

MALAYSIA ENVIRONMENTAL QUALITY REPORT 1997



**Department of Environment
Ministry of Science,
Technology and the Environment
Malaysia**

MALAYSIA

Environmental

Quality Report

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MALAYSIA

E n v i r o n m e n t a l

Quality Report

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**Department of Environment
Ministry of Science,
Technology and the
Environment
Malaysia**

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Abbreviations

ADB	Asian Development Bank
AEY	ASEAN Environment Year
AMME	ASEAN Ministerial Meeting on the Environment
APO	Asian Productivity Organisation
ASEAN	Association of South East Asian Nations
ASOEN	ASEAN Senior Officials on the Environment
AWASI	Area Watch and Sanction Inspection
BAS	Branched Alkyl Benzene Sulphonates
BIMP	Brunei-Indonesia-Malaysia-Philippines
BOD	Biochemical Oxygen Demand
CETDEM	Centre for Environment, Technology and Development Malaysia
CFC	Chlorofluorocarbon (s)
CICM	Chemical Industries Council of Malaysia
COBSEA	Co-ordinating Body on the Seas of East Asia
COD	Chemical Oxygen Demand
COP	Conference of the Parties
CPO	Crude Palm Oil
db	decibel(s)
DOE	Department of Environment
DOKUMAS	Document Management System
DSE	German Foundation for International Development
EAGA	East ASEAN Growth Area
<i>E. coli</i>	<i>Escherichia coli</i>
EDSS	Environmental Decision Support System
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
EPM	Environmental Protection Management
EPSM	Environmental Protection Society of Malaysia
EPU	Economic Planning Unit
EQA	Environmental Quality Act
EQR	Environmental Quality Report
EXCO	Executive Council
FLIR	Forward Looking Infrared Radar
FMM	Federation of Malaysian Manufacturers
FOMCA	Federation of Malaysian Consumers Association
FRTAM	Federation of the Rubber Trade Associations of Malaysia
GIS	Geographic Information System
HCFC	Hydro Chlorofluorocarbon (s)
HSU	Hartridge Smoke Unit (s)
INFOTERRA	International Referral System for Sources of Environmental Information
INTAN	National Institute of Public Administration
IPCS	International Programme on Chemical Safety
IRPTC	International Register of Potentially Toxic Chemicals
ISIS	Institute of Strategic and International Studies
JICA	Japan International Co-operation Agency
MAC	Mobile Air Conditioning
MASAAM	Motorcycles and Scooter Assemblers Association of Malaysia
MEW	Malaysia Environment Week

MEXCOE	Ministers and State Executive Councillors Responsible for Environmental Matters
MF	Multilateral Fund
MICCI	Malaysian International Chamber of Commerce and Industry
MISIF	Malaysian Iron and Steel Industry Federation
MFIC	Malaysian Furniture Industries Council
MITI	Ministry of International Trade and Industry
MMVAA	Malaysian Motor Vehicles Assemblers Association
MNS	Malaysian Nature Society
MOA	Ministry of Agriculture
MOH	Ministry of Health
MOHR	Ministry of Human Resources
MOMG	Malaysian Oleochemical Manufacturers Group
MOPGC	Malaysian Oil Palm Growers Council
MOSTE	Ministry of Science, Technology and the Environment
MOT	Ministry of Transport
MOU	Memorandum of Understanding
MRPC	Malaysian Rubber Producers Council
MSJCE	Malaysia-Singapore Joint Committee on the Environment
NAQMP	National Air Quality Monitoring Programme
NFP	National Focal Point
NGO	Non-Governmental Organisation
NH ₃ N	Ammoniacal Nitrogen
NPOE	National Policy on the Environment
NREB	Natural Resource and Environment Board
ODS	Ozone-Depleting Substance (s)
OECD	Organisation for Economic Co-operation and Development
OEWG	Open-Ended Working Group
PIC	Prior Informed Consent
PM	Particulate Matter
POMA	Palm Oil Millers Association
PORIM	Palm Oil Research Institute of Malaysia
RAC	Refrigerant Air Conditioning
RM	Ringgit Malaysia
RNR	Raw Natural Rubber
RRIM	Rubber Research Institute of Malaysia
SEAP	South East Asia Pacific
SMI	Small and Medium Industry
SOM	Senior Officials Meeting
SS	Suspended Solids
TSP	Total Suspended Particulate
UIA	Universiti Islam Antarabangsa (International Islamic University)
UKM	Universiti Kebangsaan Malaysia
ULG	Unleaded Gasoline
UM	Universiti Malaya
UNCED	United Nations Conference on Environment and Development
UNEP	United Nations Environment Programme
UPM	Universiti Putra Malaysia
USM	Universiti Sains Malaysia
UTM	Universiti Teknologi Malaysia
UUM	Universiti Utara Malaysia
WHO	World Health Organisation
WQI	Water Quality Index
WWF	World Wide Fund for Nature



Foreword



It is my pleasant duty to present the 1997 Environmental Quality Report in fulfillment of the requirement of Section 3 (1)(i) of the Environmental Quality Act, 1974.

For the first time in our 22 years history, the Department of Environment was confronted with an environmental problem of such magnitude that even the State of Sarawak had to declare an emergency situation when the Air Pollutant Index went beyond 500 on 19 September 1997. When 1996 came to a close, 1997 was ushered in with expectations of exciting challenges in the light of the latest amendments to the Environmental Quality Act, 1974 that took effect on 1 August 1996. Right from the onset, the new provisions for environmental audit, environmental management system, environmental fund and research cess, deposit and rebate schemes, environmental labelling and environmental hazardous substances, prohibition orders and increase in the quantum of penalties for offences under the Act, occupied our thoughts and action, as we undertook our routine enforcement, monitoring, development planning and environmental impact assessment activities.

The impact of haze brought to the forefront the visible realities of transboundary pollution, which was the main cause of the serious deterioration of air quality in many parts of the country. The general public too became sensitive to the importance of clean and fresh air for healthy and conducive living which are often taken for granted. Various remedial measures, internally and externally, were put into effect and with the cooperation of all parties, the episode was finally put behind us.

All parties have learned from this experience. We are more acutely aware of the limitations of a fragile ecosystem, more appreciative of clean air and unpolluted water for healthy living, more entrenched in our commitment to balance development and nature and environmental sustainability of development efforts.

More and more, the government will continue with its environmental education and awareness activities such that we can become a society that will not subscribe to short-term greed at the expense of present and long term needs. We have to be more vigilant to curb environmental pollution from existing sources and prevent new ones, by ensuring regulatory compliance and environmental impact assessment for better-informed decision-making.

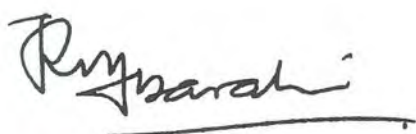


We can expect the years ahead to be more challenging as the nation embarks progressively on development and industrialization. Develop we must, to ensure a better standard of living for all Malaysians; but we must ensure that these achievements are not negated or nullified by adverse environmental repercussions.

We must all cooperate to bring about a healthy and conducive environment for every one, today and tomorrow.

“Alam Gemilang, Hidup Cemerlang”

Best Regards,



HAJAH ROSNANI IBARAHIM
DIRECTOR-GENERAL OF ENVIRONMENTAL QUALITY
MALAYSIA
30 AUGUST 1998

Executive Summary

Chapter 1





At the onset, 1997 promised to be a challenging year, as it ushered in a new phase of environmental management for the Department of Environment brought about by the recent amendments and inclusions to the Environmental Quality Act, first promulgated in 1974. The amended Environmental Quality Act introduced new dimensions to prevent and control pollution as well as managing new environmental issues and problems, such as in the field of environmental audit, environmental management system, environmental fund and research cess, deposit and rebate schemes, environmental labelling and environmental hazardous substances.

The air quality was generally good during the first six months of 1997 until the advent of the haze in mid-July which lasted till November 1997. The air quality worsened dramatically at several places in the country to such an extent that between 19-28 September 1997, a state of emergency had to be declared in Sarawak when the Air Pollutant Index (API) (the dominant pollutant is PM10) hovered above the 500 level. The air quality returned to normal in November coinciding with the monsoon season. Throughout 1997, the level of gaseous pollutants and lead in ambient air remained below the Recommended Malaysian Guidelines.

The prolonged drought and hot spell due to the El-Nino effect and the consequential significant low flow in most rivers also took its toll on the river water quality monitored at 908 stations along 117 rivers. The number of clean rivers decreased from 42 in 1996 to 24 rivers in 1997 and the number of polluted rivers increased from 13 in 1996 to 25 in 1997, in terms of water quality index classification based on biochemical oxygen demand, chemical oxygen demand, dissolved oxygen, ammoniacal nitrogen, suspended solids and pH. 84 stations (37%) of the total number of marine monitoring stations were found to have exceeded the Marine Interim Standard for oil and grease, total suspended solids and *Escherichia coli*. In terms of beach tar contamination along sandy beaches, all beaches surveyed were found to be unaffected except for beaches in Kuala Selangor and Sabak Bernam in Selangor and Pulau Pangkor in Perak.

Initial groundwater monitoring covering 42 sites consisting of 69 wells was carried out in

1997. Preliminary findings did not indicate any significant contaminants in the groundwater monitored. Groundwater monitoring is expected to be intensified in 1998.

Enforcement visits remained the punchline activity of the department. The traditional agro-based sector of palm oil mills and rubber factories were closely monitored. Overall compliance for crude palm oil mills was 76%, while for the raw natural rubber factories was 90%. Due to step-up enforcement, the number of notifications on waste generation from scheduled waste generators increased by 28% from 2252 in 1996 to 3103 in 1997. A total of 159 licences for scheduled wastes treatment and disposal facilities were issued including 5 new off-site recovery facilities and 8 scheduled wastes incinerators. There were 58 applications to export scheduled wastes for recovery purposes.

A total of 5290 enforcement visits relating to industrial effluent discharges of non-prescribed premises were carried out, of which 4402 (83.2%) were found to have complied with the Environmental Quality (Sewage and Industrial Effluents) Regulations, 1979. Industrial compliance with the Environmental Quality (Clean Air) Regulations, 1978 was generally satisfactory, except for the non-metallic mineral and rubber-based industries as well as quarries; of the total 7660 sources investigated, 6813 (89%) were found to have complied. 90 applications were received for contravention licences under Section 22(1) and 25(1) of the Act to emit air pollutants and discharging effluents exceeding stipulated standards. The applications for contravening Section 22(1) decreased from 14 in 1996 to 12 in 1997 and for Section 25(1) increased from 40 in 1996 to 78 in 1997.

A total of 8.5 million registered vehicles in 1997 accounted for emissions of 1.9 million metric tonnes of carbon monoxide (CO), 224,000 metric tonnes of oxides of nitrogen (NOx), 101,000 metric tonnes of hydrocarbons (HC), 36,000 metric tonnes of sulphur dioxide and 16,000 metric tonnes of particulate matter (PM) into the atmosphere. From the AWASI campaigns conducted throughout the country in 1997 by DOE State Offices, a total of 78,130 vehicles were visually inspected, out of which 6,088 were summoned and 1,340 vehicles were issued with prohibition orders and were only allowed back on the roads after rectification. The

overall compliance was 92%, showing an improvement of 8% as compared to 84% for the previous year (1996).

The number of pollution complaints received by the DOE rose sharply in 1997 to 4,254, an increase of 34% over 1996. The bulk of complaints (79%) pertained to air pollution principally black smoke emission from diesel motor vehicles and complaints received during the haze episode from July to September 1997. Complaints of dust and particulate matter featured prominently throughout the year.

In 1997, 275 environmental offences were prosecuted in court and a total of RM2,391,400 in fines were collected, an increase of 7% over 1996. A total of 2,684 compound notices were issued to premises and companies for various compoundable environmental offences amounting to RM2,072,950.

A record number of 414 EIA reports were received in 1997, the highest since 1988. By year end, 216 individuals and 63 firms had been registered with the department under the administrative scheme for registration of EIA consultancy services to ensure quality, professionalism and accountability.

In recognition of Malaysia's commitment and positive contribution towards the global agenda to protect the ozone layer, DOE received the 1997 UNEP Ozone Award, USEPA Best-of-the-Best Stratospheric Protection Award 1997, the UNEP Outstanding National Ozone Unit Award 1997 and 1997 USEPA Stratospheric Ozone Protection Award. By 31 December 1997, 102 projects and activities funded by the Multilateral Fund of the Montreal Protocol were approved involving a total disbursement of USD30,200,236. The total quantity of ozone depleting substances phased out was 3241.40 ODP tonnes resulting from 60 completed projects, bringing Malaysia's per capita consumption to 0.15 kg.

The theme for Malaysia Environment Week (MEW) 1997 was "Alam Gemilang, Hidup Cemerlang" which was officially launched in Pulau Pinang on 21 October 1997. The Langkawi Award was also presented to a deserving Malaysian in conjunction with MASM'97. In pursuing the environmental awareness activities, DOE organised 24 camps for 1080 students

throughout Malaysia between the ages of 14 to 16. 15 DOE environmental publications were issued in 1997 and 17,000 copies were distributed locally and abroad.

As in the previous year, the department was involved in various environmental programmes and activities at the bilateral, regional and international level. For instance under the Malaysia - Vietnam bilateral environmental cooperation, a seminar-tour programme on environmental management was conducted in Malaysia for Senior Vietnamese Officials. The Twelfth Meeting of the Malaysia-Singapore Joint Committee on the Environment (MSJCE) was held to discuss current environmental issues of mutual interest such as haze pollution from land and forest fires, cleaning up of Straits of Johor and control of vehicular emissions. Bilateral cooperation between Malaysia and Denmark was also greatly enhanced under the auspices of the Danish programme for cooperation in environment and development (DANCED).

Throughout the year, the department was also a popular destination for numerous environmental missions from developed as well as developing countries. The Minister of Science, Technology and the Environment also led several environmental missions abroad to promote international cooperation in the environmental field and foster closer working relationship between environmental officials.

DOE also served as an effective national focal point for UNEP, notably in matters relating to the Basel Convention on Transboundary Movement of Hazardous Wastes; Prior Informed Consent Procedure for Certain Chemicals and Pesticides in International Trade; Multilateral Fund for Montreal Protocol for reduction of Ozone Depleting Substances; Intergovernmental Negotiating Committee on Persistent Organic Pollutants.

DOE will continue to strive to fulfill the hopes and aspirations of our people for a healthier environment.



Organisational Structure

Chapter 2



ORGANISATIONAL STRUCTURE

The Department of Environment is headed by a Director General who is appointed under Section 3(1) of the Environmental Quality Act, 1974. The Department is comprised of five Divisions at the Head Office in Kuala Lumpur viz. Administration, Information System, Control, Development Planning and

Environmental Assessment, as well as 13 State Offices located at Johor Bahru (Johor), Kota Bharu (Kelantan), Kuala Lumpur (Federal Territory), Melaka, Seremban (Negeri Sembilan), Kuantan (Pahang), Ipoh (Perak), Butterworth (Pulau Pinang), Kota Kinabalu (Sabah), Kuching (Sarawak) and Kuala Terengganu (Terengganu), Alor Setar (Kedah/Perlis), a branch office at Pulau Langkawi and an Environmental Advisory Office at the MIDA Head Office in Kuala Lumpur (Figure 2.1).

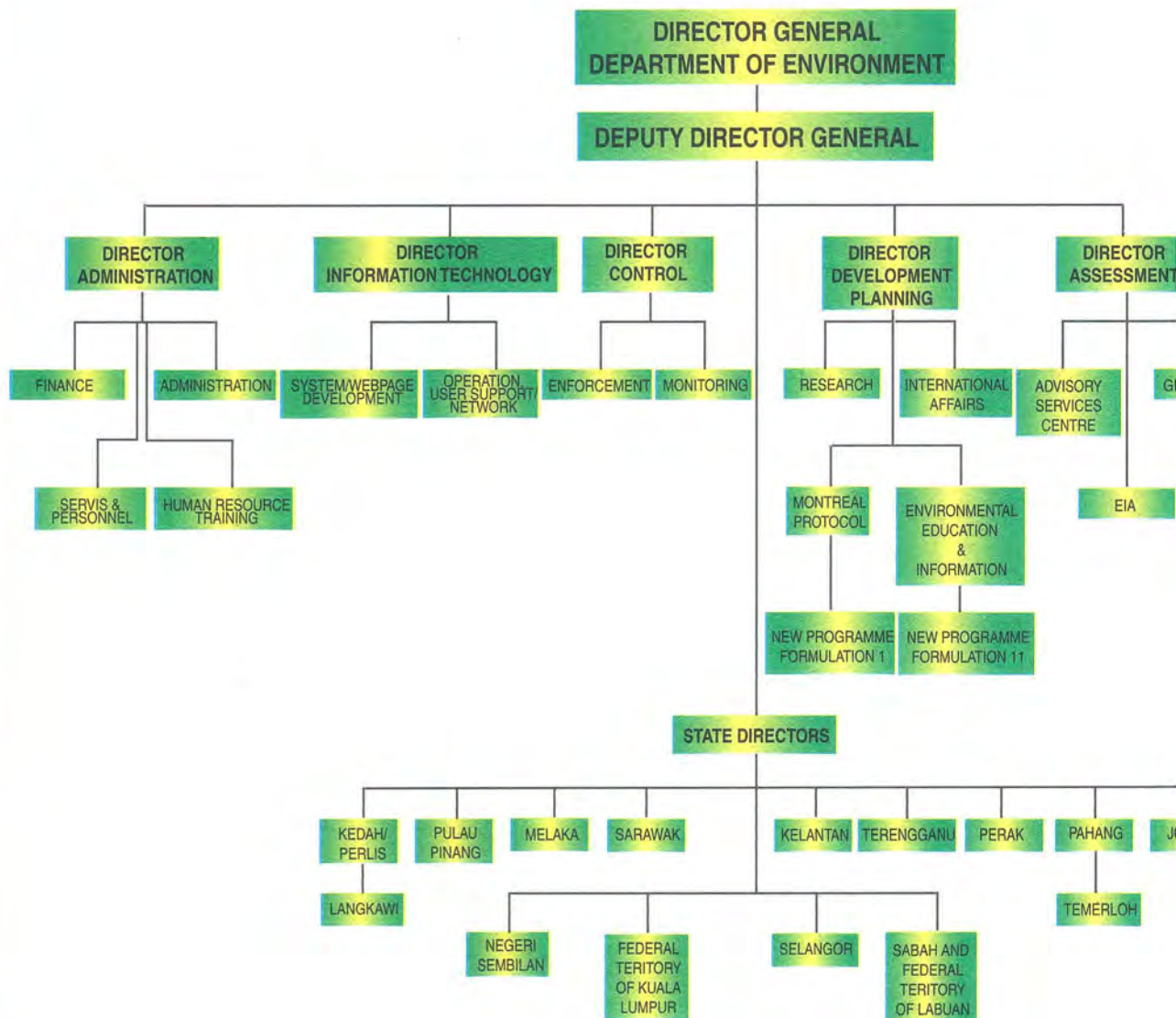


Figure 2.1 Malaysia : DOE Organisational Structure, 1997

HUMAN RESOURCES

As of 31 December 1997, the total personnel strength of DOE was 497 comprising of 107 officers in the management and professional group and 390 in the supportive group (Figure 2.2).

Personnel Training

The overall training program of the department is coordinated by a Committee to plan and recommend suitable candidates for short and long term courses (exceeding 3 months duration). In-house training such as induction courses for new staff members, courses on law and court procedures as well as enforcement, environmental impact assessment and briefings on the Environmental Quality Act 1974, were regularly conducted.

In total DOE officers participated in 58 short-term courses held locally, of which 14 were organised by the department and the remainder 44 by other agencies and the private sector. 110 officers attended short-term overseas courses/seminars/study tours outside Malaysia between January to December 1997.



FINANCE

The total budget allocation received by the Department for the year 1997 was RM42,719,535.00, an increase of RM8,711,727.75 (25.6%) over the previous year. From this amount, a sum of RM35,833,610.00 (84%) was allocated for operational expenditure (Figure 2.3), while RM6,885,925.00 (16%) was for implementing development projects (Figure 2.4).

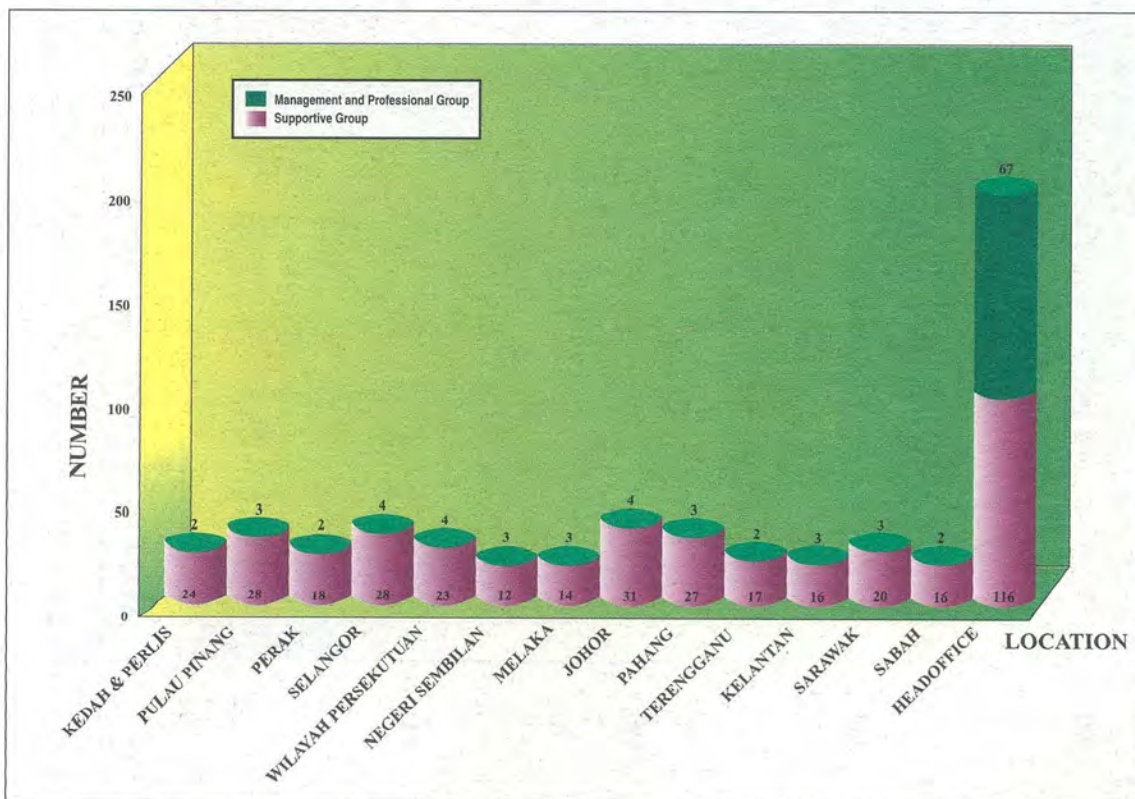


Figure 2.2 Department of Environment: Distribution of Personnel, 1997

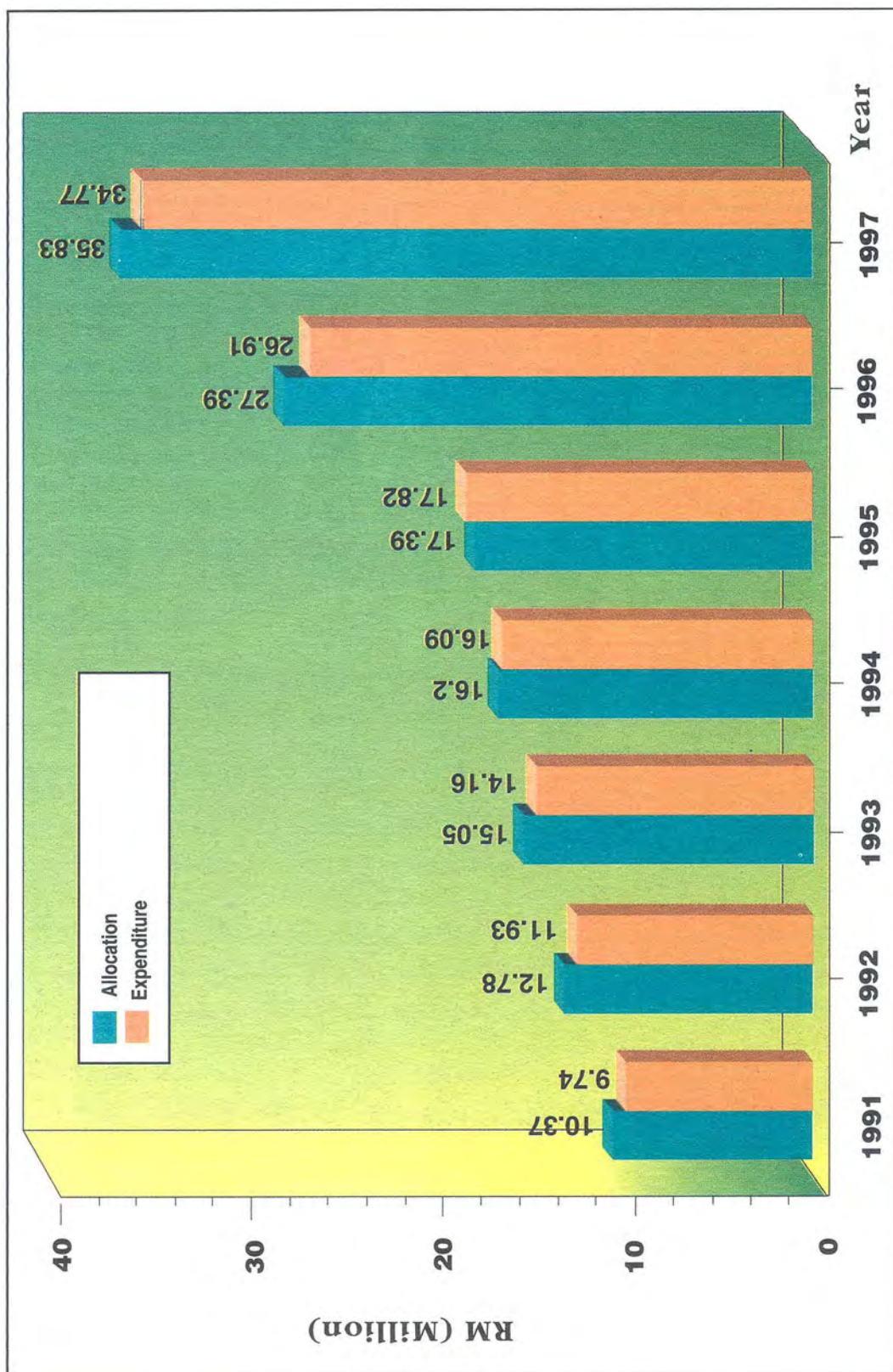


Figure 2.3 Department of Environment: Operational Allocation and Expenditure

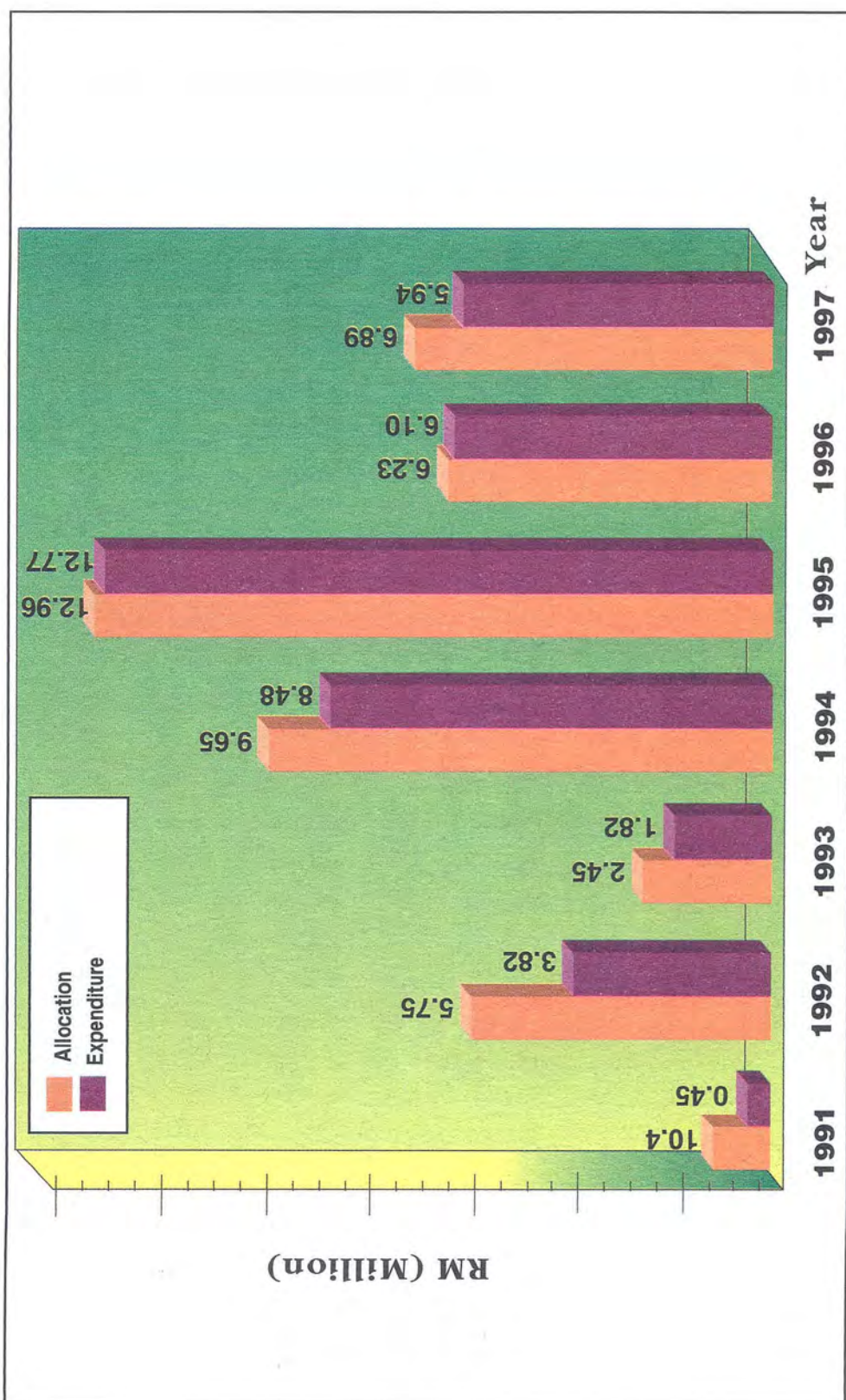


Figure 2.4 Department of Environment: Allocation and Expenditure for Development Projects, 1997



ENVIRONMENTAL QUALITY COUNCIL

Section 4(1) of the Environmental Quality Act, 1974 provides for the establishment of an Environmental Quality Council to:

- advise the Minister on matters pertaining to the Act; and
- advise the Minister on any matter referred to it by the Minister.

In accordance with Section 4(2) of EQA, the Ninth Council members were appointed by the Minister of Science, Technology and the Environment commencing 1997 for duration of 3 years. Y.Bhg.Prof. Dato' Dr. Mohd. Sham Mohd. Sani was reappointed the EQC Chairman for a second term. Other Council members appointed are as follows :-



EQC Meeting in November 1997



1. Dato' V. Danabalan	Ministry of Science, Technology and the Environment	Section 4(2)(b)
2. Datuk Asmat Kamaludin	Ministry of International Trade and Industry	Section 4(2)(c)
3. Dato' Mohamad Noor Abdul Rahim	Ministry of Domestic Trade & Consumer Affairs	Section 4(2)(cc)
4. Dato' Ahmad Zabri Ibrahim	Ministry of Agriculture	Section 4(2)(ccc)
5. Dato' Kong How Kooi	Ministry of Human Resources	Section 4(2)(d)
6. Datuk Hj. Othman Mohd. Rijal	Ministry of Transport	Section 4(2)(dd)
7. Ir. Dr. M.S. Pillay	Ministry of Health	Section 4(2)(e)
8. Puan Monica Chia	Ministry of Tourism & Environmental Development, Sabah	Section 4(2)(f)
9. Tuan Hj. Zaidi Khaldin Zainie Hj. Abdul Latip	Ministry of Resource Planning, Sarawak	Section 4(2)(f)
10. Ir. Hussein Rahmat	PETRONAS	Section 4(2)(g)
11. Encik Teo Leng	Malaysian Oil Palm Growers Council (MOPGC)	Section 4(2)(gg)
12. Dato' Mohd. Yusof Hitam	Federation of Malaysian Manufacturers (FMM)	Section 4(2)(hh)
13. Encik D. Selvaraj	Malaysian Rubber Producers Council (MRPC)	Section 4(2)(hh)
14. Prof. Dr. Muhamad Awang	Universiti Putra Malaysia	Section 4(2)(i)
15. Dato' Dr. Salleh Mohd. Nor	Malaysian Nature Society (MNS)	Section 4(2)(j)
16. Ir. Gurmit Singh K.S.	Centre for Environmental Technology & Development Malaysia (CETDEM)	Section 4(2)(j)



In 1997, the Council met three times on May 6, August 12 and November 4. The second EQC meeting was held at the Bukit Nanas Waste Management Centre, Negeri Sembilan to allow Council members to view the status and progress of the only integrated scheduled waste facility in the country.

The Council deliberated on various policy, issues and matters pertaining to environmental management in the country:-

- Draft regulations on noise control from specific sources;
- Draft Environmental Quality (Environmentally Hazardous Substances) (Control of Banned or Severely Restricted Chemicals) Regulations, 1997;
- Draft Environmental Quality (Prescribed Premises) (Scheduled Wastes Treatment and Disposal Facilities) (Amendment) Order, 1997;
- Proposed amendment to the Environmental Quality Act 1974 to include registration of EIA Consultants and the use of registered Consultants for EIA study;
- Draft Environmental Quality (Natural Gas For Vehicles) Regulations, 1997;
- Draft Environmental Quality (Prescribed Circumstances) (Prohibition Order) Order, 1997;
- Green Citizen Award in recognition of exemplary public environmental contribution;
- Proposal to reduce sulphur content in diesel from 0.5% to 0.3% by weight; and
- Haze Action Plan (1997-1998)

MEETING BETWEEN THE MINISTER OF SCIENCE, TECHNOLOGY AND THE ENVIRONMENT WITH STATE MINISTERS AND EXECUTIVE COUNCILLORS RESPONSIBLE FOR ENVIRONMENTAL MATTERS (MEXCOE)

MEXCOE meetings were held twice in 1997 on July 3 in Kuala Lumpur and on October 20 in Pulau Pinang. The October Meeting in Pulau Pinang was held in conjunction with the national-level Malaysian Environment Week 1997 (MASM) celebrations in Pulau Pinang.

MEXCOE deliberated and agreed on a number of policy issues relating to various aspects of enhancement and upgrading of environmental prevention and control strategies as well as the enhancement of cooperation between Federal and State agencies in environmental management (a total of 67 policy papers had been deliberated since 1989). The important matters deliberated by MEXCOE in 1997 were as follows:

- Implementation of administrative EIA for activities on hill land;
- Implementation of macro EIA for coastal reclamation;
- Issues relating to the implementation of national sewerage programme;
- Privatisation of solid waste management; and
- Haze Action Plan.

The 1997 MEXCOE member are as follows:

- | | |
|---|--|
| 1. Y.B Datuk Law Hieng Ding | Minister of Science, Technology and the Environment
(Chairman) |
| 2. Y.B Dato' Abu Bakar Daud | Deputy Minister of Science, Technology and the
Environment |
| 3. Y.B Datuk Abdul Rashid bin Abdullah | Chairman of Agriculture, Fishery and Environment
Committee, Pulau Pinang |
| 4. Y.B Tuan Haji Abdul Razak Hashim | Chairman of Human Resource, Environment
and Voluntary Association Committee, Kedah
(until July 1997) |
| 5. Y.B. Dato' Bahari b. Tan Sri Yahya | Chairman of Public Facility, Housing and
Environment Committee, Pahang |
| 6. Y.B Tan Sri Datuk Bernard
G. Dompok | Minister of Tourism and Environmental
Development, Sabah |
| 7. Y.B Puan Che Ah @ Ramlah bte Long | Chairman of Land, Forestry and Environment
Committee, Perlis |
| 8. Y.B Encik Cheung Khai Yan | Chairman of Human Resource, Environment and
Voluntary Association Committee, Kedah (from
August 1997) |
| 9. Y.B Encik Ch'ng Toh Eng | Chairman of Youth and Sport, Science, Technology
and Environment Committee, Selangor |
| 10. Y.B Dr. Chua Soi Lek | Chairman of Environment and Consumer Affairs
Committee, Johor |
| 11. Y.B Dato' Amar James Wong
Kim Min | Minister of Environment and Tourism, Sarawak. |
| 12. Y.B En. Lee Chee Leong | Chairman of Health and Environment Committee,
Perak |
| 13. Y.B Datuk Poh Ah Tiam | Chairman of Tourism, Culture and Environment
Committee, Melaka |
| 14. Y.B Encik Wong Foon Meng | Chairman of Environment Development, Health and
Consumer Affairs Committee, Terengganu |
| 15. Y.B Dato' Dr. Yeow Chai | Chairman of Housing and Local Government,
Environment, Science and Technology Committee,
Negeri Sembilan |
| 16. Y.Bhg. Tuan Hj. Mohd Aris | Department of Federal Development, Kelantan
(until September 1997) |
| 17. Y.Bhg Encik Azman b. Abd Rashid | Department of Federal Development, Kelantan
(from October 1997) |
| 18. Y. Bhg. Datuk Hj. Noordin Hj. Abdul Razak | Director-General, Dewan Bandaraya , Kuala Lumpur |





MEXCOE Meeting in October 1997

INSTITUTIONAL MANAGEMENT

Federal-State Relationship in Environmental Management

A Study on Federal-State Relationship in Environmental Management was conducted to explore possibilities of further enhancing Federal-State cooperation and coordination and the delineation of responsibilities and functions of federal and state legislative and administrative authorities regarding issues relating to ownership, powers and responsibilities of environmental resources and other environment-related matters. The study highlighted a number of important issues and recommendations for the enhancement of enforcement of environmental management at state and federal levels such as:

- the need for a strong and active federal participation in the management of environment-related issues;
- the need for clearer definition and delineation of federal and state roles in environmental management; and
- the need to establish a mechanism and institutional framework for more effective environmental management.

MALAYSIA INCORPORATED CONCEPT

In line with the objectives of Malaysia Incorporated Concept to enhance cooperation and understanding between the various players in national development, i.e. the public sector, the private sector and non-governmental organizations, a total of 54 activities were initiated in 1997 by the Department in the form of dialogues, consultative meetings and staff exchange training programme.

Under the staff exchange training programme between the private sector and DOE, 4 DOE officials were attached to 4 firms and correspondingly 15 senior executives from the private sector attended a week's training at the DOE Head Office between 10 - 14 June 1997. The participating companies were:

- (i) Kelang Port Management Sdn. Bhd;
- (ii) Good Year (M) Bhd;
- (iii) Matsushita Ind. Corp. Sdn. Bhd;
- (iv) Malaysia Oxygen Bhd;
- (v) Robert Bosch (M) Sdn. Bhd;
- (vi) Penang Port Sdn. Bhd;
- (vii) KTS Holdings Sdn. Bhd;
- (viii) Cabot (M) Sdn. Bhd;
- (ix) Esso Production (M) Inc.
- (x) Nestle Foods (M) Bhd;
- (xi) Henkel Oleochemicals (M) Sdn. Bhd;
- (xii) CCM Chemical Sdn. Bhd;
- (xiii) Clipsal Mtg.(M) Sdn. Bhd; and
- (xiv) Sarawak Shell Bhd.

At the DOE, the participants were briefed on the functions and responsibilities of the Department, coupled with field visits to water, air and noise monitoring stations as well as the Federal Territory Environment Office. The programme served as a useful platform for participants to exchange views and experience with DOE officials for a better understanding of the objectives of sustainable environmental management vis-a-vis socio-economic development. On the whole, the programme was found to be highly beneficial and participants strongly recommended that it be expanded to allow more private sector participation.

The 1997 series of dialogues between DOE, the industrial sector and NGOs served as a useful forum for exchange of views, information, experiences and concerns in a non-confrontational manner. A total of 7 dialogues on environmental issues were held in 1997.



State of The Environment

Chapter 3



AIR QUALITY

Status of Air Quality

In 1997, 16 new Continuous Air Quality Monitoring (CAQM) stations (Table 3.1) were set up in addition to the existing 13 stations. These 29 CAQM stations are located throughout the country, of which 6 stations are situated in the Klang Valley.

The overall air quality for Malaysia, described in terms of the Air Pollutant Index (API) measured at the 29 stations, was good generally from the months of January to July and November to December 1997. However API increased drastically during the months of

August to October 1997, coinciding with the haze episode of 1997. The index reached very unhealthy levels in Sarawak in the month of September 1997 (Figure 3.1). Similar trends were also observed from stations in the Klang Valley (Figure 3.2 and Figure 3.3). The high index was attributed to the high concentrations of particulate matter (PM_{10}), which was the dominant pollutant in the air. Apart from PM_{10} , the concentrations of other pollutants (Figure 3.4, 3.5, 3.6 and 3.7) were found to be well below the Recommended Malaysian Air Quality Guidelines. The annual average ambient concentrations of lead monitored in Kuala Lumpur, Petaling Jaya and Shah Alam were generally low between 0.08 to 0.28 $\mu g/m^3$ (Figure 3.8)

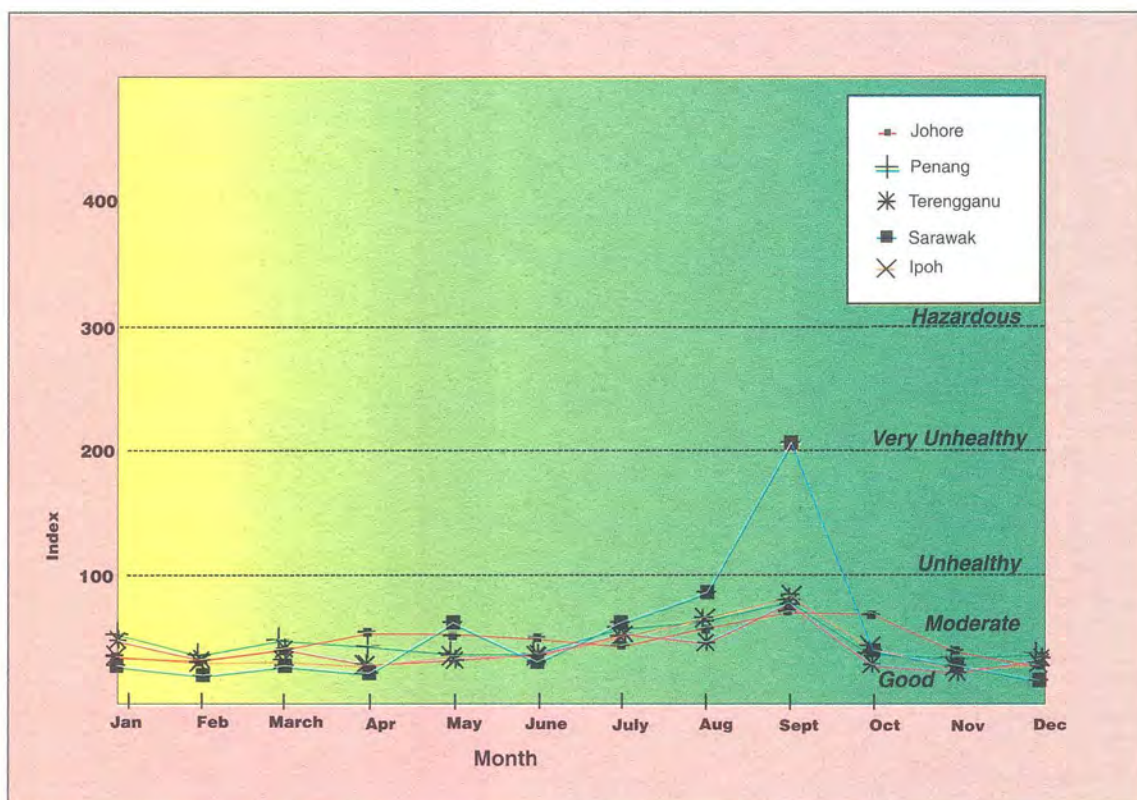


Figure 3.1 Malaysia: Air Pollutant Index, 1997

Table 3.1 Malaysia: Automatic Air Monitoring Stations established in 1997

SITE LOCATION	DATA AVAILABILITY	CATEGORY
Sek. Keb. Indera Mahkota, Kuantan	January 97	Residential
Sek. Keb. Balok Baru	January 97	Industrial
Sek. Keb. Seri Petaling, Petaling Jaya	December 97	Industrial
Sek. Keb. Bakar Arang	January 97	Residential
Sek. Keb. Bagan Ajam, Butterworth	January 97	Traffic
Sek. Men. Vok. Perdagangan, Johor Bahru	January 97	Residential
Sek. Men. Kg. Air Putih, Taiping	January 97	Industrial
Sek. Keb. Dato' Hashim 2, Pengkalan Cepa	January 97	Industrial
Maktab Sultan Ismail, Kota Bharu	January 97	Residential
Country Height, Kajang	June 97	Residential
Kaw. Industri Paka, Terengganu	June 97	Industrial
Sek. Keb. Raja Muda, Shah Alam	October 97	Residential
Ibu Pejabat Sib, Sarawak	October 97	Residential
Balai Polis Pusat, Bintulu, Sarawak	October 97	Residential
Sek. Men. Dato' Permaisuri, Miri, Sarawak	October 97	Residential
Balai Polis Pusat Sarikei, Sarawak	October 97	Residential

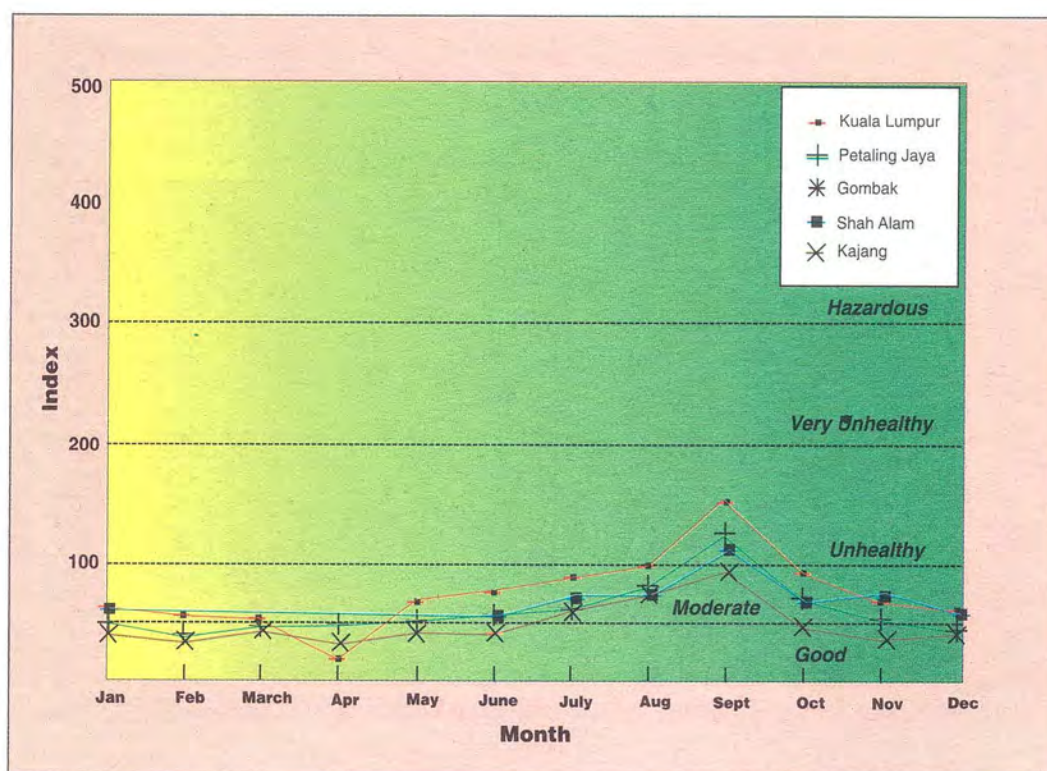


Figure 3.2 Klang Valley: Air Pollutant Index (API), 1997

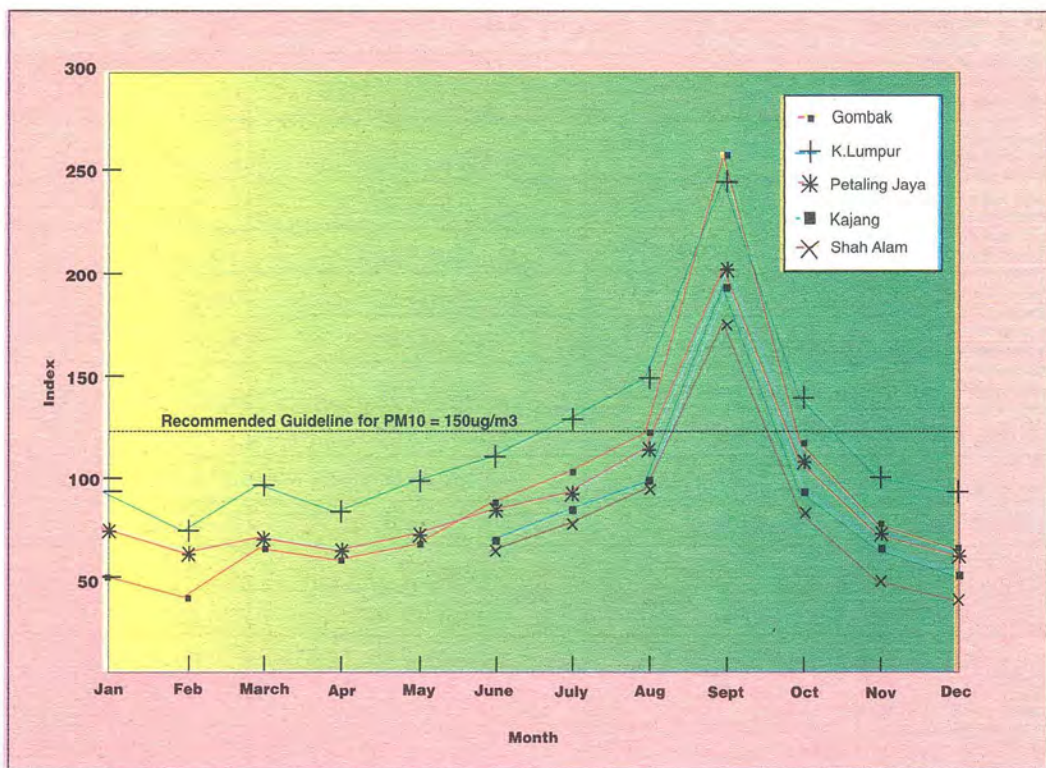


Figure 3.3 Klang Valley: Concentration of PM_{10} , 1997

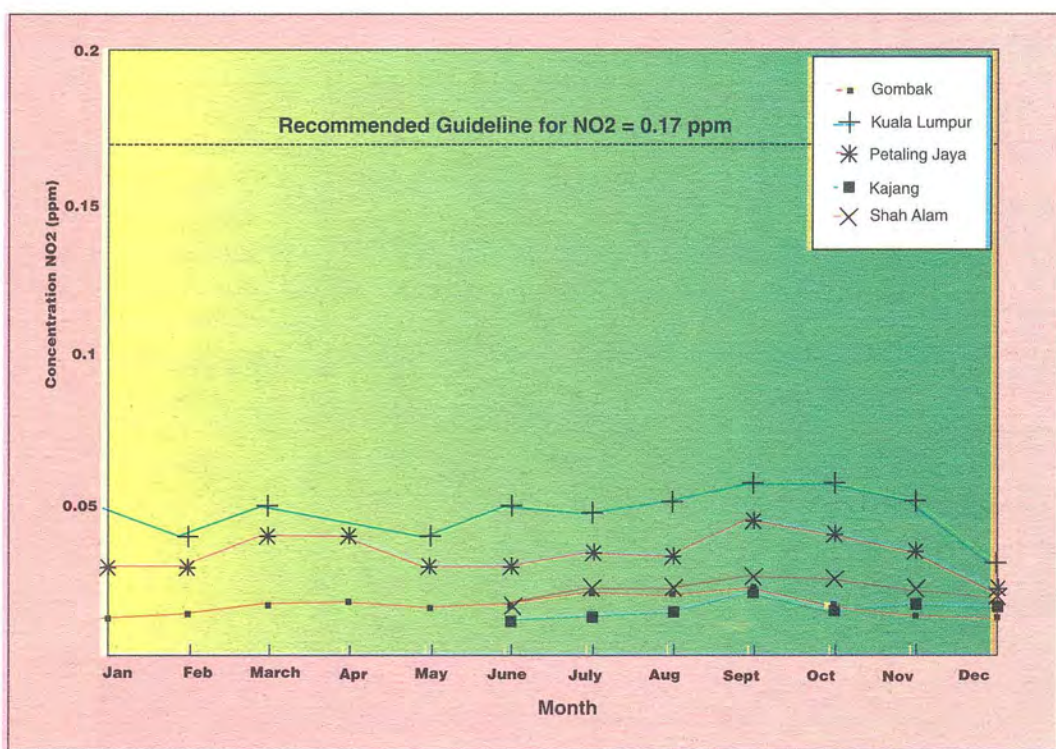


Figure 3.4 Klang Valley: Concentration of Nitrogen Dioxide (NO_2), 1997

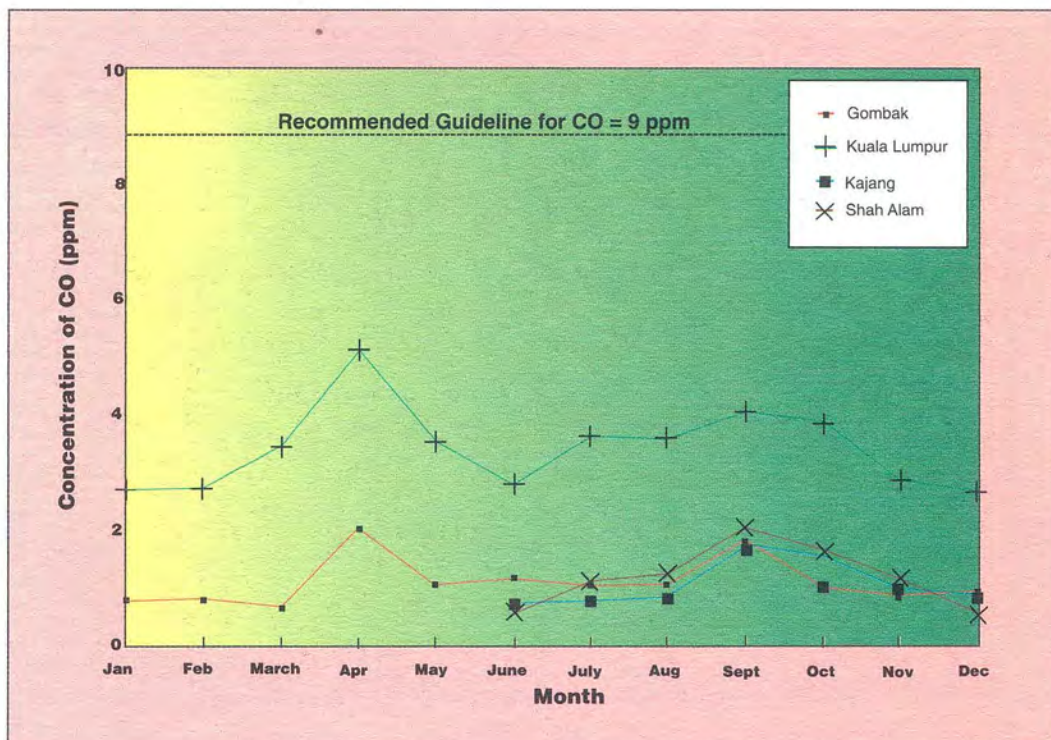


Figure 3.5 Klang Valley: Concentration of Carbon Monoxide (CO), 1997

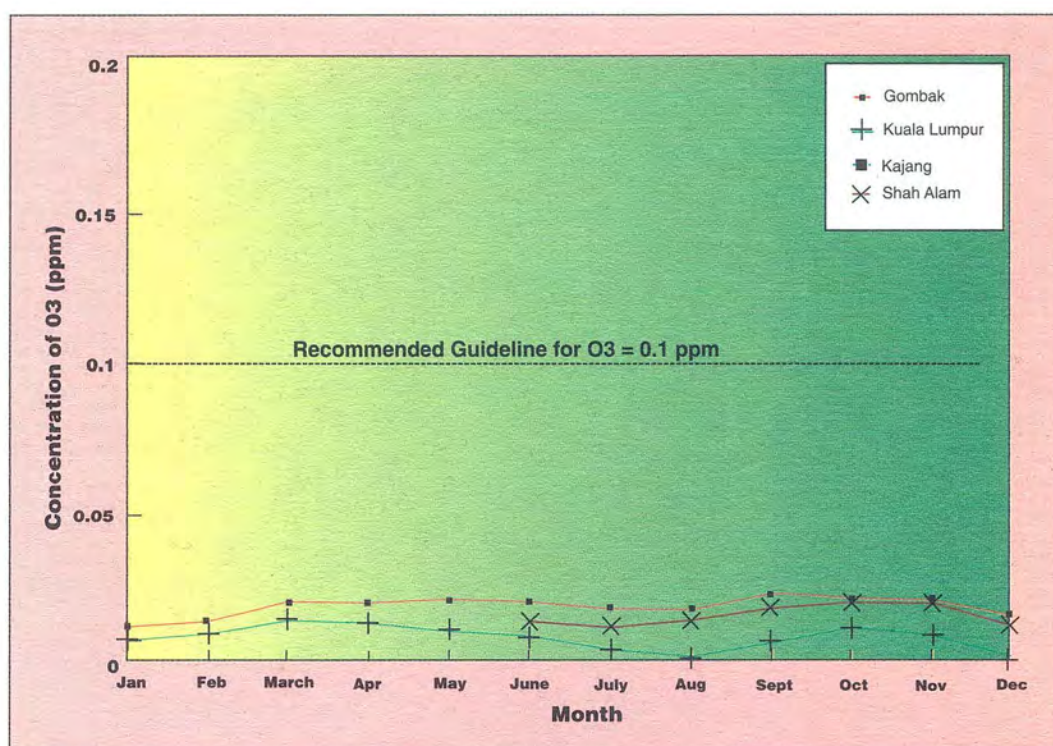


Figure 3.6 Klang Valley: Concentration of Ozone (O3), 1997



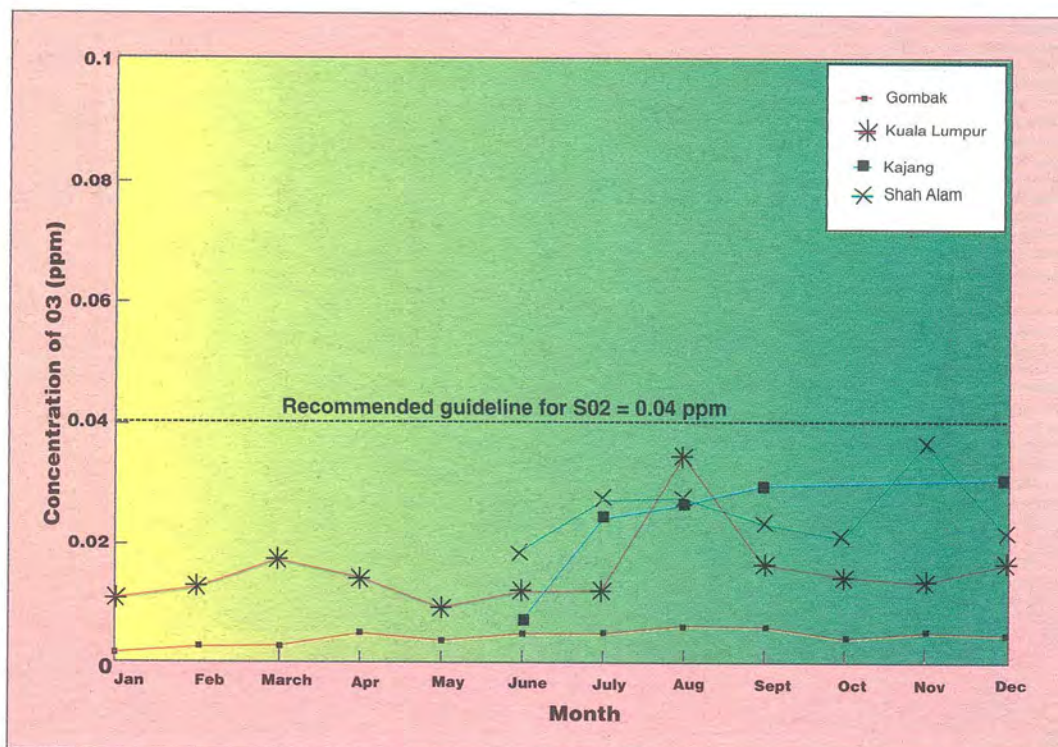


Figure 3.7 Klang Valley: Concentration of Sulphur Dioxide (SO_2), 1997

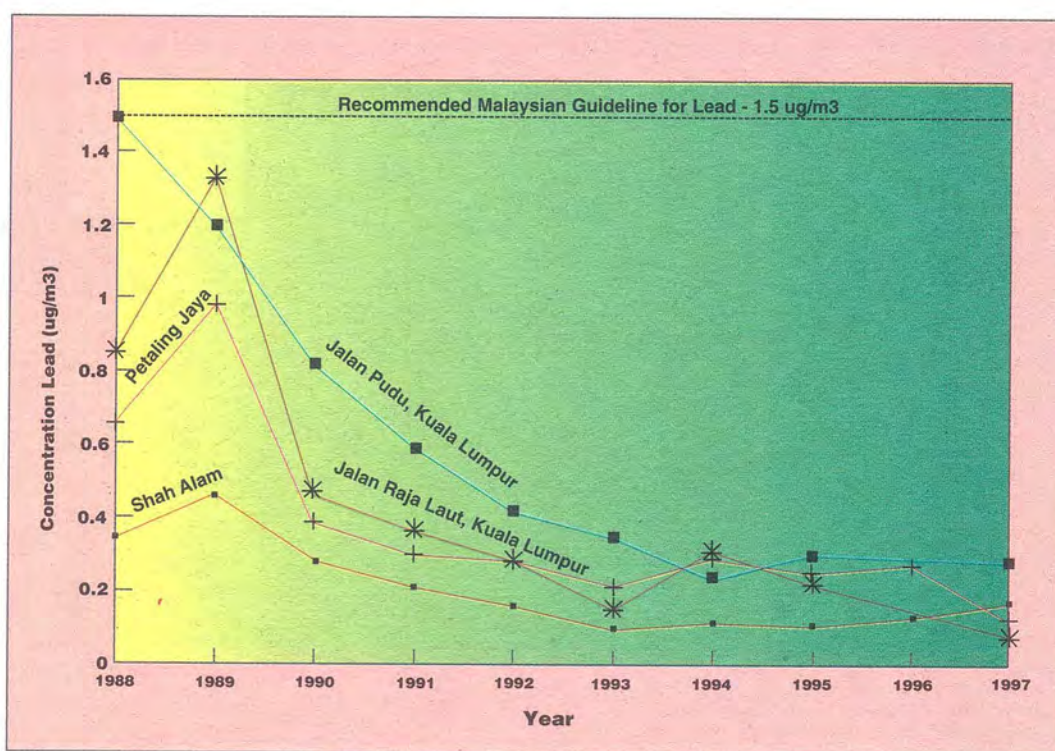


Figure 3.8 Kuala Lumpur & Selangor: Ambient Lead Concentration, 1988-1997

HAZE EPISODE

Early signs of the haze were detected when API reached unhealthy levels of more than 100 and continued to increase drastically in mid-July. The episode had been the most serious so far, both in terms of intensity and duration. It reached a climax when a haze emergency had to be declared in the State of Sarawak for 10 days starting from 19 September 1997 when the index reached the hazardous level of more than 500 and visibility was greatly reduced.

The 1997 haze episode was primarily due to forest and land fires in Kalimantan and Sumatra, Indonesia. Detection of hot spots via satellite imagery had shown that most of the fires started in plantation areas in Indonesia. The unusual prolonged severe drought caused by El Nino which started in March 1997 aggravated the situation.

Several economic sectors were affected. Among those severely affected were transport services, manufacturing activities and the tourism sector. The haze also increased complaints of respiratory problems particularly among asthmatic patients and caused decline in agriculture and fishing yield.^a

The Government of Malaysia took all possible measures to prevent the haze from worsening. At the national level, efforts were carried out in accordance with the National Haze Action Plan, which detailed out operational procedures to respond to different alert levels of the Air Pollutant Index. The measures taken included intensification of enforcement action; stepping-up public awareness and education campaigns to stop open burning; and regular announcement of API readings through the mass media to inform the public of the prevailing air quality conditions throughout Malaysia.

In addition, institutional cooperation among the agencies involved in managing haze was strengthened, and Haze Action Committees at National, State and District Levels were activated. The National Committee on Disaster Relief and Management at the Prime Minister's Department took on the lead role of handling emergencies resulting from haze.

At the regional level, the Regional Haze Action Plan was endorsed by ASEAN Environment Ministers at their Meeting in Singapore in



Haze in Kuala Lumpur, September 1997

^a Jamal Othman and Mohd Shahwahid H.O, 'Economic Value of the 1997 Haze Damages to Malaysia', Economy and Environment Program For Southeast Asia (EEPSEA) - 1998.





December 1997. The primary aim of the plan is to facilitate cooperation among ASEAN countries to prevent occurrence of haze in the region arising from land and forest fires. The major components of the plan included preventive measures, regional monitoring mechanisms and fire fighting capabilities.

In relation to this, a Memorandum of Understanding (MoU) between Malaysia and Indonesia was signed on 11 December 1997. Under the MoU, a mechanism will be established for the two countries to work together for mutual cooperation and assistance in disaster management, including forest fires.

NOISE

Noise Monitoring Programme

Noise baseline monitoring activities were extensively conducted along the new

alignments of the Light Rail Transit system (LRT) and selected major roads in the Federal Capital (Jalan Ipoh, Jalan Pudu, Jalan Cheras and Jalan Setapak). Noise baseline monitoring were also conducted in the vicinity of the new Kuala Lumpur International Airport (KLIA) to establish noise level baseline before expected commencement of operation in July 1998. In response to public complaints, both noise and vibration measurements were carried out at several sites in the Klang Valley, especially at construction sites and industrial areas.

Based upon monitoring at four selected major roads, the noise levels at heavy traffic areas were found to be in the range of 58-73 dB(A) (Figure 3.9). Noise levels measured during the daytime at 4 selected locations in the vicinity of the KLIA project site showed that the levels were between 39 dB(A) and 70 dB(A) as shown in Figures 3.10, 3.11 and 3.12. Generally the noise levels along the LRT track were between 57 dB(A) to 80 dB(A) (Figure 3.13). Noise barriers had been erected at specific locations along the LRT route to reduce noise impact to adjacent areas.



Noise Monitoring at Taman Sayang, Selayang, Selangor (Residential Area)

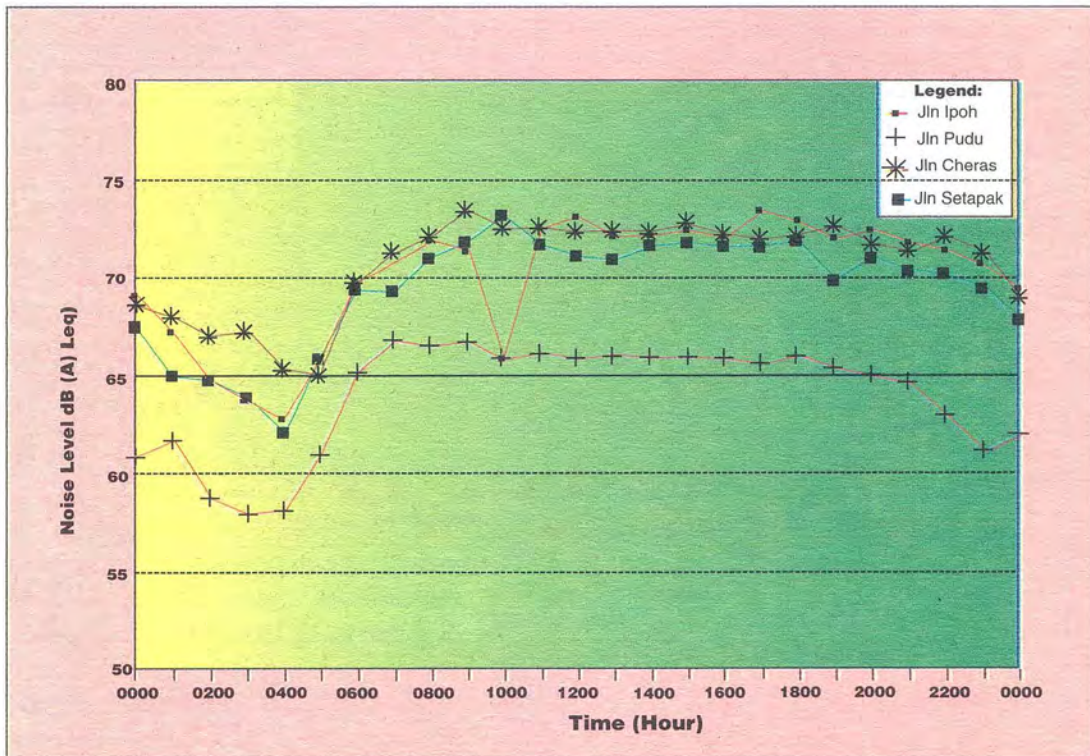


Figure 3.9 Traffic Noise Levels along Major Roads in Kuala Lumpur, 1997.

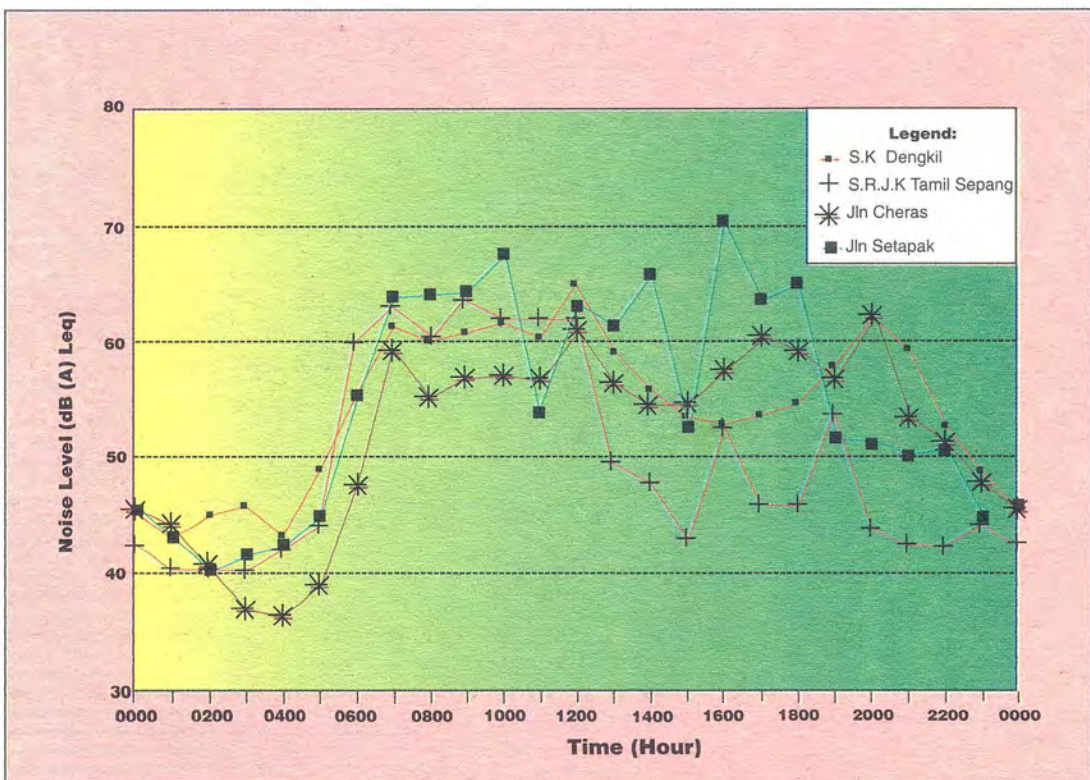


Figure 3.10 Noise Levels in the Vicinity of KLIA Project Site, Sepang, 24-26 March 1997

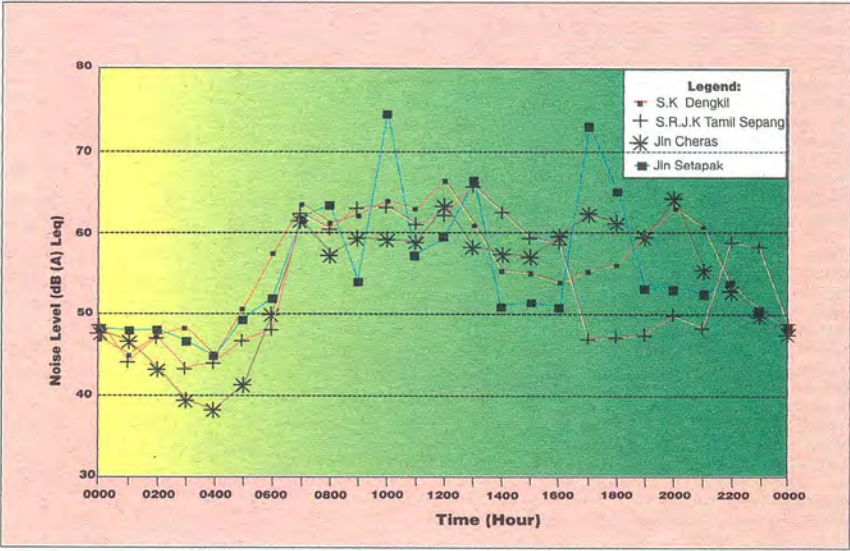


Figure 3.11. Noise Levels in the Vicinity of KLIA Project Site Sepang, 30 June-2 July 1997.

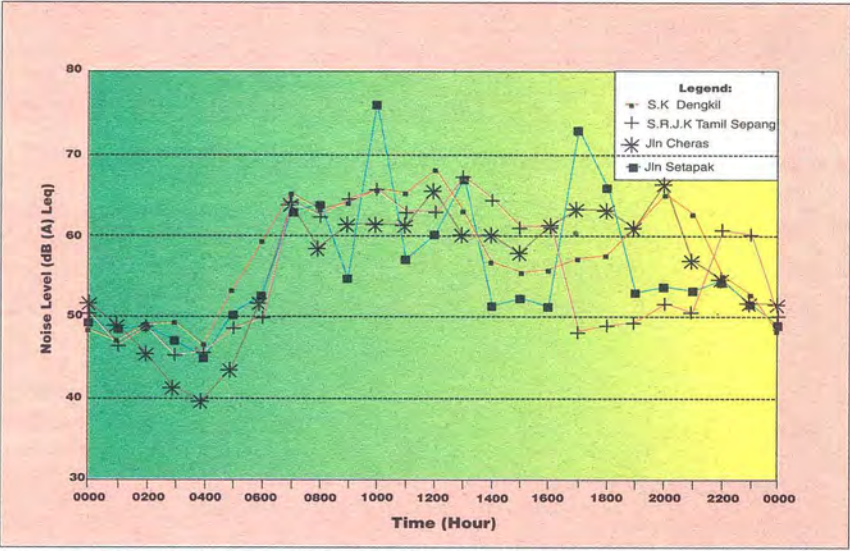


Figure 3.12. Noise Levels in the Vicinity of KLIA Project Site, Sepang, 13-15 October 1997.

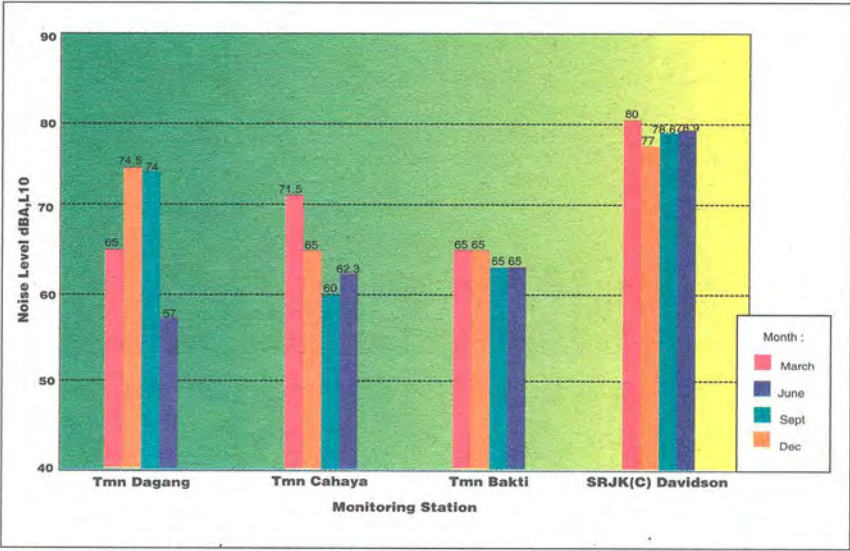


Figure 3.13. Noise Levels at Selected Sites along LRT Route, 1997

RIVER WATER QUALITY

Status of Malaysian Rivers

A total of 908 water quality stations along 117 rivers were monitored. Six parameters namely pH, dissolved oxygen, biological oxygen demand, chemical oxygen demand, ammoniacal nitrogen and suspended solids are taken for consideration to compute the water quality index (WQI). Based on the 1997 WQI calculations, 24 rivers were categorised as clean, 68 slightly polluted and 25 rivers polluted (Table 3.2).

The number of clean rivers had decreased from 42 in 1996 to 24 in 1997, while rivers slightly polluted had increased from 61 in 1996 to 68 in 1997, and polluted rivers had increased from 13 in 1996 to 25 in 1997. The significant change in the number of clean, slightly polluted and polluted rivers could be attributed to the reduction in rainfall, the prolonged drought in many part of the country and the higher temperature experienced throughout the year as a consequence of the El Nino effect. The 90 percentile rainfall recorded in 1996 was 12197.9mm and in 1997 was 8930.7mm^b. The significant lesser rainfall resulted in low river water flow and hence reducing the dilution capacity.



In-Situ Measurement for Water Quality

Table 3.2 Malaysia: River Water Quality Status, 1997

State	River	Status
Perak	Temerloh	Clean (Index 81-100)
Johor	Mersing	
Pahang	Rompin	
Pahang	Bertam	
Pahang	Mentiga	
Pahang	Pahang	
Terengganu	Kerteh	
Terengganu	Paka	
Terengganu	Besut	
Kelantan	Kelantan	
Sabah	Mengalong	
Sabah	Papar	
Sabah	Putatan/Moyong	
Sabah	Damit/Tuaran	
Sabah	Kadamaian	
Sabah	Sugut	
Sabah	Labok	
Sabah	Kaya	
Sabah	Kinabatangan	
Sabah	Silabukan	
Sabah	Kalumpang	
Sabah	Tawau	
Sabah	Umas - Umas	
Sabah	Brantian	
Perlis	Perlis	Slightly Polluted (Index 60-80)
Kedah	Langkawi	
Kedah	Kedah	
Kedah	Muda	
Perak	Kerian	
Perak	Kurau	
Perak	Sepetang	
Perak	Bruas	
Perak	Perak	
Selangor	Bernam	
Selangor	Tengi	
Selangor	Selangor	
Selangor	Langat	
Negeri Sembilan	Linggi	
Melaka	Melaka	
Melaka	Kesang	
Johor	Muar	
Johor	Batu Pahat	
Johor	Benut	
Johor	Pontian Besar	
Johor	Pontian Kecil	
Johor	Skudai	
Johor	Tebrau	

^b Source: Bahagian Kajiklim, Perkhidmatan Kajicuaca Malaysia

Table 3.2 Malaysia: River Water Quality Status, 1997

State	River	Status	State	River	Status
Johor	Johor	Slightly Polluted (Index 60-80)	Kedah	Merbok	Polluted (Index 0-59)
Johor	Sedili Besar		Pulau Pinang	Juru	
Johor	Paloi		Pulau Pinang	Prai	
Johor	Jemaluang		Pulau Pinang	Pulau Pinang	
Johor	Endau		Pulau Pinang	Jejawi	
Johor	Anak Endau		Perak	Raja Hitam/Manjong	
Pahang	Pontian		Perak	Wangi	
Pahang	Bebar/Merchong		Selangor	Buloh	
Pahang	Serting		Selangor	Kelang	
Pahang	Bera		Selangor	Sepang	
Pahang	Lepar/Bekapor		Negeri Sembilan	Jimah/Lukut Besar	
Pahang	Kuantan		Melaka	Duyong	
Terengganu	Kemaman		Johor	Air Baloi	
Terengganu	Chukai		Johor	Kempas	
Terengganu	Dungun		Johor	Danga	
Terengganu	Marang		Johor	Rambah	
Terengganu	Terengganu		Johor	Tukang Batu	
Terengganu	Setiu		Johor	Sedili Kenil	
Kelantan	Kemasin		Pahang	Balok	
Kelantan	Semerak		Pahang	Cherating	
Kelantan	Golok		Terengganu	Ibai	
Sarawak	Batang Kayan		Terengganu	Landas	
Sarawak	Sarawak		Sarawak	Batang Kemena	
Sarawak	Batang Samarahan		Sarawak	Niah	
Sarawak	Batang Sadong		Sarawak	Miri/Lutong	
Sarawak	Batang Lupa				
Sarawak	Batang Saribas				
Sarawak	Kerian				
Sarawak	Batang Rajang				
Sarawak	Batang Oya				
Sarawak	Batang Mukah				
Sarawak	Batang Balingian				
Sarawak	Batang Tatau				
Sarawak	Similajau				
Sarawak	Suai				
Sarawak	Sibuti				
Sarawak	Baram				
Sarawak	Limbang				
Sarawak	Trusan				
Sarawak	Lawas				
Sabah	Padas				
Sabah	Membakut				
Sabah	Bingkongan				
Sabah	Segama				
Sabah	Kalabakan				

SOURCES OF RIVER POLLUTION

Agro-based Industries, Manufacturing, Livestock Farming and Domestic Waste (Biochemical Oxygen Demand) (Table 3.3)

The sources of BOD pollution were from agrobased industries, livestock farms, sewage and manufacturing activities. In 1997, 81 rivers were polluted in terms of BOD, out of which 20 rivers were in Sarawak, 17 in Johor, 8 in Pahang, 8 in Terengganu, 7 in Perak, 6 in Selangor, 4 in Pulau Pinang, 3 in Kedah, 3 in Melaka, 2 in Kelantan, 2 in Negeri Sembilan and 1 in Perlis (Figure 3.14).

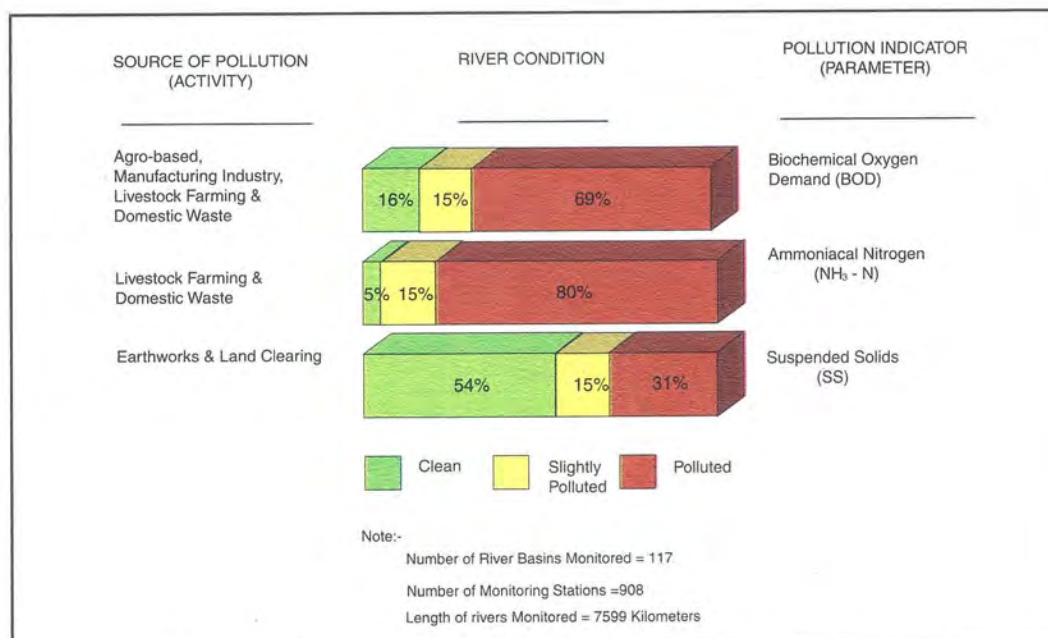


Figure 3.14 Malaysia: Status of River Water Quality Based on Activity, 1997

Livestock Farming & Domestic Waste (Ammoniacal Nitrogen) (Table 3.3)

A total of 93 rivers were polluted in terms of NH₃-N (Table 3.3) largely due to livestock farming and domestic waste. The rivers polluted by these sources were in Johor (18), Sarawak (17), Sabah (12), Pahang (10), Terengganu (9), Perak (6), Selangor (5), Pulau Pinang (4), Kelantan (3), Melaka (3), Kedah (3), Negeri Sembilan (2) and Perlis (1).

Earthworks and Land Clearing Activities (Suspended Solids) (Table 3.3)

In 1997, 36 major rivers were found to be polluted by suspended solids. Johor had the highest number (9), followed by Sarawak (8), Sabah (6), Selangor (4), Melaka (3) and one river for Langkawi, Pulau Pinang and Perak.

Table 3.3 Malaysia : Water Quality Classification (Sub-Index)

PARAMETER	SUB-INDEX RANGE		
	Clean	Slightly Polluted	Polluted
BOD	91 - 100	80 - 90	0 - 79
NH ₃ - N	92 - 100	71 - 91	0 - 79
SS	76 - 100	70 - 75	0 - 69

MARINE ENVIRONMENTAL QUALITY

Status of Marine Quality

In 1997, a total of 794 samples were collected from 226 marine monitoring stations, compared to 597 samples from 202 monitoring stations in 1996. As in previous years, the main contaminants of the coastal waters in all States were oil and grease (OG), total suspended solids (TSS) and *Escherichia coli* (*E. coli*) (Figure 3.15). 84 stations (37%) of the total number of monitoring stations were found to have exceeded the Proposed Marine Interim Standard for oil and grease (0 mg/l), total suspended solids (50 mg/l) and *E. coli* (100 MPN/100 ml).

With reference to Proposed Marine Interim Standards, of the total 794 samples analysed, 84 % for oil and grease, 61% for total suspended solids and 22 % for *E. coli* exceeded the Proposed Marine Interim Standards (Table 3.4).

Copper levels exceeding the Proposed Marine Interim Standard of 0.1 mg/l were recorded in Sarawak. Mercury and arsenic levels exceeding the Proposed Interim Standards of 0.001 mg/l for mercury and 0.1 mg/l for arsenic were also observed in the coastal waters off Negeri Sembilan. Chromium and lead levels were fairly low (Table 3.4). No cadmium level exceeding the Standard (0.1 mg/l) was recorded in any of the States.

Tarballs

All beaches surveyed were found to be free from oil pollution in the form of tarballs, except in some beaches of Selangor (Kuala Selangor and Sabak Bernam) and Perak (Pulau Pangkor), due to oil spill incidents in October 1997.

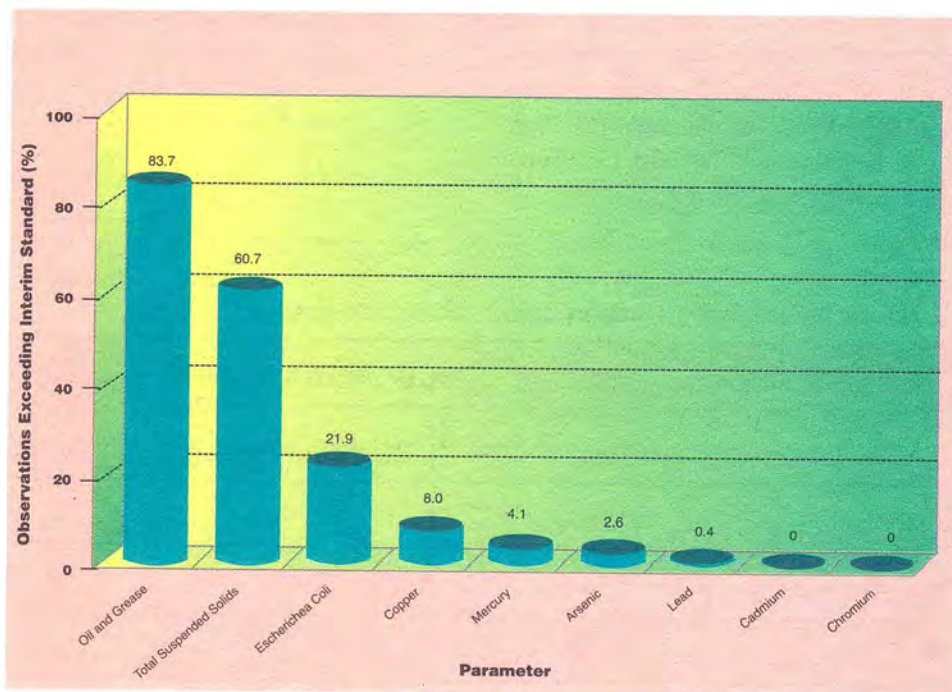


Figure 3.15 Malaysia : Status of Marine Environment ,1997

Table 3.4 Malaysia: Status of Marine Water Quality, 1997

STATE	Parameter Exceeding Interim Standards (%)										
	No. of Stations	No. of Samples	Total Suspended Solids	Oil and Grease	E.Coli	Cadmium	Chromium	Mercury	Lead	Arsenic	Copper
Pahang	17	58	100	100	41.4	0	0	0	0	0	0
Johor	42	170	15.3	98.2	35.3	0	0	0	0	0	0
Kedah/Perlis	24	89	85.4	83.1	1.1	0	0	2.2	0	0	4.5
Kelantan	10	40	65.0	75.0	15.0	0	0	0	0	0	2.5
Melaka	10	17	52.9	52.9	47.1	0	0	11.8	0	0	0
Pulau Pinang	25	128	45.3	41.4	NA	0	0	0	0	0	0.8
Perak	13	46	78.3	71.7	37.0	0	2.2	0	4.3	0	0
Sabah	31	110	18.2	100	NA	0	0	0	0	0	0
Sarawak	17	50	24.0	100	24	0	0	0	0	0	80
Terangganu	24	50	94.0	98.0	18.0	0	0	0	0	0	0
N. Sembilan	13	36	88.9	100	22.2	0	0	30.6	0	30.6	0
Selangor	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TOTAL	226	794									
AVERAGE			60.7	83.7	21.9	0	0	4.1	0.4	2.8	8.0

Note:

NA - Not Available

TSS (50 mg/l)	OG (0 mg/l)	E-coli (100 MPN/ 100 ml)	Cd (0.1 mg/l)	Cr (0.5 mg/l)	Hg (0.001 mg/l)	Pb (0.1mg/l)	As (0.1mg/l)	Cu (0.1mg/l)



GROUNDWATER QUALITY MONITORING

Preliminary groundwater monitoring under the Groundwater Monitoring and Reporting Network Project for Peninsular Malaysia, which started in 1996, was continued in 1997. The ultimate objective of the project is to evaluate the status and extent of groundwater contamination throughout the country. The first phase of the project involved:

- identification of sites with high risk of groundwater contamination caused by human activities
- establishment of a network of monitoring wells for periodic collection of samples for analysis

In 1997, a total of 42 sites consisting of 69 wells were established (Map 3.1). Preliminary findings based on samples analysed did not show any significant contaminant in groundwater.



Map 3.1 Peninsular Malaysia : Ground Water Monitoring Stations



Groundwater Sampling at a Monitoring Well

Pollution Abatement

Chapter 4



CONTROL OF AGRO-BASED PRESCRIBED PREMISES

Crude palm oil (CPO) mills and the raw natural rubber (RNR) factories are prescribed premises under Section 18 of the Environmental Quality Act 1974.

In 1997, a total of 309 CPO mills and 144 RNR factories were licenced under the Environmental Quality (Prescribed Premises)(Crude Palm Oil) Regulations, 1977 (Amendment) 1982 and (Raw Natural Rubber) Regulations, 1978. Of the 309 CPO mills, 195 mills were licenced for a period of one year, 79 mills for two years, 26 mills for three years which were effective from 1 July 1997, and another 9 mills were licenced since 1996. For RNR factories, 123 factories were licenced for a one-year, 15 factories for two-years and 6 factories for a three-year period effective from 1 April 1997. The normal licence period is for one year and only those premises with 100% compliance the previous year were given extended licence period.

1997 was a historic year for the DOE when its Prescribed Premises Unit was awarded the ISO 9002 certification for the licensing system of rubber and palm oil industries. This certifies that its licensing procedures conform to international standard and that its licensing process is transparent as it has to follow procedures stipulated in the ISO 9002 series.

Status of Compliance with the Environmental Quality (Prescribed Premises) (Crude Palm Oil) Regulations, 1977 (Amendment) 1982 and (Raw Natural Rubber) Regulations, 1978

Basing on enforcement visits by DOE State officials in 1997, the overall compliance for CPO mills and RNR factories were 76% and 90% respectively. Out of the 309 CPO mills and 144 RNR factories, 2 CPO mills had their licences temporarily suspended, 40 CPO mills and 1 RNR factory were compounded for various offences; 27 CPO mills and 1 RNR factory were taken to court for not complying fully with effluent discharge limits stipulated in their licences. (Figure 4.1 and 4.2)



ISO 9002 Certification for Rubber and Palm Oil Industries Licensing System

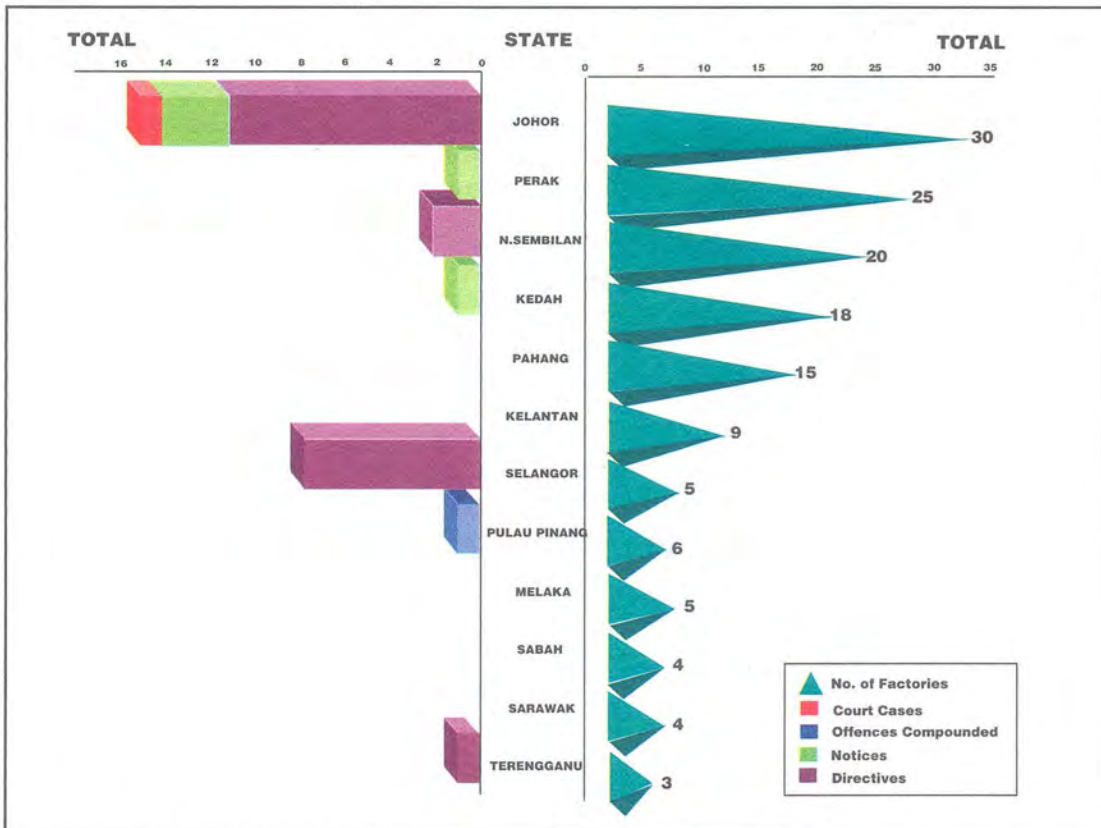


Figure 4.1 Malaysia: Legal Action Cases Against Raw Natural Rubber Factories, 1997

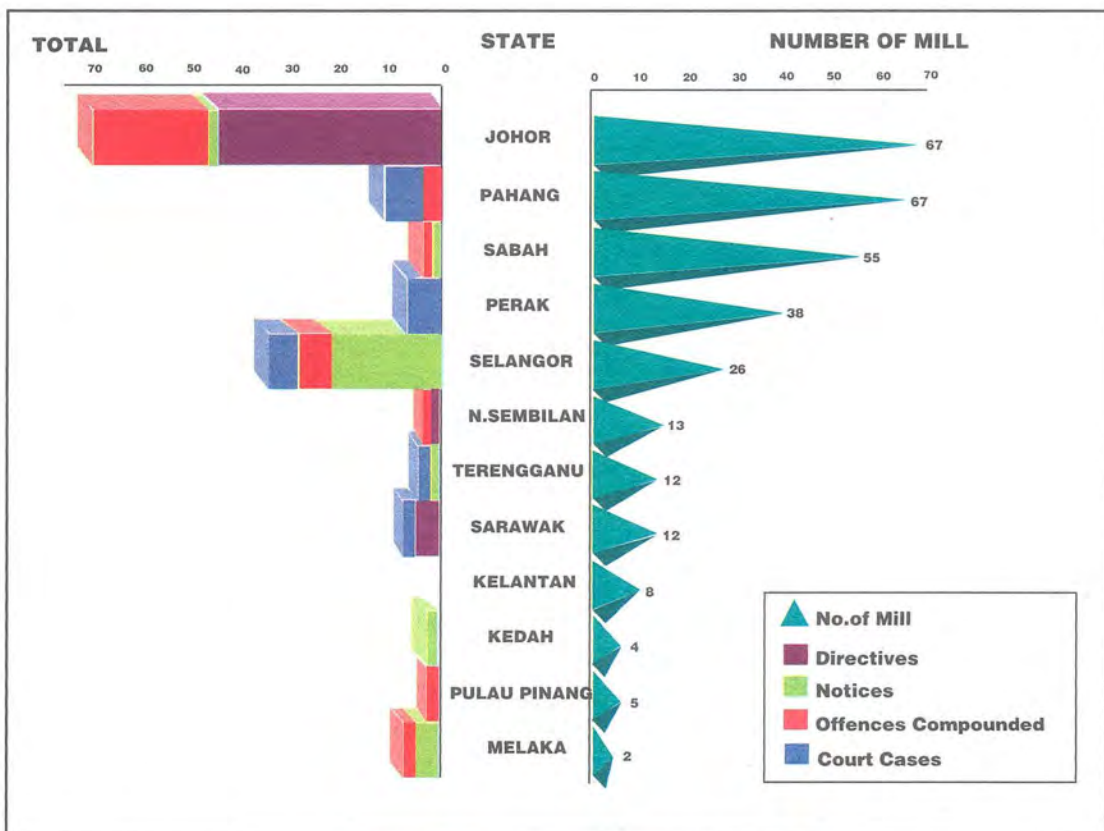


Figure 4.2 Malaysia: Legal Action Cases Against Palm Oil Mills, 1997

SCHEDULED WASTES MANAGEMENT

Integrated Scheduled Wastes Treatment and Disposal Facility

Construction work at the Kualiti Alam (KA) integrated scheduled wastes disposal and treatment facility in Bukit Nanas, Negeri Sembilan progressed satisfactorily in 1997. The newly established waste stabilisation plant started its test-run during the third quarter of 1997 and was licensed to operate by end of the year. As at 31 December 1997, 52,000 tonnes of scheduled wastes had been sent to KA.

The assessment, review, approval and supervision of implementation of KA's facility were carried out by DOE with support and technical assistance by DANCED.

KA began construction of the remaining facilities within its premises, namely the physical-chemical treatment plant and the scheduled wastes incinerator. Both plants are expected to start test-runs in early 1998. With the completion of KA's integrated facility, scheduled wastes movement and disposal in the country could be tracked and monitored more effectively through the mechanisms of the manifest and licensing requirements.

On the issue of KA's charges for the treatment and disposal of scheduled wastes at the Bukit Nanas facility, the Government had agreed to a review of the 1997's charges after a year of its implementation. The review, will largely depend on data or information provided by the industries on the quantity, types of wastes as well as the mode of treatment and disposal.

Written Permission/Enquiries/Licenses To Handle Scheduled Wastes

Of the 159 scheduled waste treatment and disposal licenses issued by the Department of Environment in 1997, 5 were for new off-site recovery facilities and 8 for scheduled waste incinerators, of which 3 were for the destruction of chemical waste. As shown in

Figure 4.3, there were reductions in the number of licenses issued for solid waste landfills, landfarming and transport since 1996. The most significant reduction was in the number of licenses issued for solid waste landfill following the initiation of KA's project. Figure 4.4 and Table 4.1 indicate the distribution of the type of licenses issued for hazardous waste treatment and disposal facilities according to States.

Notification of Scheduled Wastes Generation

The number of waste generators that complied with the notification requirement as mandated under regulation 3 of the Environmental Quality (Scheduled Wastes) Regulations, 1989 increased from 2252 in 1996 to 3103 in 1997. Figure 4.5. shows the overall compliance of industries in terms of notification of waste generation. Figure 4.6 shows the distribution of scheduled wastes generated according to State and Figure 4.7 shows the distribution of scheduled wastes generated according to waste category. Figure 4.8 indicates the distribution of scheduled wastes generated according to industry.

Implementation of the Basel Convention

A total of 58 applications to export scheduled wastes were processed during 1997, including 18 cases carried over from the previous year. This is an increase of 43% from 1996, which were only 35 cases. However, only 12 cases were approved in 1997, while 22 cases were rejected and 24 cases were still under consideration (Figure 4.9). During the year, more stringent measures were undertaken to ensure that only genuine cases of export of wastes for recovery were allowed, as more local facilities for recovery were made available to handle such scheduled wastes and also in compliance with the requirements of the Basel Convention that wastes should be handled as close as possible to the point of generation. A total of 10 cases of import of scheduled wastes such as copper slag and steel mill slags were processed and only one case was rejected (Figure 4.10)



Table 4.1 Malaysia: Scheduled Waste Treatment and Disposal Facilities Licences (as of 31 December 1997)

FACILITY	NUMBER OF LICENCE ISSUED ACCORDING TO STATE													TOTAL
	PHG	JHR	KDH	MLK	N.S	PRK	PP	SLG	SRK	SBH	TRG	KLN	WP (KL)	
Transport	2	21	1	2	4	1	4	21	7		4		7	74
Land Disposal (Seksyen 24(1))		1							2	2				5
Off-Site Recovery	1	9	1	1	1		3	8						24
Off-Site Storage	1	2			1			5		1	2	1		13
Scheduled Waste Incinerator		11	2	1		4	1	6	1	2	3			31
Landfarm					2				2	1				5
Off Site Treatment					1			3						4
Secure Landfill			1		1						1			3
TOTAL	4	44	5	4	10	5	8	43	12	10	6	1	7	159

NOTE:

JHR	- JOHOR	SBH	- SABAH
KDH	- KEDAH	SLG	- SELANGOR
MLK	- MELAKA	SRK	- SARAWAK
N.S	- NEGERI SEMBILAN	TRG	- TERENGGANU
PRK	- PERAK	WP(KL)	- WPERSEKUTUAN KUALA LUMPUR
KLN	- KELANTAN	PHG	- PAHANG



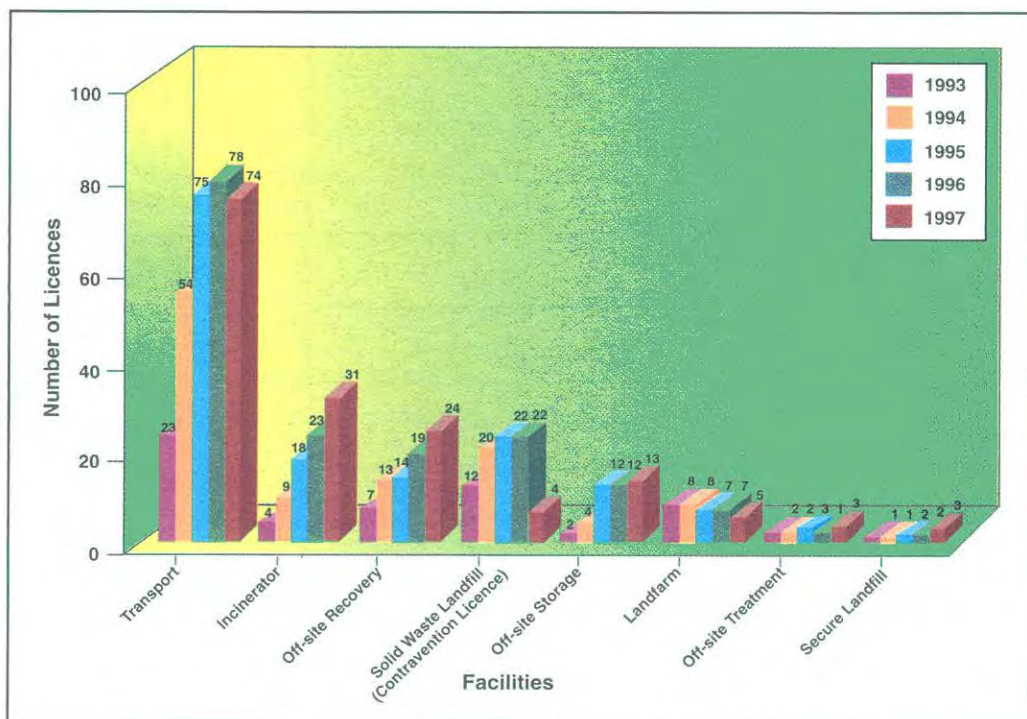


Figure 4.3 Malaysia: Scheduled Wastes Treatment and Disposal Facilities Licenses, 1993-1997

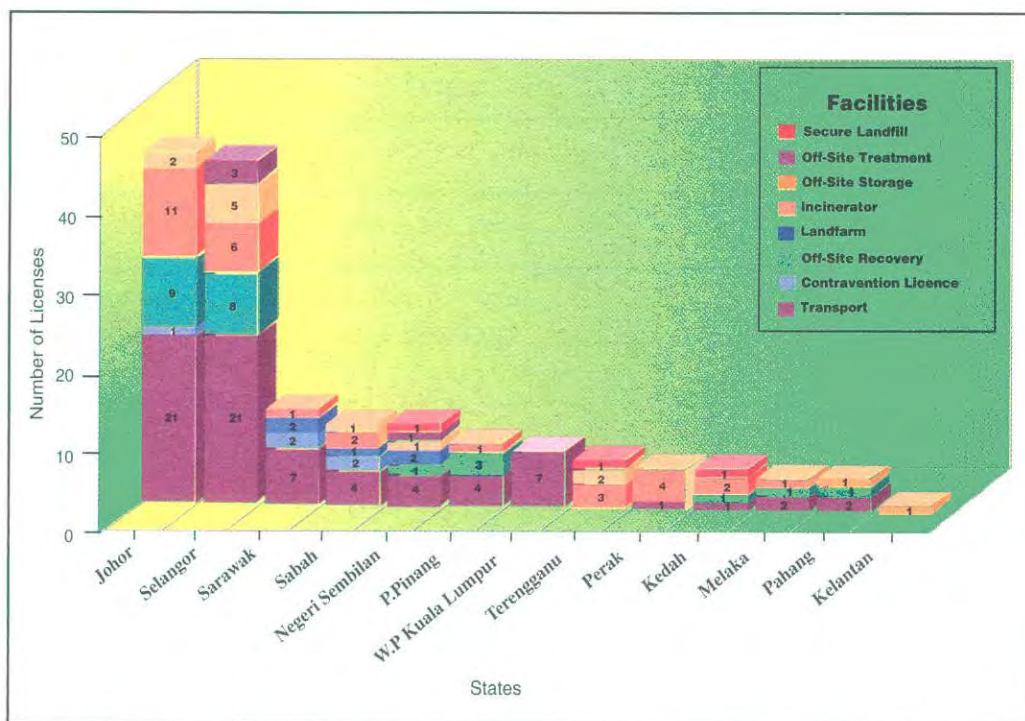


Figure 4.4 Malaysia: Distribution of Licensed Scheduled Wastes Treatment and Disposal Facilities by State, 1997.

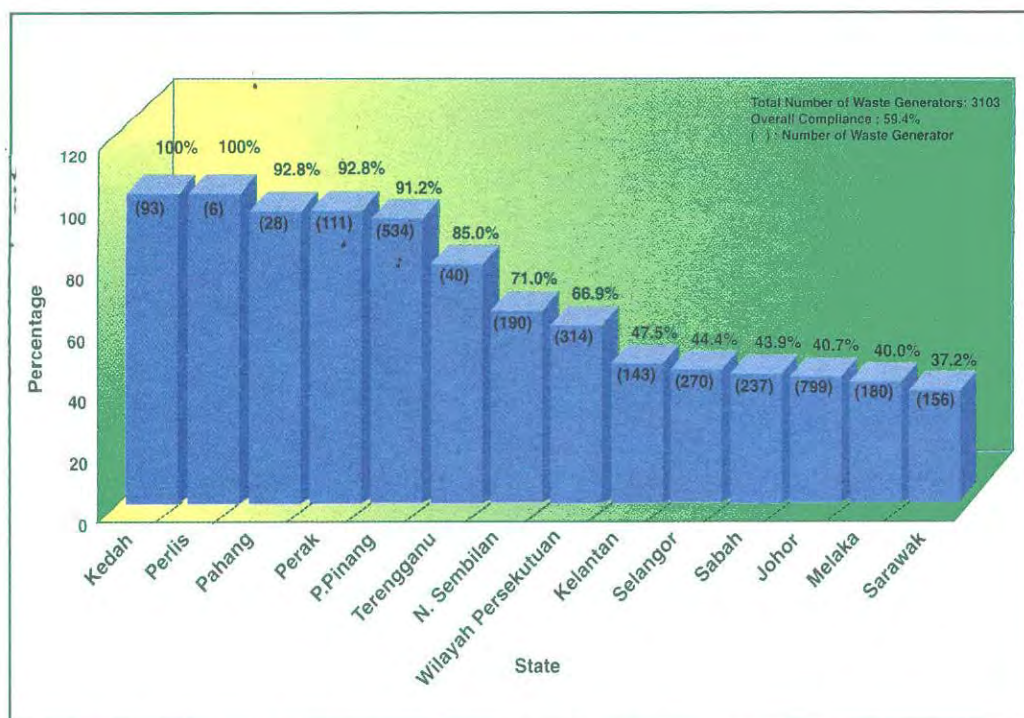


Figure 4.5 Malaysia: Status of Compliance to Notification of Scheduled Waste, by State, 1997.

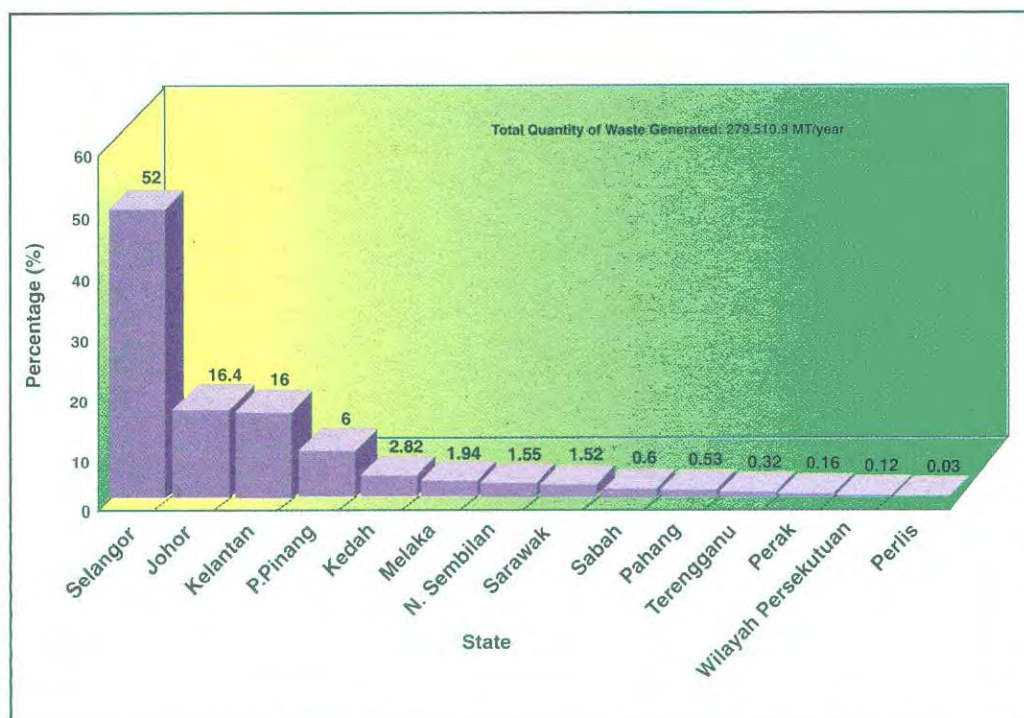


Figure 4.6 Malaysia: Distribution of Scheduled Waste Generated by State, 1997

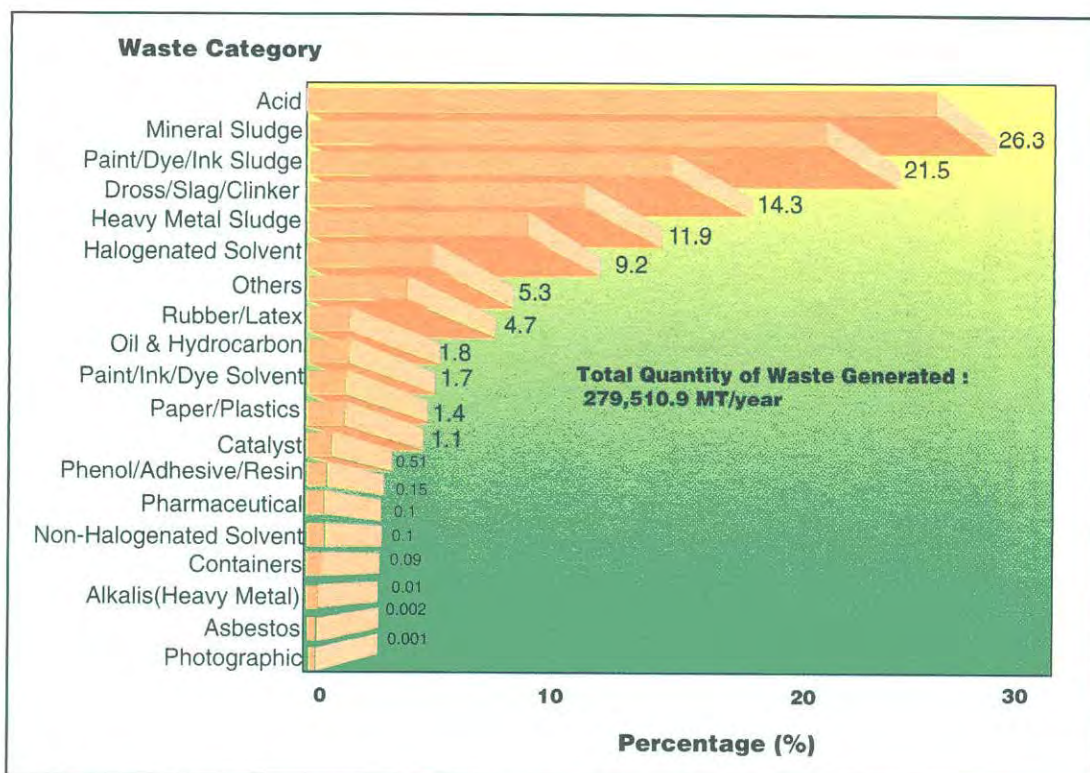


Figure 4.7 Malaysia: Quantity of Schedule Wastes Generated according to Waste Category, 1997

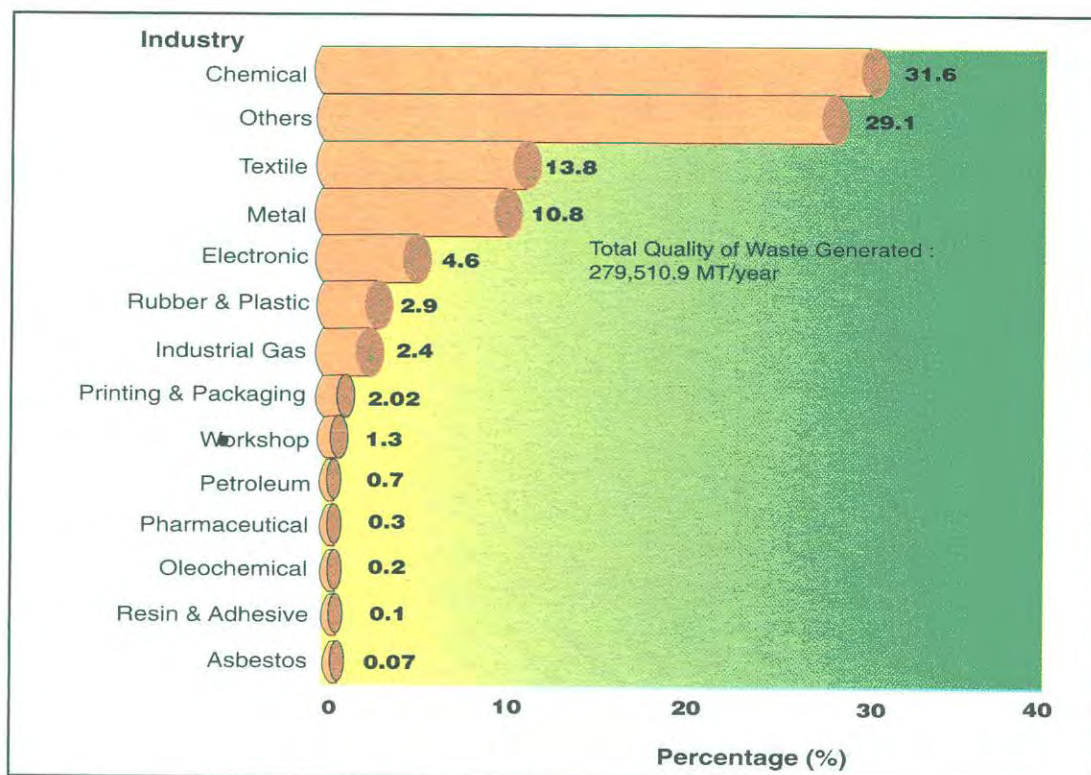


Figure 4.8 Malaysia: Quantity of Scheduled Wastes Generated according to Industry, 1997

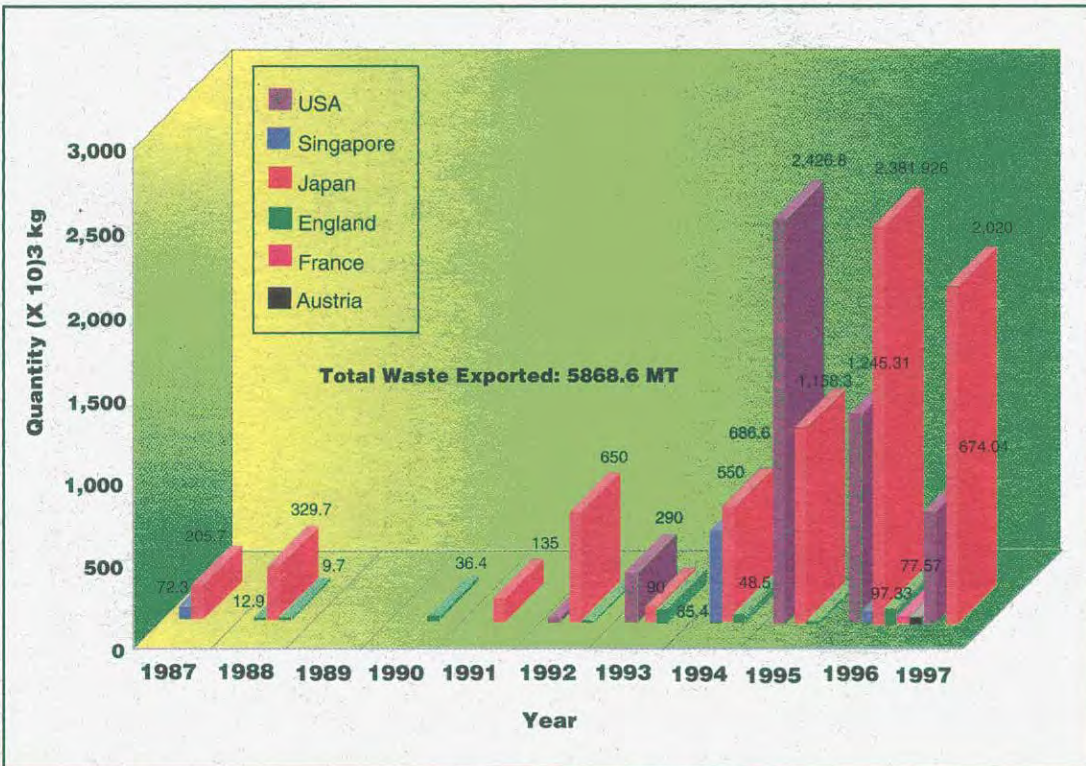


Figure 4.9 Malaysia: Quantity of Scheduled Wastes Exported, 1987-1997

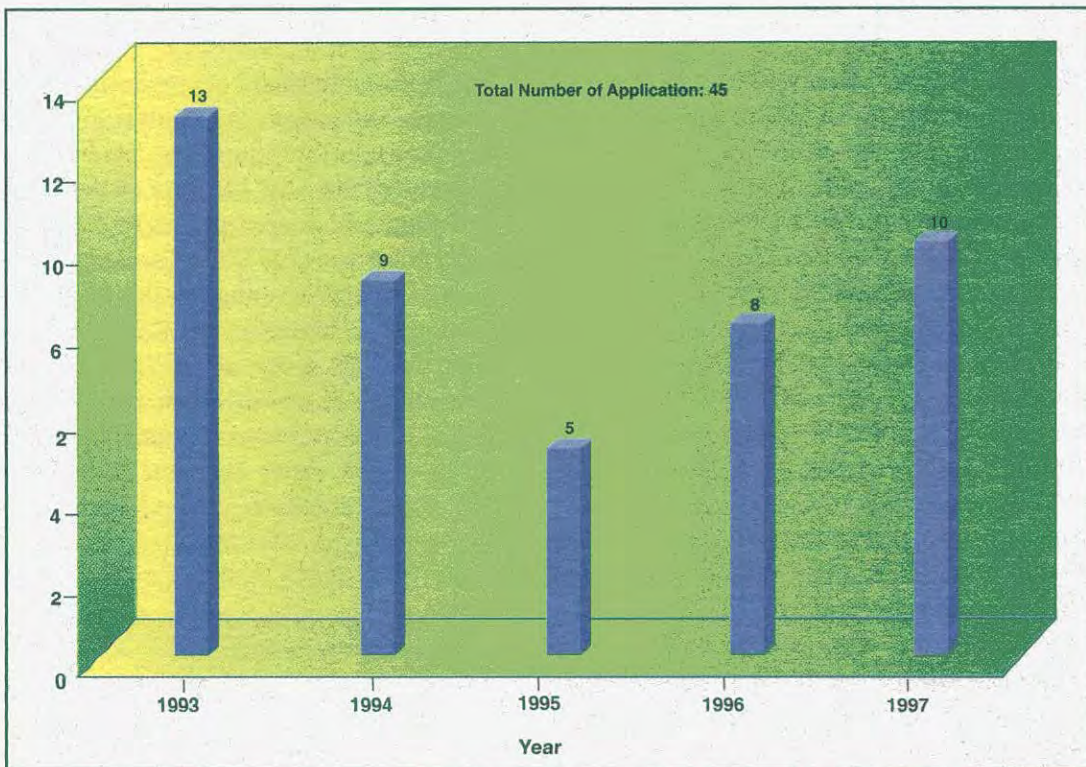


Figure 4.10 Malaysia: Number of Applications to Import Scheduled Wastes, 1993-1997



Scheduled Wastes Incinerator Plant at Kualiti Alam, Bukit Nanas.

At the international level, Malaysia continued to participate actively in the various working groups under the Basel Convention. The Technical Working Group (TWG) met in Geneva from 24 to 28 February 1997 to finalise the lists of wastes to be subjected under the Convention. The TWG was successful in meeting its tasks of classifying wastes as mandated by the Third Meeting of the Conference of the Parties (COP3) in September 1995. In addition, the TWG managed to devise a Review Mechanism for wastes subject to the Convention, finalise the illegal trafficking report format, and started its work on hazards characterisation. Finally, the TWG forwarded its list of wastes for incorporation into the Convention to be agreed upon during COP4 using one of the following options: as guidelines, decision of the Conference of the Parties (COP), protocol, adoption of new annexes and amendments of existing annexes.

Malaysia attended the Third Session of the Open-ended Ad Hoc Committee for the Implementation of the Basel Convention from 23 - 27 June 1997 which came out with draft decisions for the considerations of COP4. In addition, Malaysia also attended the Sixth Extended Bureau Meeting from 19-20 June 1997. The Bureau deliberated on financial and

organisational matters, considered the outcomes and progress of the various working groups and discussed the preparation of COP4 in Malaysia.

On the establishment of regional centres for training and technology transfer in China and Indonesia, little progress was achieved in 1997 except for the First Meeting of the Board of Directors which was held in Beijing from 11 to 13 November 1997. The Legal and Technical Expert Group Meeting for the Drafting of a Protocol on Liability and Compensation for Damages as a Result of Transboundary Movements of Wastes which met in May 1997 failed to achieve any substantial progress due to divergent views between developed and developing countries.

Malaysia's offer to host the Fourth Meeting of the Conference of the Parties to the Basel Convention (COP4) at the end of the year received enormous moral as well as financial support from the Parties to the Convention. Following the Malaysian Government's approval to host the Meeting in August 1997, four organising committees sprang into action: the National Steering Committee was headed by the Secretary-General of MOSTE, the Technical Committee was chaired by the Director General of DOE, the Coordination and Implementation Committee (Sarawak side) was headed by the Deputy State Secretary of Sarawak and the National Coordination Committee was chaired by the Secretary of the International Convention Secretariat of the Prime Minister's Department. However, due to the haze emergency that was declared in Sarawak, COP4 which was supposed to be held from 6 to 10 October 1997 in Kuching, Sarawak, was postponed to 22 - 27 February 1998.

In preparation for COP4, various consultations at the national as well as international levels were carried out. A bilateral meeting was held with Denmark in Kuala Lumpur from 12 to 13 May 1997 to discuss common issues with regard to COP4. In addition, information papers were also presented at the meeting of ASOEN and AMME in order to seek common ASEAN positions in COP4. Informal consultations on the Basel Convention issues were also carried out with various countries under the initiatives of the Danish and Malaysian Ministers of Environment during the AGENDA 21 Meeting in New York.

The National Steering Committee for the Implementation of the Basel Convention which was chaired by the Deputy Secretary-General of MOSTE met twice during the year to prepare Malaysia's national position with regard to COP4, which included analysis of proposals to amend the Convention by Monaco, Israel, European Union and Chile. The Steering Committee also elaborated at great length on the need to ratify the Amendment to the Convention as agreed in COP3.

CONTROL OF NON-PRESCRIBED PREMISES

Status of Compliance with the Environmental Quality (Sewage and Industrial Effluents) Regulations, 1979.

Throughout 1997, a total of 5290 enforcement visits relating to industrial effluent discharges were carried out, out of which 4402 (83.2%) were found to have complied with the Environmental Quality (Sewage and Industrial Effluents) Regulations, 1979.

Figure 4.11 shows industries such as metal finishing and electroplating, food and beverage, paper and petroleum refineries only achieved 69%, 70% and 79% compliance.

The parameters that most industries had difficulty complying were biochemical oxygen (BOD), chemical oxygen demand (COD), suspended solids (SS), oil and grease (O&G) and heavy metals like nickel, copper and lead. Among the main reasons for non-compliance were inefficient operation or absence of effluent treatment plants especially for small and medium-sized industries.

However as a result of intensified enforcement by the department, the industries concerned had stepped up efforts to improve the situation by upgrading existing treatment systems and constructing new treatment plants.

Status of Compliance with the Environmental Quality (Clean Air) Regulations, 1978

Industrial compliance with the Environmental Quality (Clean Air) Regulations, 1978 was generally found to be satisfactory, except for the non-metallic mineral and rubber-based industries as well as quarries. Out of a total of 7660 premises visited, the compliance was 89% (6813 premises). The non-metallic mineral industry achieved only 56% compliance whilst compliance by the rubber-based industry and quarries were 64% and 76% respectively.



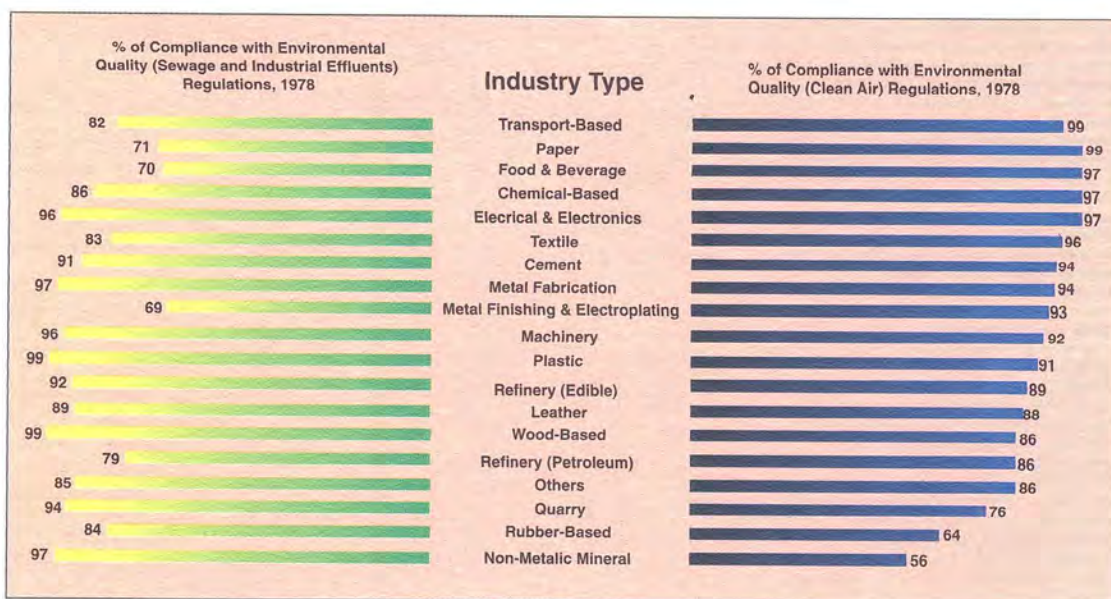


Figure 4.11 Malaysia: Compliance Status of Manufacturing Industries, 1997



Visual observation of black smoke emission using Ringlemann Chart



Effluent discharge sampling at a crude palm oil

The nature of non-compliance included excessive dust emissions due to lack of or poor maintenance of air pollution control equipment such as dust collectors, bag filters, cyclones or water sprinklers; black smoke emissions; foul odour, and operation of fuel burning equipment, chimneys or incinerators without prior written approvals from the Director General of Environment; and open burning of waste materials.

With increasing awareness on the importance of environmental control, 212 factories and 41 quarries have shown their commitment in carrying out regular self-monitoring of important parameters such as total suspended particulates (TSP), hydrogen sulphide, lead, dust, nitrogen dioxide, sulphur dioxide, sulphur trioxide, chlorine (Cl₂) and hydrochloric acid (HCL), and the results submitted regularly to the Department, either on a monthly or quarterly basis.

CONTRAVENTION LICENCE

The Environmental Quality Act, 1974, provides for contravention licences to be issued to industries under certain situations such as

genuine difficulties in complying with discharge standards and other stipulated conditions of the Act.

Figure 4.12 shows the total number of applications for licences received since 1986 under Sections 22(1) and 25(1) of the Act to contravene acceptable conditions. The number of applications for contravening Section 22(1) had decreased from 14 in 1996 to 12 in 1997. However, the application for Section 25(1) increased from 40 in 1996 to 78 in 1997.

Figure 4.13 shows the status of application for contravention licences under Section 22(1) by industry. Figure 4.14 shows the status of application for contravention licences under Section 25(1) according to the type of industry. 54 licences were approved under Section 25(1) of the Act, while 24 were rejected due to inadequate information and other reasons. The contravention licences, were mostly given to the food, rubber based and textile industries.

Sewage Treatment and Disposal

DOE continued to receive applications for contravention licences under Section 25(1) EQA 1974 from Indah Water Konsortium Sdn. Bhd. (IWK), the Consortium responsible for development, operation and maintenance of sewerage treatment facilities throughout the country under the national sewerage privatisation agreement. The number of contravention licences increased from 2366 in 1996 to 3268 in 1997. Seventy nine percent of applications were for renewal of existing licences, while the other 21% were for new applications. The increase was due to the increase in the number of sewerage facilities handed over by the Local Authorities to IWK.

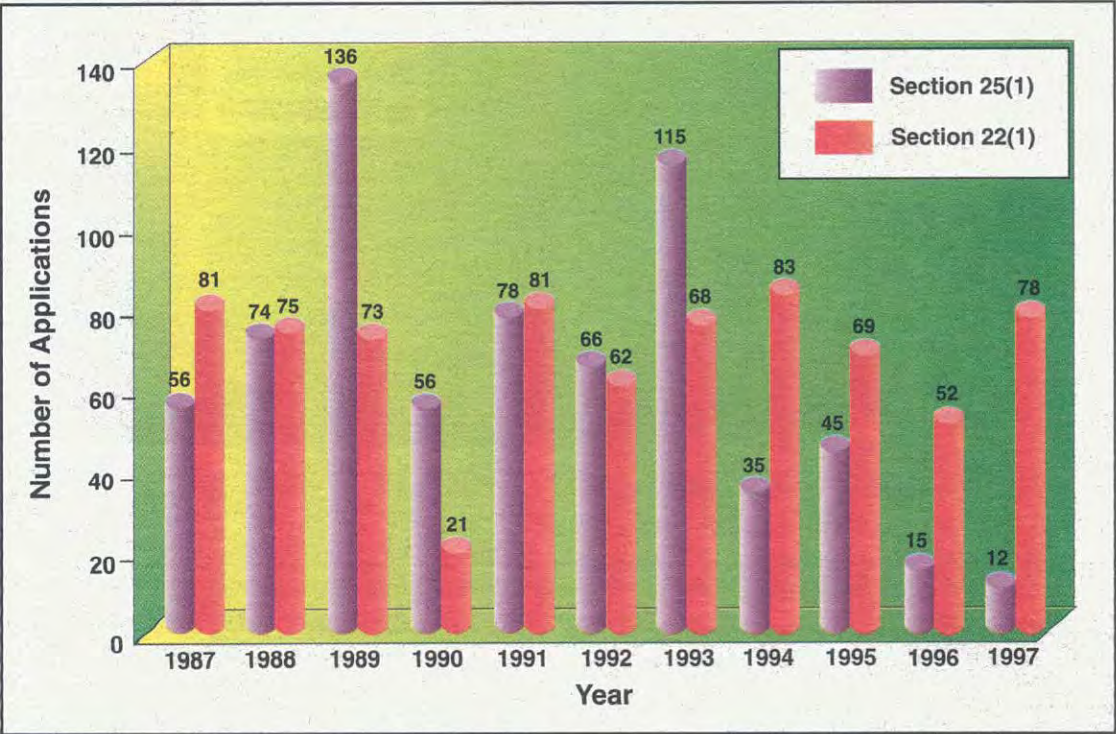


Figure 4.12 Malaysia: Number of Applications for Contravention Licenses Under Sections 22(1) and 25(1), Environmental Quality Act 1974, 1987-1997

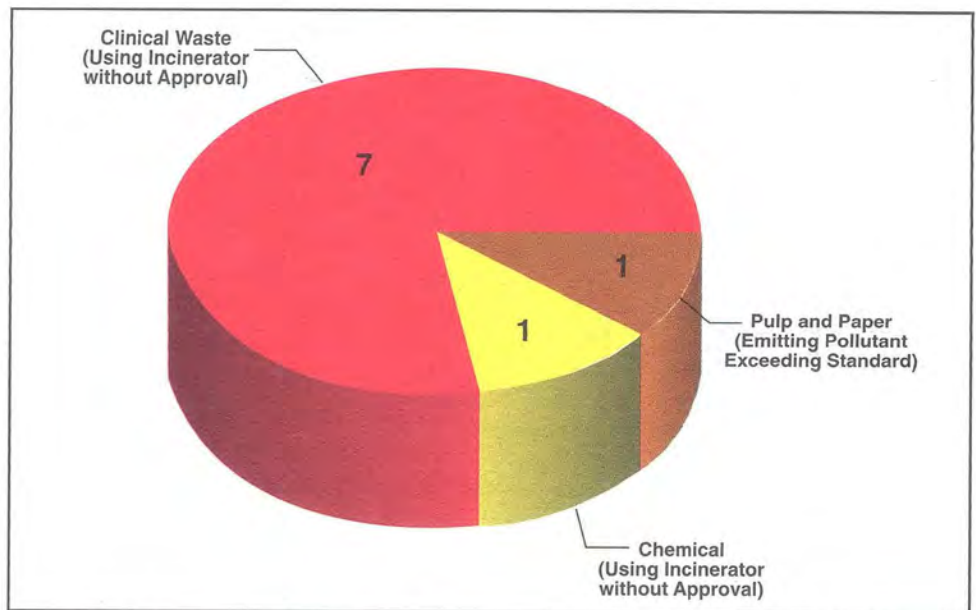


Figure 4.13 Malaysia: Number of Contravention Licenses Approved in 1997 Under Section 22(1) , Environmental Quality Act,1974

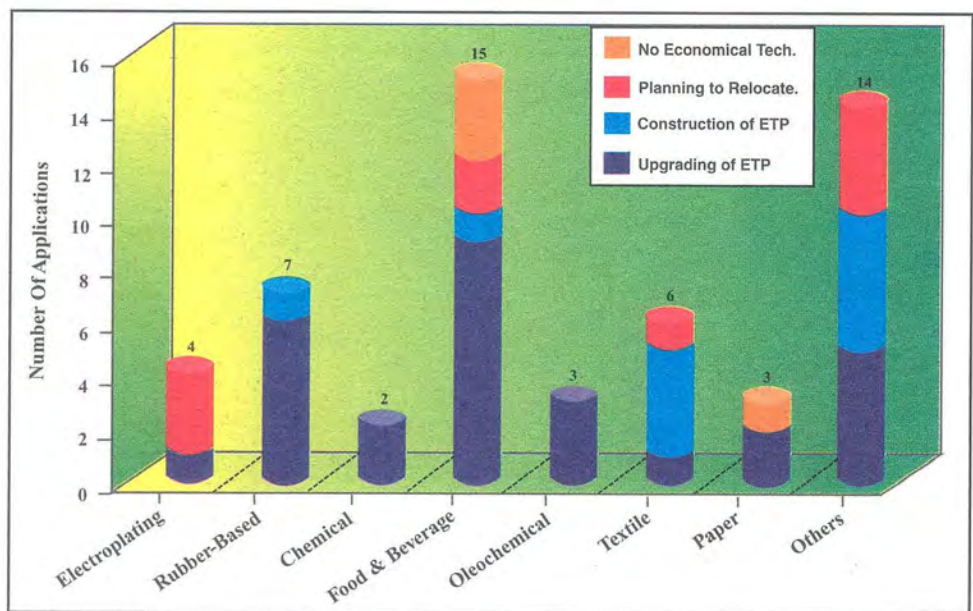


Figure 4.14 Malaysia: Number of Contravention Licenses Approved in 1997 Under Section 25(1), Environmental Quality Act, 1974

In the middle of 1997, IWK reset priorities for their refurbishment programmes. According to the programme submitted to DOE, sewerage treatment plant (STPs) would be refurbished in priority order according to the assigned ranking as stated below:

Group 1: All STPs of size greater than 5000 PE and discharging upstream of a water supply intake

Group 2: All STPs of size less than 5000 PE and discharging upstream of water supply intake

Group 3: All STPs of size greater than 5000 PE and discharging into the ten most polluted rivers as reported by DOE

Group 4: All STPs of size less than 5000 PE and discharging into the ten most polluted rivers as reported by DOE

Group 5: All remaining STPs of size greater than 5000 PE

Group 6: All remaining STPs of size less than 5000 PE

The refurbishment contract for all STPs in Group 1 and the Hulu Langat plant would be awarded by January 1998 and would be completed by end of March 1998, while for Group 2, the work would commence by March 1998.

AIRBORNE SURVEILLANCE

The joint Airborne Surveillance Programme between the Department of Environment and the Police Air Wing continued to provide useful and speedy surveillance information on violations of the Environmental Quality Act 1974. A joint surveillance was also conducted to investigate the occurrence of haze throughout the country, beginning April to the end of November 1997.

Airborne Surveillance was carried out to detect excessive smoke emissions from industries, open burning at solid waste dumping sites,

construction sites, land cleaning activities, industries and forest fires. The aerial surveillance helped to enhance and strengthen ground enforcement on open burning and stack emissions from industries.

Besides the Police Air Wing, the Air Force of the Ministry of Defence also regularly assisted the Department to detect illegal oil and oily waste discharges in the Melaka Straits and the South China Sea.

CONTROL OF MOBILE SOURCES

As of 31 December 1997, the number of motor vehicles registered for use in Malaysia was 8,510,976, an increase of 884,617 vehicles (10%) from the previous year. From this total, 91% were petrol driven vehicles (including 56% motorcycles) and 9% were diesel powered.

Vehicular emissions are regarded as a major source of air pollution especially in urban centres. Over the years the vehicle population has been increasing in tandem with improving standard of living and rising affluence. In addition, other contributory factors are improved road infrastructure resulting in more vehicular usage and increase fuel consumption, while technological development has brought about improved fuel economy and engine performance. As a corollary to this trend, the pollution loading for mobile sources has been revised. Table 4.2 shows the calculated pollution load for mobile sources for 1995-1997 using USEPA methodology. The loading has been revised consequent upon standardization of variables such as average annual distances travelled, average vehicle fuel economy and total annual fuel consumption.

In Malaysia emissions of CO, HC, NO_x and PM from diesel and petrol powered vehicles are controlled under the Environmental Quality (Control of Emission From Diesel Engines) Regulations 1996 and the Environmental Quality (Control of Emission from Petrol



Table 4.2 Pollution Load for Mobile Sources (metric tonnes)

YEAR	MOTOR VEHICLE POPULATION	CARBON MONOXIDE	OXIDES OF NITROGEN	HYDROCARBON	SULPHUR DIOXIDE	PARTICULATE MATTER
1995	7,368,329	1.3 million	159,000	79,000	26,000	12,000
1996	7,626,359	1.6 million	197,000	89,000	32,000	14,000
1997	8,510,976	1.9 million	224,000	101,000	36,000	16,000



Enforcement of Black Smoke Emission by DBKL, Traffic Police and DOE

Engines) Regulations 1996 respectively. As of 1 January 1997, new models of motor vehicles were required to comply with the emission standards stipulated under the above Regulations before they are allowed to be on the roads. To comply with these emission standards, new vehicles especially passenger cars and light duty vehicles would require installation of catalytic converters in their exhaust systems.

Black Smoke Emission

Under AWASI (Area Watch And Sanction Inspection) programme, DOE's mobile squads would go on patrol, stop and test diesel vehicles emitting excessive black smoke.

From the AWASI campaign conducted throughout the country in 1997, a total of 78,130 vehicles were visually inspected, out of

which 6,088 were summoned, 1340 vehicles were issued with prohibition order which were lifted only after repairs and passing a smoke retest by DOE (Figure 4.15). The overall percentage of compliance was 92%, showing an improvement of 8% as compared to 84% for 1996. A total of 138 drivers and vehicle owners were prosecuted for non-compliance.

Lead in Motor Gasoline

In 1977, all 166 samples of leaded petrol randomly collected nationwide from gasoline stations were found to comply with the lead level of 0.15 grams per litre as specified under the Environmental Quality (Control of Lead Concentration in Motor Gasoline) Regulations, 1985.

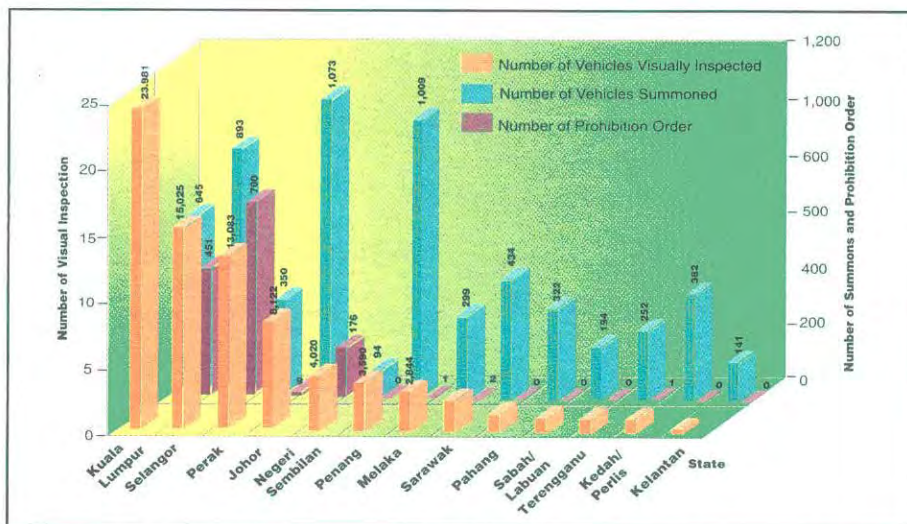


Figure 4.15 Malaysia: Environmental Quality (Control of Emission From Diesel Engine) Regulation 1996. Vehicles Visually Inspected, Summoned and Prohibited under the AWASI Programme according to States, 1997.

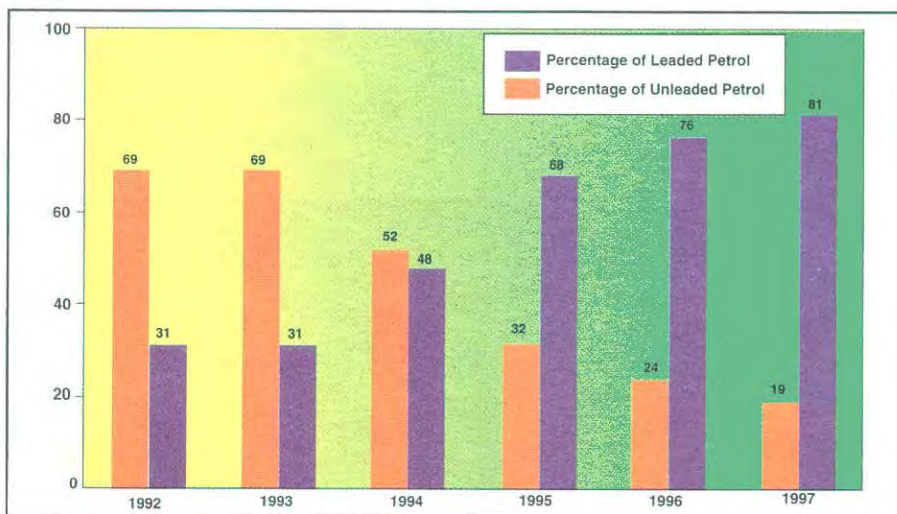


Figure 4.16 Malaysia: Percentage of Sale of Leaded and Unleaded Gasoline, 1982-1997

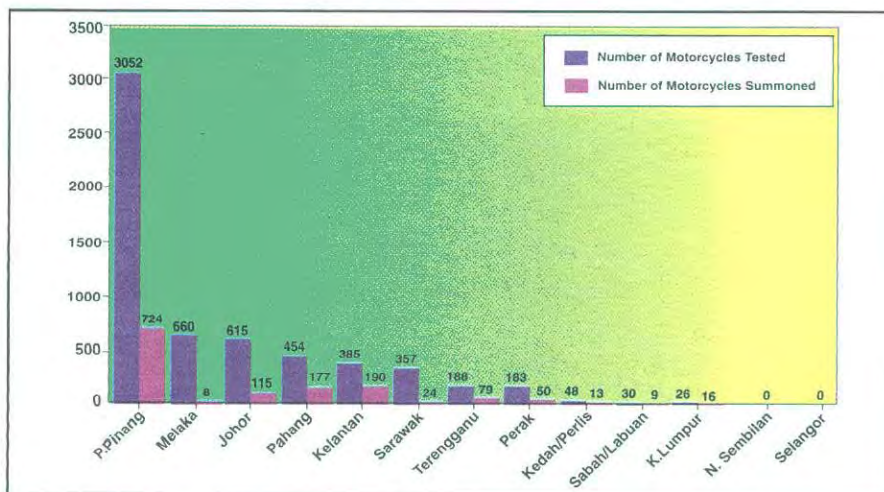


Figure 4.17 Malaysia: Enforcement of Environmental Quality (Motor Vehicle Noise) Regulations, 1987. Number of Motorcycles Tested and Summoned by State, 1997.



The use of unleaded petrol has been aggressively promoted by DOE since 1991. The introduction of new Regulations for petrol engine emissions in 1996 requiring the use of catalytic converter coupled with increasing awareness and acceptance of the public at large to switch to cleaner fuels have resulted in the increase of the nationwide retail sale of unleaded petrol from 76% in 1996 to 81% in 1997 (Figure 4.16).

Motor Vehicle Noise

In 1997, DOE with the cooperation of the Royal Malaysian Police conducted 116 curbside enforcement campaigns throughout the country. Out of 5999 motorcycles tested, 1405 were summoned for violating the permissible noise limits as prescribed under the Environmental Quality (Motor Vehicle Noise) Regulations, 1987 compared to 2149 motorcycles summoned from the 7337 motorcycles tested in 1996 (Figure 4.17).

OIL SPILL RESPONSE

Major Oil Spill Incident

On 15 October 1997, a collision between two tankers M.T Evoikos and M.T Orapin Global in the Straits of Singapore caused a spillage of about 25,000 M.T of heavy fuel oil from M.T. Evoikos into the sea. On 17 October, about 700 metric tonne of the oil entered the Straits of Melaka off Johor and moved northward. The National Oil Spill Contingency Plan was activated to coordinate operation to control the spillage from entering sensitive areas such as fish farms and mangrove swamps. The Marine Department, as On-Scene Commander and the Department of Environment as the Area Coordinator and other relevant agencies were involved monitoring the movement and the clean-up of the spill.



Enforcement of Noise from motorcycles



Oil Spill Incident on 17 October 1997 in Melaka Straits.

Oily Waste Discharges

In 1997, 23 cases of oil pollution in Malaysian waters were reported, out of which 5 cases were prosecuted in court.

Ratification of Oil Pollution Conventions

Malaysia ratified the International Convention for the prevention of pollution from ships (MARPOL 73/78) on 1 May 1997 and the International Convention on Oil Pollution Preparedness, Response and Cooperation (OPRC '90) on 30 October 1997.

The MARPOL deals with the prevention and control of pollution from vessel-based discharges while OPRC'90 prescribes international cooperation for oil spill incidents.

RESPONSE TO PUBLIC COMPLAINTS

The number of pollution complaints received by the Department of Environment rose sharply in 1997 to a total of 4,254 cases, an increase of 34 percent over 1996. The annual trend of complaints since 1987 is illustrated in Figure 4.18.

Analysis of the complaints received showed that the Federal Territory of Kuala Lumpur recorded the highest number of complaints, followed by Pulau Pinang and Perak. The least number of complaints were received from Perlis. Detailed breakdown of complaints received by States is as shown in Figure 4.19. As in the previous years, air pollution complaints (79%) far exceeded other complaints as shown in Figure 4.20.

In 1997, DOE received a total number of 3355 complaints on air pollution which included black smoke emission from diesel vehicles and complaints received during the haze episode from July to September 1997. Complaints on dust and particulate matter continued to feature prominently over the year. The sources of air pollution complaints came largely from sources other than industries (532), and from the public regarding the occurrence of open burning of

waste at construction sites, illegal disposal sites or local authority/municipal disposal sites which amounted to 497 cases and 447 cases respectively. Figure 4.21 gives the breakdown of the types and sources of air pollution complaints.

The highest number of complaints received on water pollution came from non-industrial sources (79 cases), followed by sewerage systems (47 cases) and textile industries (31 cases) as illustrated in Figure 4.22. The non-industrial sources of complaints included land development, logging practices and rubbish disposal.

LEGAL ACTION

Prosecutions

As in the previous year, legal action continued to be taken against those who violated the law. In 1997, 275 cases were prosecuted and a total of RM 2,391,400 in fines were collected. This was an increase of 7% as compared to 1996 and the amount collected increased by 102%. The increase is the direct result of the amendments to the Environmental Quality Act 1974 which came into force on 1 August 1996, whereby the quantum of fine had been increased from RM 10,000.00 to RM100,000.00 for air pollution cases. Another significant reason was due to the deterrent sentences passed by the Courts on environmental polluters. For example, a cement factory was given a near maximum fine of RM 90,000 for flouting Section 25(1) of the Environmental Quality Act, and a contractor was imposed a jail sentence of six months for committing an offence under Section 22(1) of the same Act. Also in the wake of the haze episode, air pollution cases were given priority and expediated by the courts.

Types of offences prosecuted were shown in Figure 4.23 while prosecution cases according to States were shown in Figure 4.24. Figure 4.25 shows the number of offences prosecuted from 1987-1997.



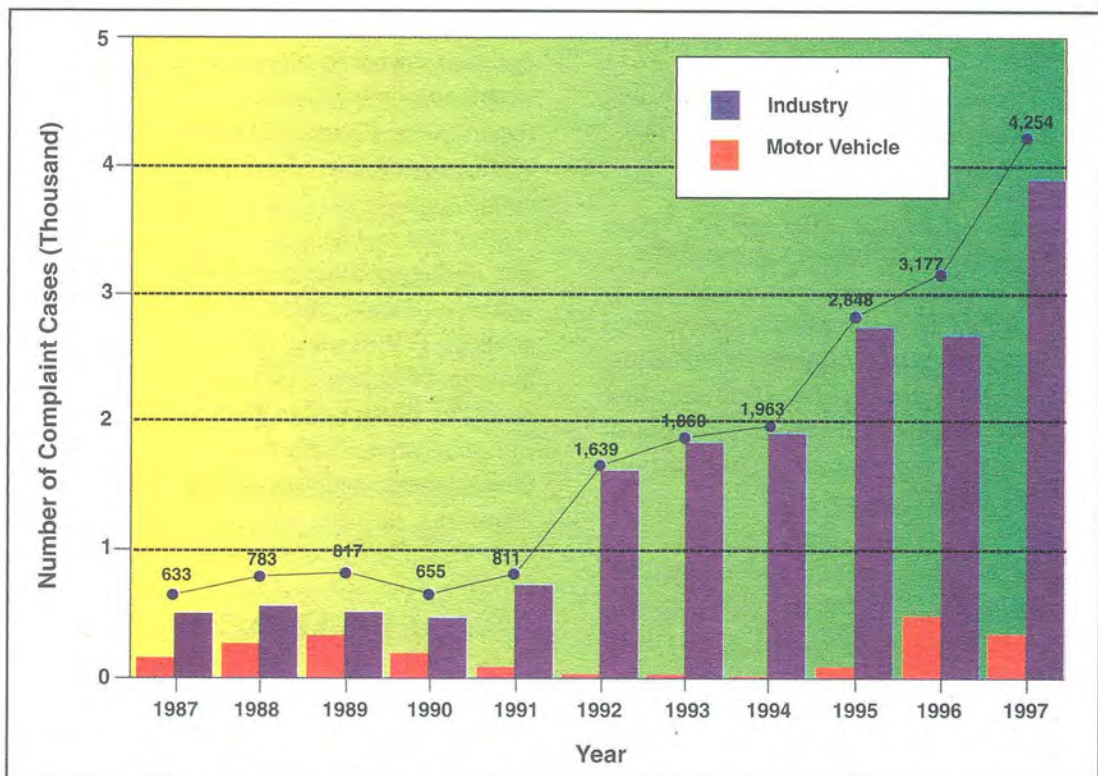


Figure 4.18 Malaysia: Trend in the Number of Complaint Cases, 1982-1997

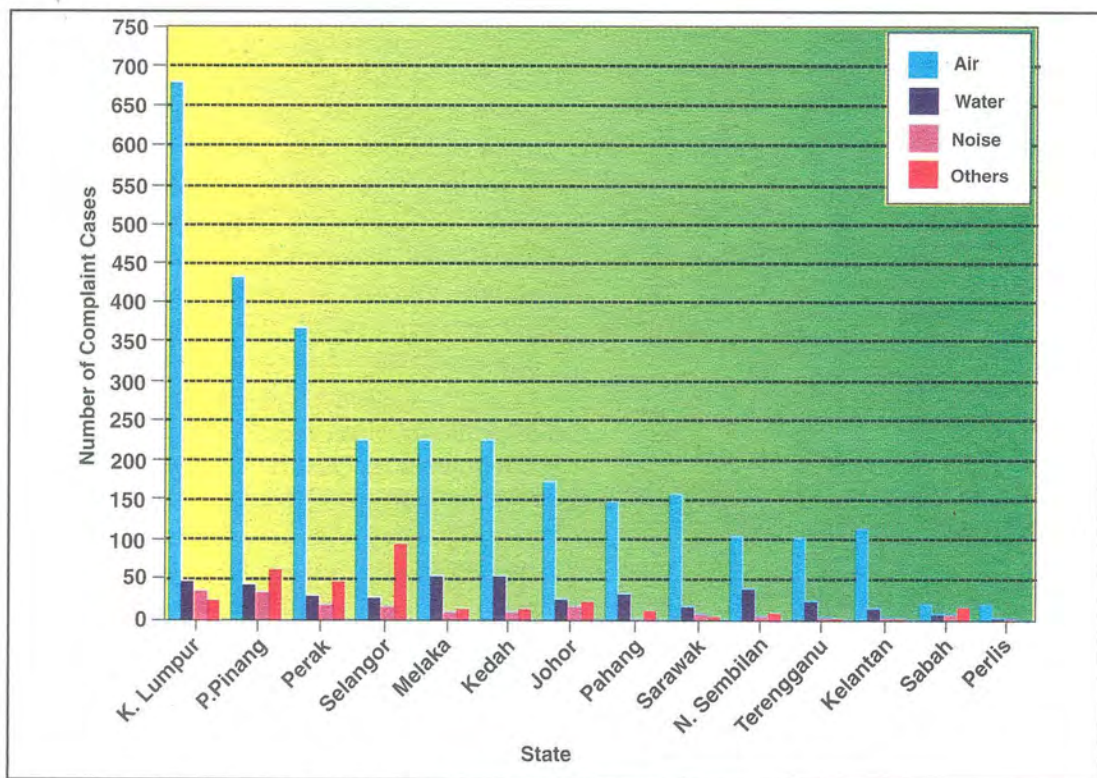


Figure 4.19 Malaysia: Types of Pollution Complaints by State, 1997

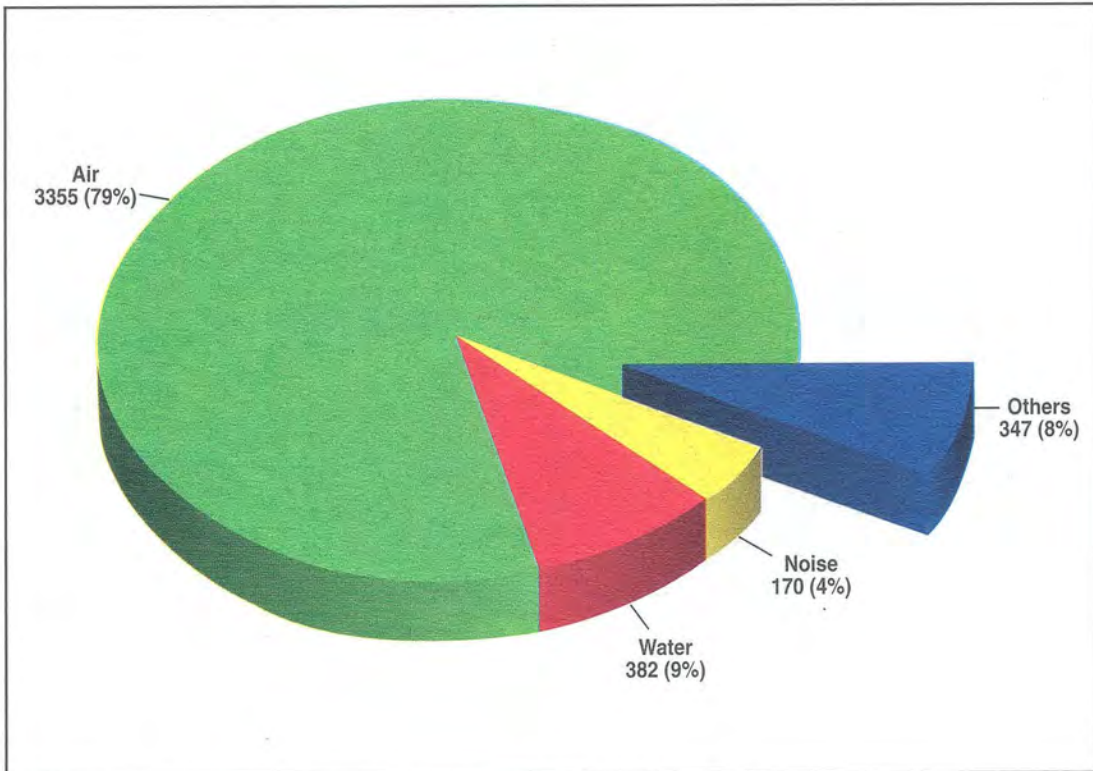


Figure 4.20 Malaysia: Types of Complaint Received, 1997

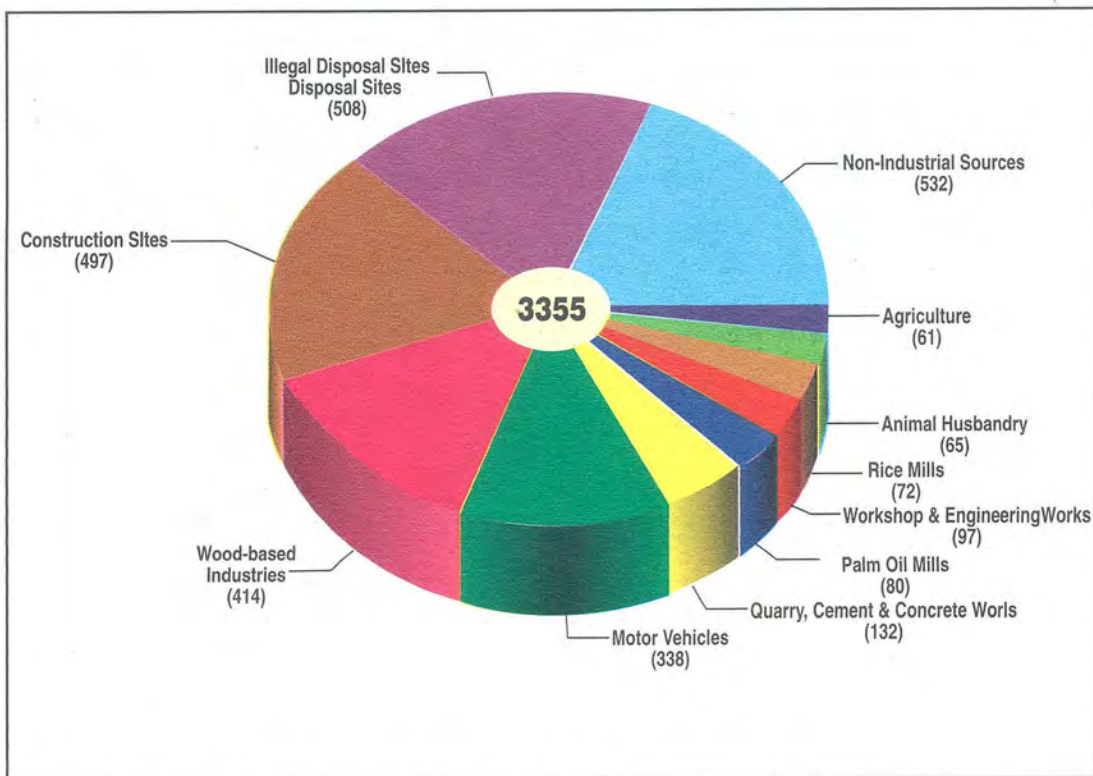


Figure 4.21 Malaysia: Sources of Air Pollution Complaints, 1997