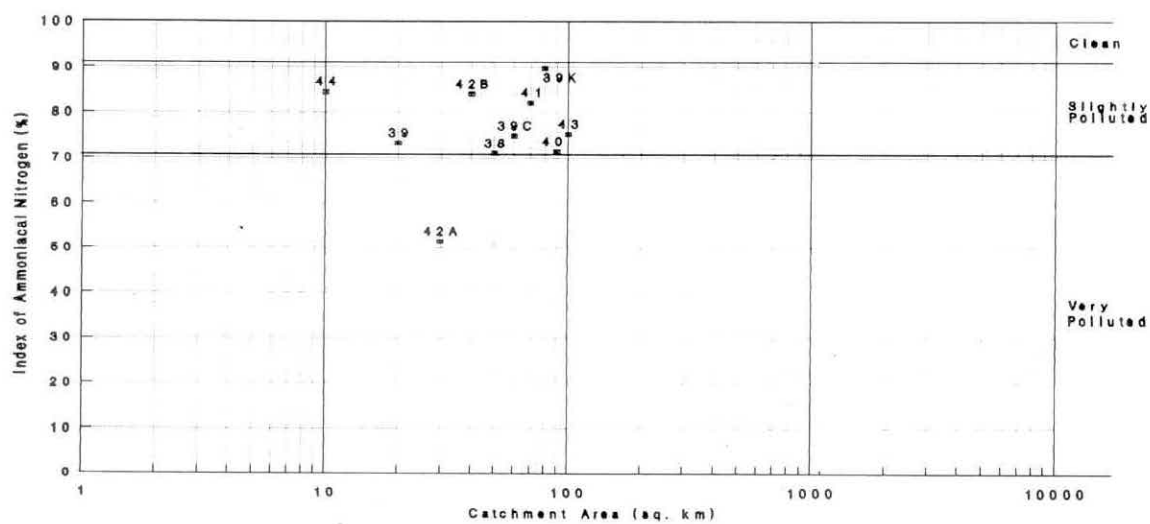
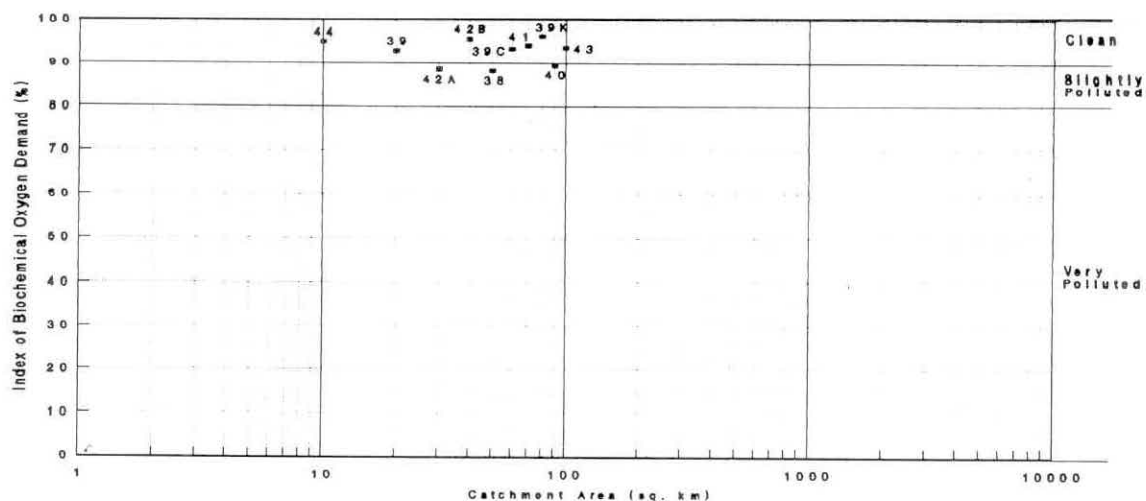
Appendix 4.18 Sabah: Status of River Water Quality, 1991



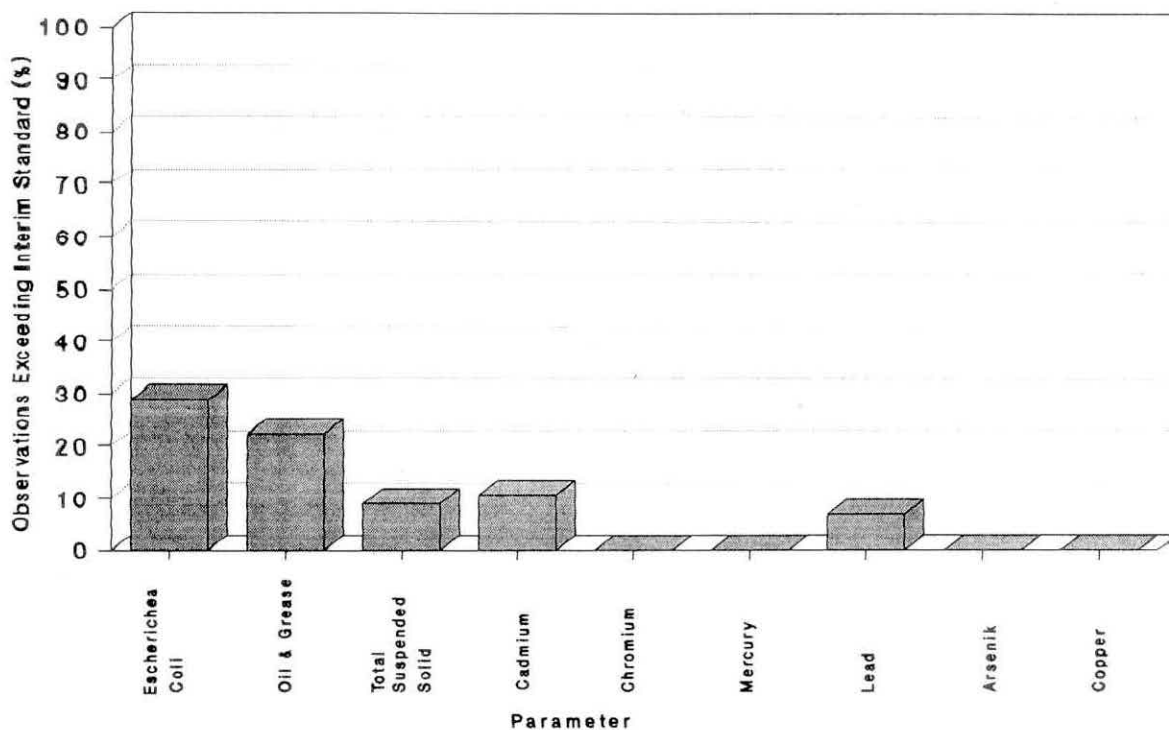
Appendix 4.19 Sarawak: Status of Water Water Quality, 1991



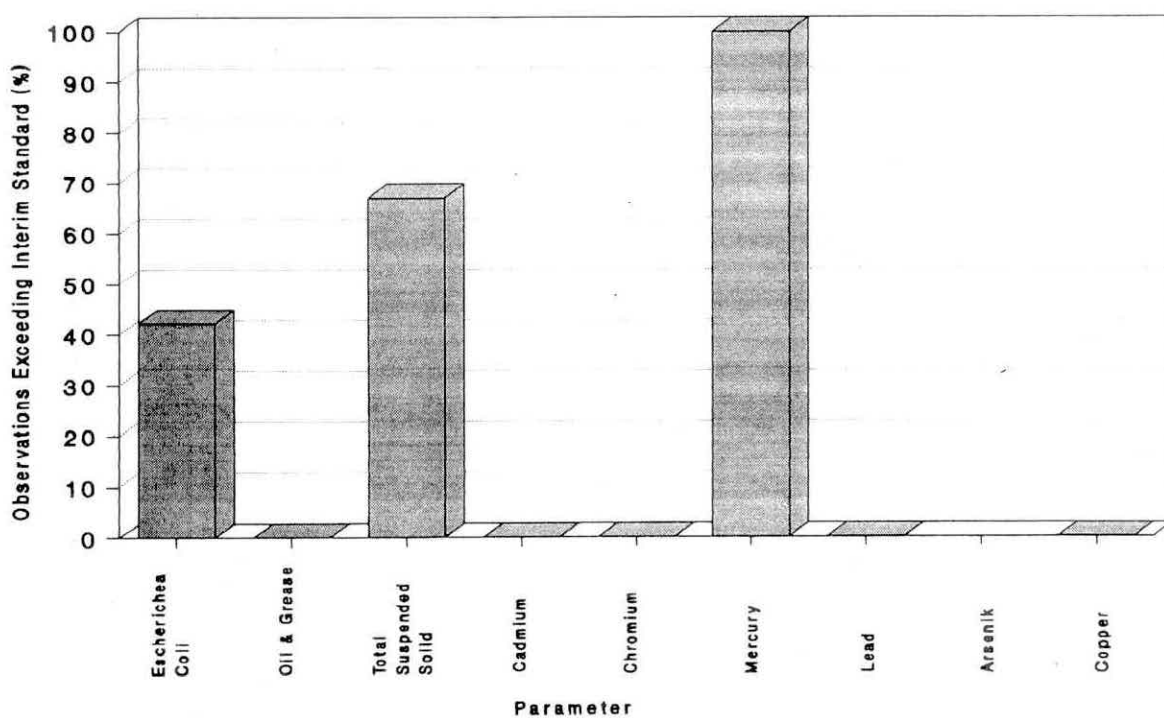
Appendix 4.20 Selangor: Status of River Water Quality, 1991



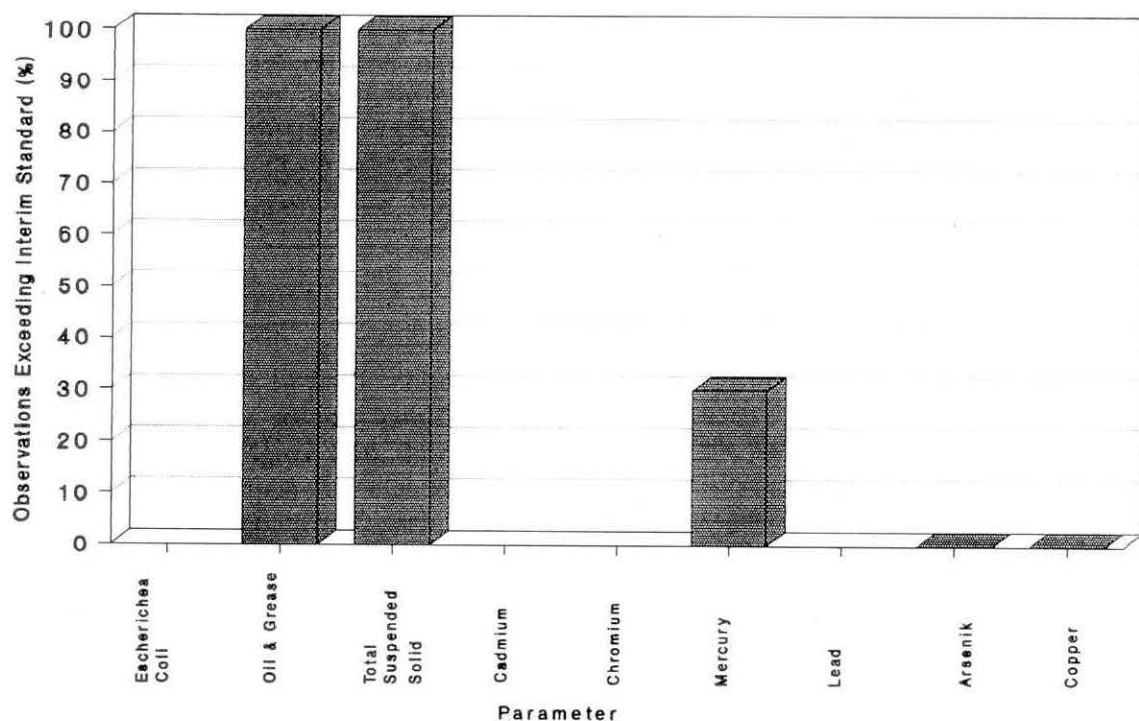
Appendix 4.21 Terengganu: Status of River Water Quality, 1991



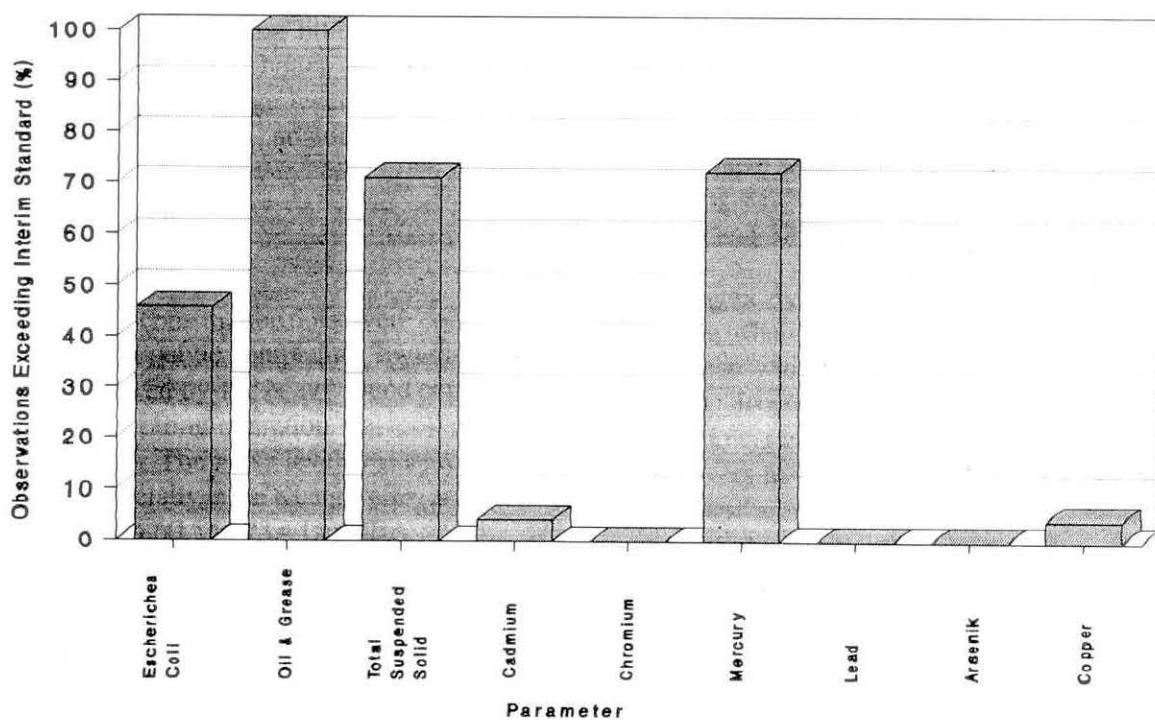
Appendix 4.22 Johor: Status of Marine Water Quality, 1991



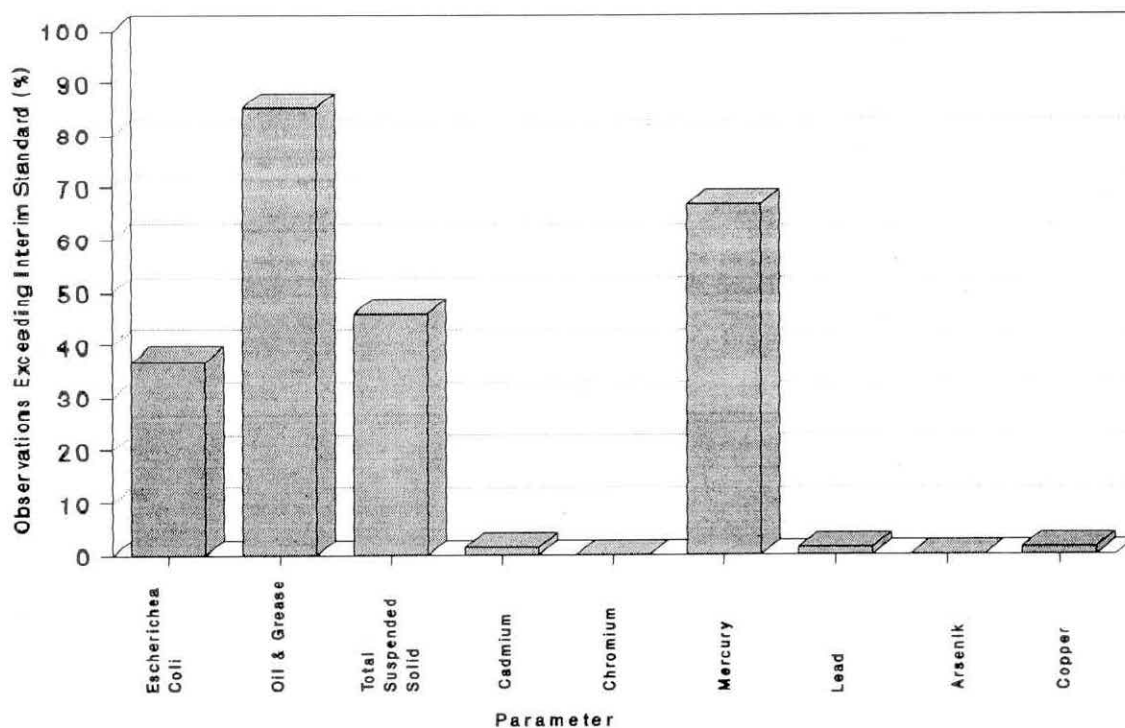
Appendix 4.23 Kedah: Status of Marine Water Quality, 1991



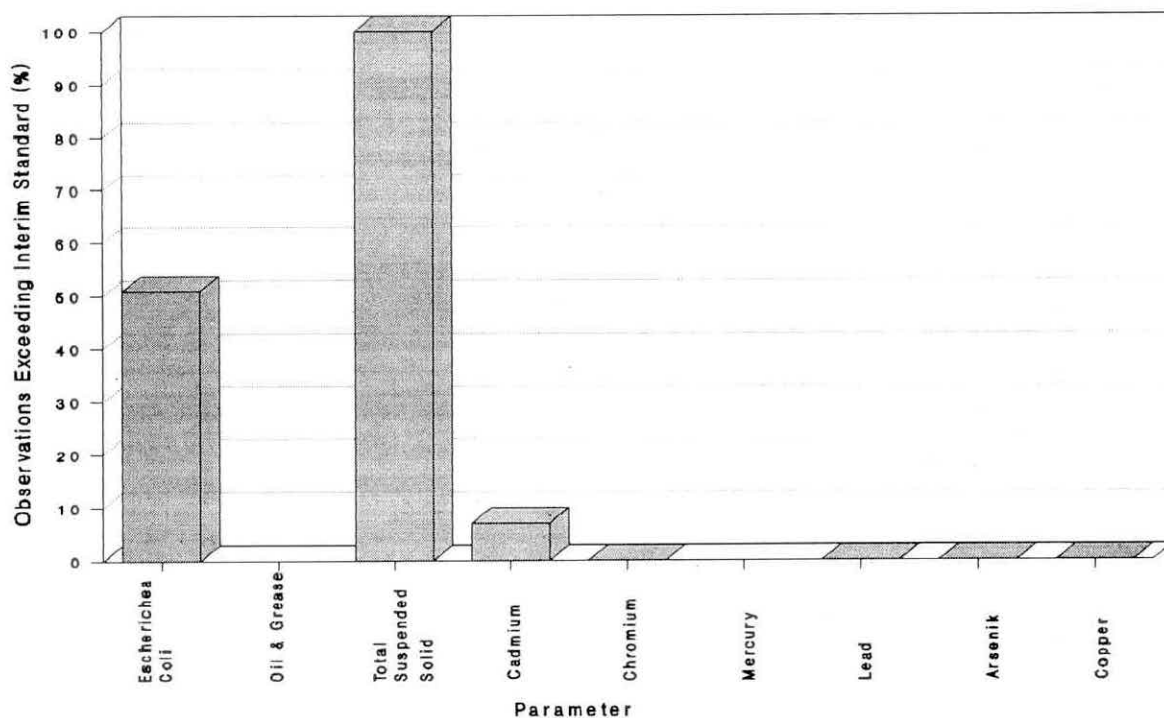
Appendix 4.24 Kelantan: Status of Marine Water Quality, 1991



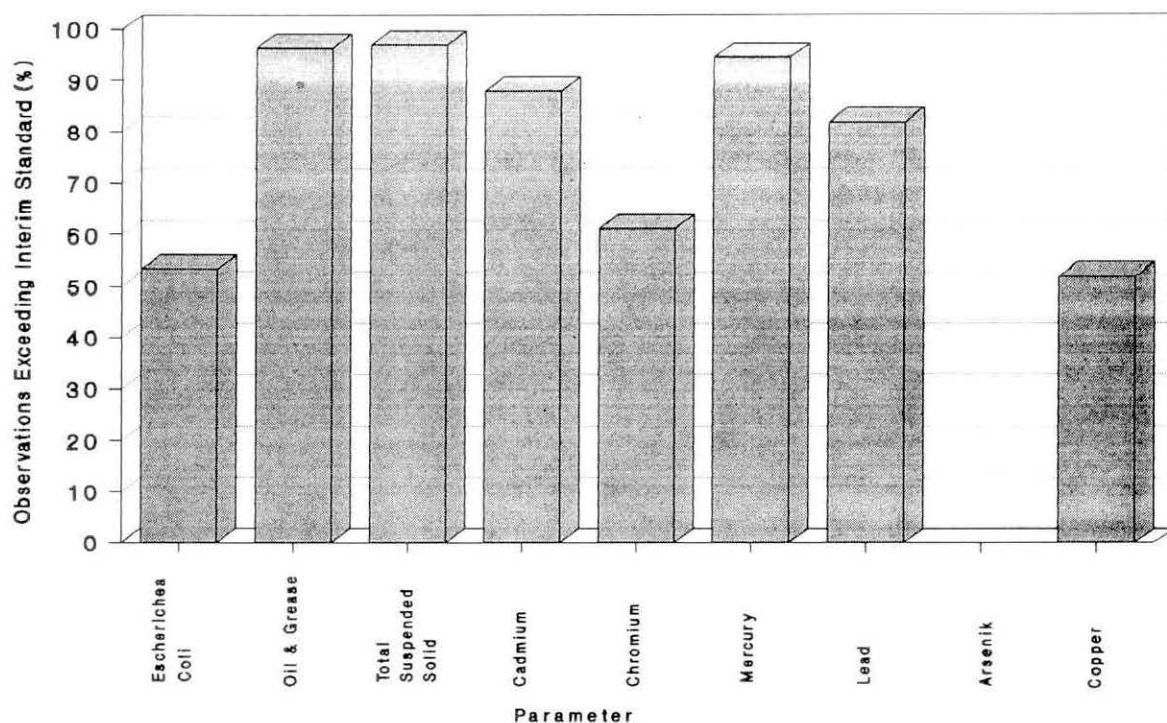
Appendix 4.25 Melaka: Status of Marine Water Quality, 1991



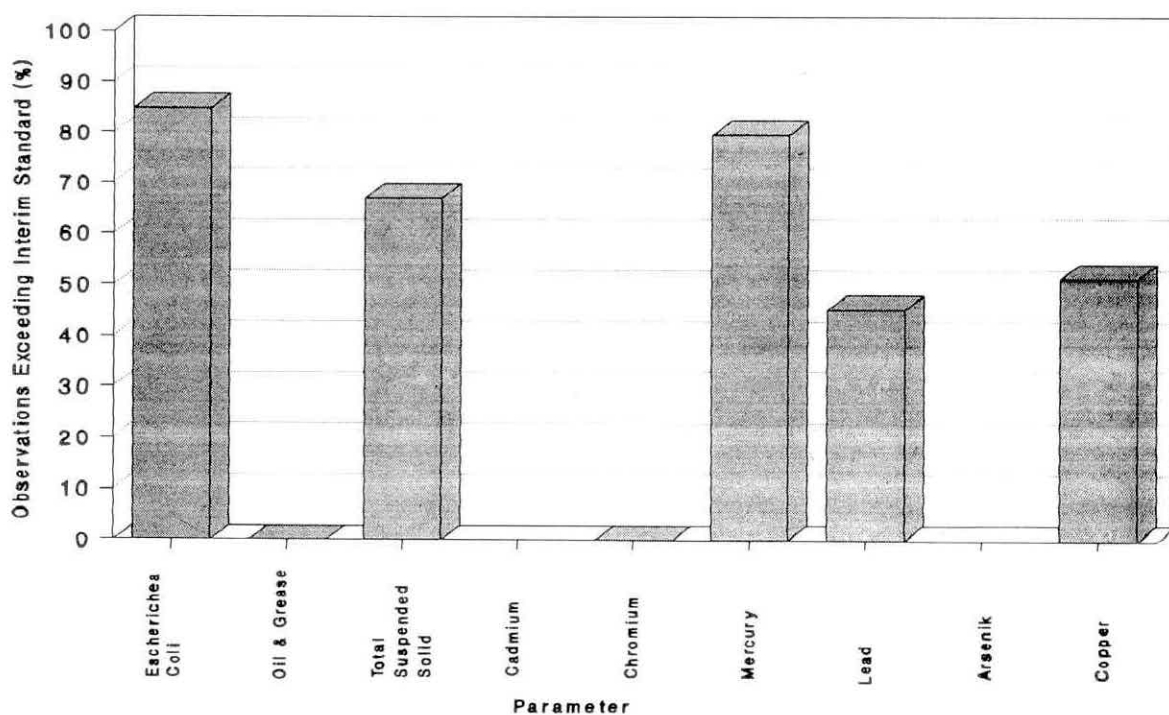
Appendix 4.26 Negri Sembilan: Status of Marine Water Quality, 1991



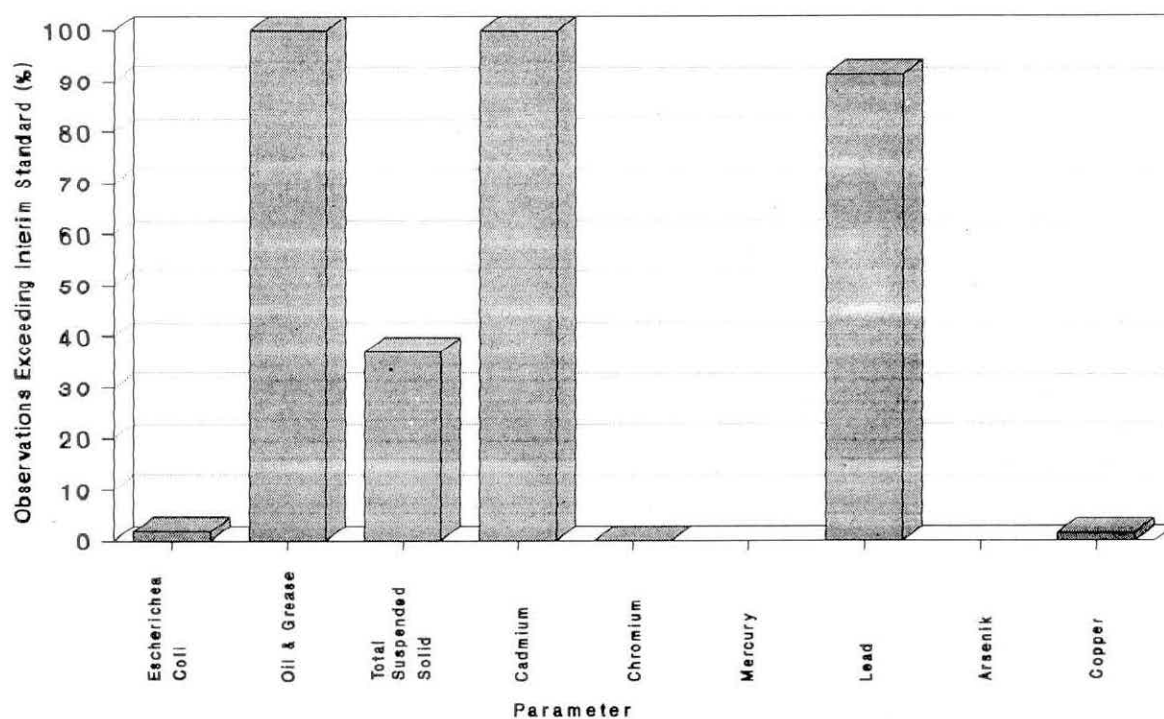
Appendix 4.27 Pahang: Status of Marine Water Quality, 1991



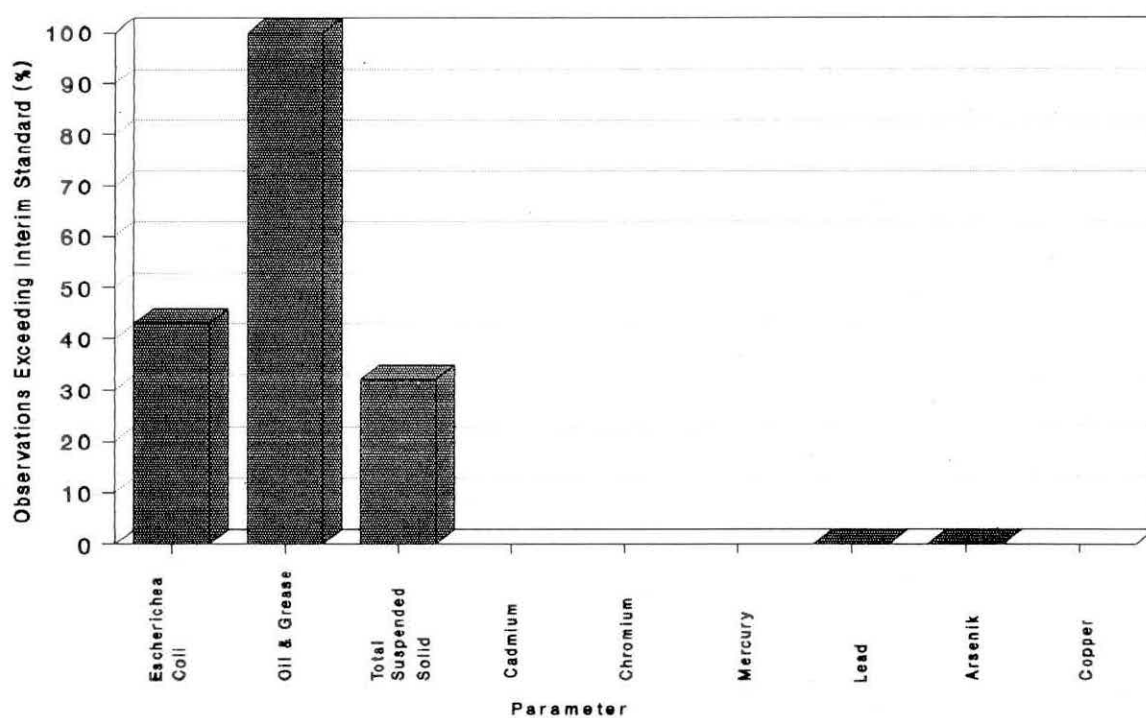
Appendix 4.28 Perak: Status of Marine Water Quality, 1991



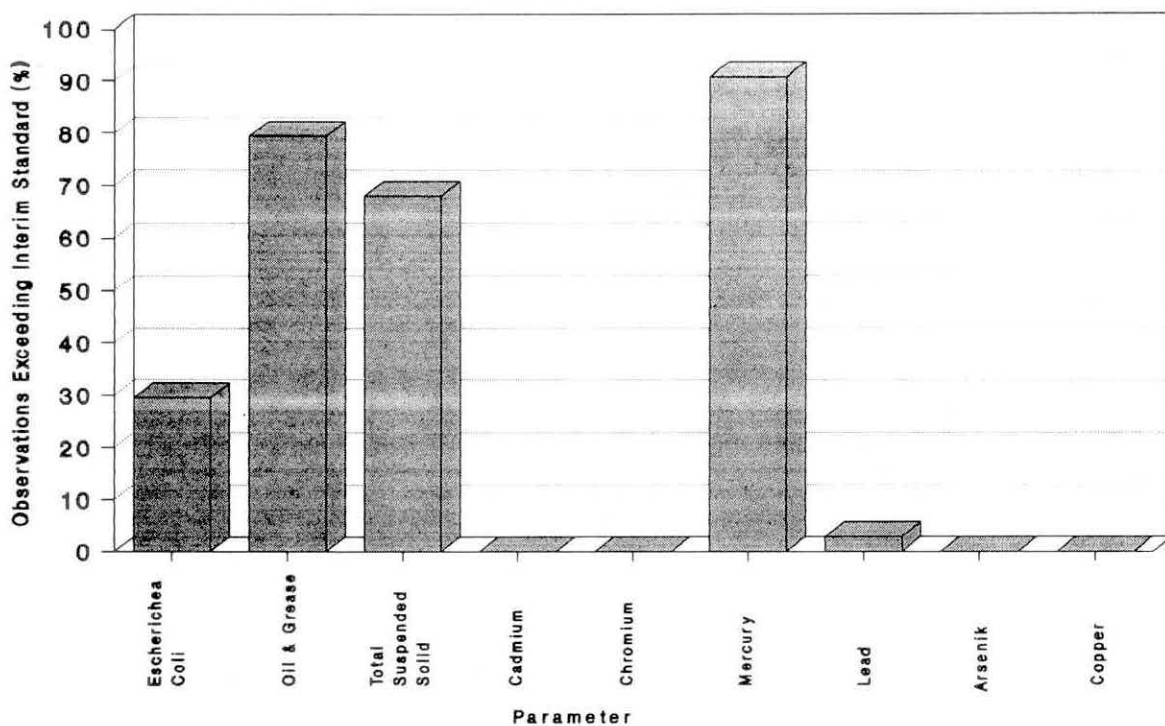
Appendix 4.29 Pulau Pinang: Status of Marine Water Quality, 1991



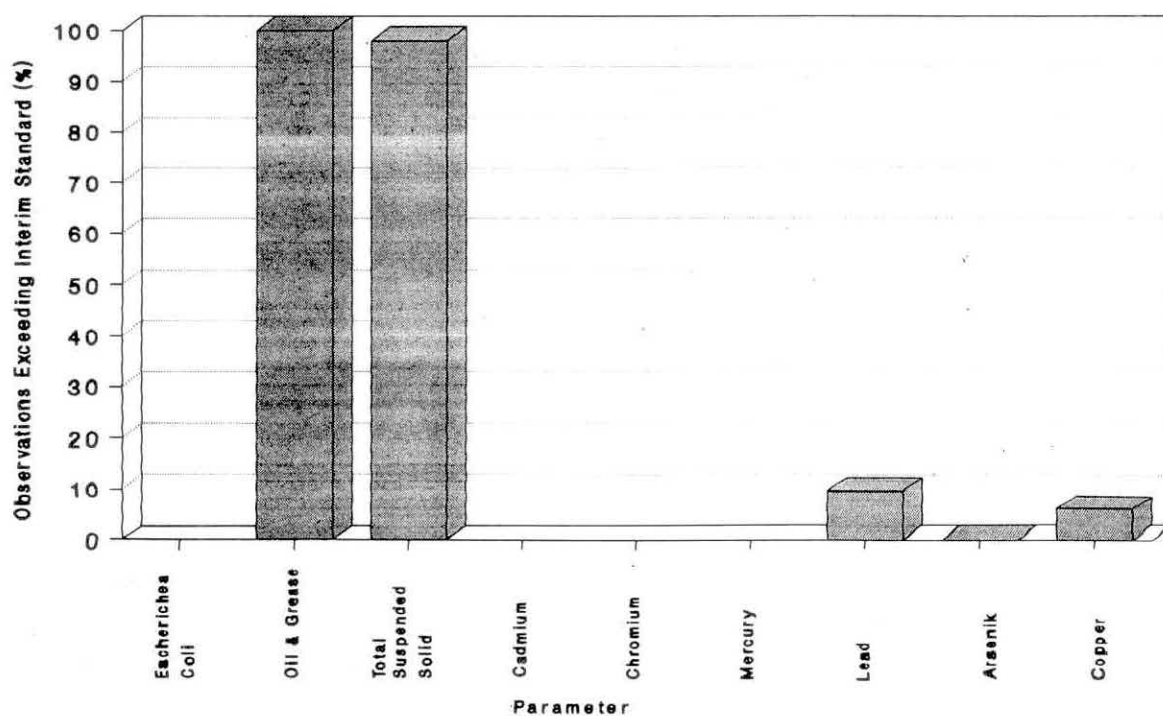
Appendix 4.30 Sabah: Status of Marine Water Quality, 1991



Appendix 4.31 Sarawak: Status of Marine Water Quality, 1991



Appendix 4.32 Selangor: Status of Marine Water Quality, 1991



Appendix 4.33 Terengganu: Status of Marine Water Quality, 1991

Appendix 4.34

Malaysia: Interim Standards for Marine Water Quality

INTERIM STANDARDS FOR MARINE WATER QUALITY				
PARAMETERS		UNIT	INTERIM STANDARD	REMARKS
ESCHERICHIA COLIFORM	E.COLI	MPN/100 ml.	100	*
OIL & GREASE	O&G	mg/l	0	**
TOTAL SUSPENDED SOLIDS	TSS	mg/l	50	* TYPE 1
ARSENIC	As	mg/l	0.1	* TYPE 2
CADMIUM	Cd	mg/l	0.01	* TYPE 2
CHROMIUM (TOTAL)	Cr	mg/l	0.5	* TYPE 2
COPPER	Cu	mg/l	0.1	* TYPE 2
LEAD	Pb	mg/l	0.1	* TYPE 2
MERCURY	Hg	mg/l	0.001	* TYPE 2
NICKEL	Ni	mg/l	-	* TYPE 1
LEGEND ----- * : Based upon The People's Republic of China Standard ** : Based upon Japan's Standard Types of quality are in accordance to use : TYPE 1 : For the conservation of marine equatic resources and safe utilization by humans (includes salt field, food processing, desalination, fisheries, aquaculture and marine park (conservation area) TYPE 2 : For recreation TYPE 3 : For industrial processing, harbour, port and oceanic exploitation and development				

Appendix 4.35

Malaysia: Regulations and Orders Enforced by the Department of Environment

No.	Regulations/Order	P.U.(A)	Effective Date Enforcement
1.	Environmental Quality (Prescribed Premises)(Crude Palm Oil) Order 1977	199	1 July 1978
2.	Environmental Quality (Prescribed Premises)(Crude Palm Oil) Regulations 1977 Amendment (1982)	342	4 November 1977
3.	Environmental Quality (Licensing) Regulations 1977	198	1 October 1977
4.	Motor Vehicle (Control of Smoke and Gas Emissions) Rules 1977 (made under the Road Traffic Ordinance, 1958)	414	22 December 1977
5.	Environmental Quality (Prescribed Premises)(Raw Natural Rubber) (Amendment) Order 1978	337	1 April 1979
6.	Environmental Quality (Prescribed Premises) (Raw Natural Rubber) Regulations 1978 Amendment (1980)	338	1 December 1978
7.	Environmental Quality (Clean Air) Regulations 1978	280	1 October 1978
8.	Environmental Quality (Compounding of Offences) Regulations 1978	281	1 October 1978
9.	Environmental Quality (Sewage and Industrial Effluents) Regulations 1979	12	1 Januari 1979
10.	Environmental Quality (Control of Lead Concentration in Motor Gasoline) Regulations 1985	296	11 July 1987
11.	Environmental Quality (Motor Vehicle Noise) Regulations 1987	244	16 July 1987
12.	Environmental Quality (Prescribed Activities)(Environmental Impact Assessment) Order 1987	362	1 April 1988
13.	Environmental Quality (Scheduled Wastes) Regulations 1989.	139	1 May 1989
14.	Environmental Quality (Scheduled Wastes) Regulations 1989.	140	1 May 1989
15.	Environmental Quality (Prescribed Premises)(Scheduled Wastes Treatment and Disposal Facilities) Regulations 1989.	141	1 May 1989

Appendix 6.1
Overseas Courses
Attended by the Department of Environment
Officers, 1991

Name	Title of Course	Venue	Date	Organiser
Abd. Aziz Kassim	International Post Graduate Training Course on Environmental Management	USA	02/09-02/11/91	UNEP
Abd. Rahim Shahid	Training Course on Water Pollution Control	UK	04/01-07/04/91	Colombo Plan U.K.
Abd. Rahim Shahid	Malaysia-Singapore Joint Committee on the Environment (MSJCE) Joint Water Sampling Programme in the Straits of Johor	Singapore	24-25/09/91	Singapore Government
Abd. Razak Ahmad	Malaysia-Singapore Joint Committee on the Environment (MSJCE) Joint Water Sampling Programme in the Straits of Johor	Singapore	24-25/09/91	Singapore Government
Abdul Rahman Abdul Shukor	Course on Environmental Impact Assessment and Management	Aberdeen, UK	30/06-20/09/91	CEMP
Adam Ariffin	Training Course on Lake Water Quality Management	Japan	08/01-30/03/91	Colombo Plan Japan
Ainon Zakiah Zakaria	Group Training Course on Measures to Reduce the use of Ozone-Depleting Substances	Tokyo, Japan	11/10-17/11/91	JICA

Name	Title of Course	Venue	Date	Organiser
Aziz bin Mat	Environmental Administration (Administration of Pollution Control)	Japan	07/10-30/11/91	Colombo Plan Japan
Che Asmah Ibrahim	International Training Course on Preventive Toxicology: Industrial and Household Chemicals	Moscow, Russia	09-26/09/91	UNEP/IRPTC/IPCS
Mazlan Omar	Training Course on Oil Spill and Identification System	Indonesia	25/02-08/03/91	IMO
Md. Shafie Muda, Hj.	Training Course on Personnel Management	UK	15/04-12/07/91	IDPM
Mohd. Hashim Malek	DOE/SHELL Joint Study on Control of Waste Oil from Service Stations	Singapore	08/11/91	Shell Singapore
Mohd. Nahar Othman	Environmental Engineering (Air Pollution Control)	Japan	24/01-14/03/91	Colombo Plan Japan
Mohd. Yunus Mohd	Malaysia-Singapore Joint Committee on the Environment (MSJCE) Joint Water Sampling Programme in the Straits of Johor	Singapore	24-25/09/91	Singapore Government

Name	Title of Course	Venue	Date	Organiser
Mohd. Zafrullah Sulaiman	Malaysia-Singapore Joint Committee on the Environment (MSJCE) Joint Water Sampling Programme in the Straits of Johor	Singapore	24-25/09/91	Singapore Government
Muhammad Saberi Abdul Hamid	Industrial Waste Management Application of Clean Technologies	Bangkok, Thailand	18/02-15/03/91	ASEAN-US
Norlin Jaafar	Training Course on Environmental Impact Assessment	Japan	11/02-10/03/91	Colombo Plan Japan
Normadiah Hussein	Training Course on Energy Management and Medium Scale Industries	Netherlands	07/10-08/11/91	Netherlands Government
Suratman Pardi	Malaysia-Singapore Joint Committee on the Environment (MSJCE) Joint Water Sampling Programme in the Straits of Johor	Singapore	24-25/09/91	Singapore Government
Tengku Bakry Shah Tengku Johan	Short Course on Ecologically Sustainable Development	Australia	24/06-12/07/91	ASEAN-AUSTRALIA
Wan Abdullah Wan Salleh	Training Course on High Volume Sampler	Australia	15-22/07/91	Seligi Sdn. Bhd.

Appendix 6.2
Overseas Workshops
Attended by the Department of Environment Officers, 1991

Name	Title of Workshop	Venue	Date	Organiser
Abdul Aziz Abdul Rasol	Workshop on Country Specific Activities to Promote Cleaner Production	Paris, France	17-19/09/91	UNEP/IEO
Hashim Daud	Marine Environment Workshop	Tokyo, Japan	04-08/02/91	Ministry of Transport Japan
Lee Heng Keng	ESCAP/UNDP Workshop on Sectoral Development Issues and Environment	Dhaka, Bangladesh	18-21/12/91	ESCAP/UNDP
Mohd. Sharif Mustaffa	ASEAN-JAPAN Project on Atmospheric Corrosion-Metallic Coating Workshop	Manila, Philippines	04-09/03/91	JICA
Norhayati Mustapha	ESCAP/UNDP Workshop on Implementation of the Regional Strategy on Environmentally Sound and Sustainable Development	Rayong Thailand	01-06/07/91	ESCAP/UNDP
Norhayati Mustapha	ESCAP/UNDP Workshop on Economic Issues and Sustainable Development	Bombay, India	16-20/09/91	ESCAP/UNDP

Appendix 6.3
Overseas Conferences
Attended by the Department of Environment
Officers, 1991

Name	Title of Conference	Venue	Date
Abu Bakar Jaafar, Dr.	International Conference Towards Sustainable Environmental Future for South East Asia Region	Yogyakarta, Indonesia	09-10/05/91
Abu Bakar Jaafar, Dr.	Conference on Combatting Waste Management Problems in the Coastal Areas of the ASEAN Region	Singapore	18-30/06/91
Abu Bakar Jaafar, Dr.	Enviroworld '91	Singapore	27-30/06/91
Abu Bakar Jaafar, Dr.	Environmental Congress for Asia Pacific	Tokyo, Japan	04-05/07/91
Abu Bakar Jaafar, Dr.	Clean & Green Week 91	Singapore	03/11/91
Abu Bakar Jaafar, Dr.	International Conference and Exhibition on Environment (ENVIROASIA '91)	Singapore	07-10/11/91
Lee Choong Min	Ministerial Conference on Environment and Development	Singapore	07-10/11/91
Norhayati Mustapha	UNIDO International Conference on Ecologically Sustainable Industrial Development (ESID)	Copenhagen, Denmark	14-18/10/91
Norhayati Mustapha	Clean & Green Week 1991 -Regional Youth Conference on the Environment	Singapore	06-08/11/91

Name	Title of Conference	Venue	Date
Raja Rokiah Raja Saigon	International Conference & Exhibition South East Asia-Clean Environment 1991 (SEACE 91)	Bali, Indonesia	11-15/11/91
Tan Meng Leng	Enprotech 1991 (The Taipei Second International Technology Exhibition & Conference)	China	30/01-02/02/91

Appendix 6.4
Overseas Seminars
Attended by the Department of Environment
Officers, 1991

Name	Title of Seminar	Venue	Date	Organiser
Hasmah Harun	ASIA-Pacific Seminar on Climate Change	Nagoya, Japan	23-26/01/91	UNEP
Ibrahim Abd. Majid	IMO/Oil Industry Seminar on Oil Spill Contingency Planning	Jakarta, Indonesia	09-11/09/91	IMO/UNDP
Ismail Ithnin	Seminar on Promotion of Ozone Layer Protection in Asian Countries	Japan	24/11-03/12/91	JICA
Mohamad Sayuti Sepeai	Seminar on Environment Management for Mining and Mineral Resources Development	Bangkok, Thailand	09-13/09/91	ESCAP

Appendix 6.5
Overseas Fora
Attended by the Department of Environment
Officers, 1991

Name	Title of Forum	Venue	Date	Organiser
Mariana Mohd. Noor	Yokohama-Asia Economic and Technical Forum 91 and Visit to Common Waste Water Treatment Plant	Yokohama, Japan	21-22/11/91	Yokohama Industrial Institute
Patrick Tan Hock Chuan	IMO/Japan International Forum on Oil Spill Preparedness and Response in Asia	Japan	16-19/01/91	IMO/ Japan Government
Rusli Che Hussin	IMO/JAPAN International Forum on Oil Spill Preparedness and Response in Asia	Japan	16-19/01/91	IMO/ Japan Government

Appendix 6.6
Overseas Meetings
Attended by the Department of Environment
Officers, 1991

Name	Title of Meeting	Venue	Date
Abdul Aziz Abdul Rasol	Technical Meeting of Experts on Proposals for an Intergovernmental Mechanism for Chemical Risk Assessment and Management	London, UK	16-19/12/91
Abu Bakar Jaafar, Dr.	UN/ESCAP Project Meeting of Senior Officials on Environment and Development in Asia and the Pacific	Bangkok, Thailand	13-19/02/91
Abu Bakar Jaafar, Dr.	ASEAN Preparatory Meeting for the ASEAN-Australia Forum	Singapore	08-09/03/91
Abu Bakar Jaafar, Dr.	7th. ASEAN-Canada Joint Cooperation Committee Meeting	Ottawa	03-05/04/91
Abu Bakar Jaafar, Dr.	9th. ASEAN-EC Ministerial Meeting	Luxembourg	30-31/05/91
Abu Bakar Jaafar, Dr.	Second Meeting of ASOEN	Singapore	17-19/06/91
Abu Bakar Jaafar, Dr.	Inter-Agency Committee on Environment in Asia and the Pacific	Bangkok, Thailand	17/07/91
Abu Bakar Jaafar, Dr.	Revolving Fund Committee Meeting (RFC)	Singapore	16-17/09/91

Name	Title of Meeting	Venue	Date
Halimah Hassan	Ad Hoc Working Group of Experts on the Implementation of the Amended London Guidelines	Geneva, Switzerland	08-10/04/91
Halimah Hassan	Second Meeting of ASOEN	Singapore	17-19/06/91
Hashim Daud	ASEAN-COST Meeting	Chiengmai, Thailand	28/02-03/03/91
Hashim Daud	Preparatory Meeting for 10th ASEAN Dialogue	Bangkok, Thailand	25-26/03/91
Hashim Daud	Intergovernmental Committee on Science and Technology for Development	New York, USA	22/04-03/05/91
Hashim Daud	Intergovernmental Meeting of Experts on Land-Based Sources of Marine Pollution	Nova Scotia, Canada	06-10/05/91
Hasmah Harun	CCGIM/International Development for Environmental Action (IDEA) Meeting	Guyana	07-15/02/91
Hasmah Harun	First Meeting of ASEAN Working Group on Environmental Management	Philippines	21-22/03/91

Name	Title of Meeting	Venue	Date
Hasmah Harun	4th IDEA/CCGIM Programme Institutional Development for Environmental Action	Accra, Ghana	29/07-02/08/91
Ibrahim Abd. Majid	Revolving Fund Committee Meeting	Singapore	16-17/09/91
Ismail Ithnin	Ad Hoc Group of Legal Experts on Non Compliance (with Montreal Protocol) Meeting	Geneva, Switzerland	08-10/04/91
Ismail Ithnin	Subcommittee of Executive Committee of the Multilateral Fund	Montreal, Canada	01-06/03/91
Ismail Ithnin	Multilateral Fund-Montreal Protocol	Nairobi, Kenya	17-18/06/91
Ismail Ithnin	Third Meeting of the Ad-Hoc Working Group of Legal Experts on Non-Compliance with the Montreal Protocol	Geneva, Switzerland	05-08/11/91
Lee Heng Keng	The OECD Expert Meeting on Estimation of Emission and Sinks of Greenhouse Gases	Paris, France	18-21/02/91

Name	Title of Meeting	Venue	Date
Muhammad Saberi Abdul Hamid	ESCAP/UNDP Expert Group Meeting on Institutions Legislation and Public Participation in Environment	Bangkok, Thailand	09-13/12/91
Muslina Sulaiman	ASEAN-Canada Project on Marine Science-Inception Mission	ASEAN Countries	21/11-07/12/91
Norhayati Mustapha	First Meeting of the ASEAN Working Group on Environmental Information, Public Awareness and Education	Bangkok, Thailand	07-08/05/91
Norhayati Mustapha	2nd Meeting of ASOEN	Singapore	17-19/06/91
Norhayati Mustapha	UNIDO Preparatory Meeting to the Conference on Ecologically Sustainable Industrial Development (ESID)	Vienna, Austria	22-25/07/91
Rahmah Mohd. Tahir	Consultative Meeting on Environmental Development of Coastal Areas	Chonburi, Thailand	22-23/02/91
Tan Meng Leng	2nd Meeting of UNCED Preparatory Committee	Geneva, Switzerland	18/03-05/04/91
Tan Meng Leng	3rd Meeting of the Executive Committee of the Multilateral Fund of Montreal Protocol	Montreal, Canada	15-19/04/91

Name	Title of Meeting	Venue	Date
Tan Meng Leng	2nd Meeting of the Parties to the Vienna Convention for the Protection of Ozone Layer and 3rd Meeting of the Parties to Montreal Protocol	Nairobi, Kenya	10-21/06/91
Tan Meng Leng	3rd Meeting of UNCED Preparatory Committee	Geneva, Switzerland	12/08-04/09/91
Tan Meng Leng	5th Meeting of the Executive Committee of the Multilateral Fund on the Montreal Protocol	Montreal, Canada	18-22/11/91
Tan Meng Leng	Inter-agency Committee on Environment and Development in Asia and the Pacific	Bangkok, Thailand	18/12/91
Wan Ramlah Wan Ibrahim	First Meeting of ASOEN Working Group on Asean Seas and Marine Environment	Brunei	19-20/02/91
Zulkifli Abd. Rahman	Meeting of Government-Designated Experts to Formulate a Draft Strategy for the Reduction of the Degradation of the Marine Environment from Land-Based Sources of Pollution & Act in Coastal Area	Nairobi, Kenya	09-13/12/91

Appendix 6.7
Visits Overseas
by the Department of Environment
Officers, 1991

Name	Title of Visit	Venue	Date
Abu Bakar Jaafar, Dr.	State-Guest Visit	New Zealand	18-24/11/91
Md. Sanusi Sulaiman	Official Visit to a Petrochemical Factory in Taiwan	Taiwan	09-13/01/91
Patrick Tan Hock Chuan	Official Visit to Hawaii	Hawaii USA	03-11/03/91
Patrick Tan Hock Chuan	Visit to Registrar of Vehicles Singapore	Singapore	16/05/91
Patrick Tan Hock Chuan	Official Visit to Taiwan	Taiwan	19-23/05/91
Patrick Tan Hock Chuan	Visit by the Johor Lorry Owner Association to the Ministry of Environment Singapore	Singapore	10/10/91
Rosnani Ibarahim, Hajjah	Official Visit to Denmark	Denmark	25-29/05/91
Rosnani Ibarahim, Hajjah	Visit by Negeri Sembilan State Government to Singapore (Waste Treatment/Recycling Plant)	Singapore	14-15/06/91
Shamsudin Ab. Latif	Exchange Programme-Kanagawa Prefectural Government	Japan	01-30/09/91

