



MALAYSIA

ENVIRONMENTAL

QUALITY REPORT

1998



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

MALAYSIA
ENVIRONMENTAL
QUALITY REPORT
1 9 9 8

*With The Compliments
of the
Director-General
Department of Environment
Malaysia.*

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ENVIRONMENTAL

QUALITY REPORT

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

Department of Environment, Malaysia

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ISSN 0127-6433

Design and printed by
MASKAH SDN. BHD.
No 19, Jalan 24/56 Kawasan J,
Keramat Wangsa,
Ampang Ulu Klang,
54200 Kuala Lumpur



Printed in Recycle Paper

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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
CICM	Chemical Industries Council of Malaysia
COBSEA	Co-ordinating Body on the Seas of East Asia
COD	Chemical Oxygen Demand
COP	Conference of 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' Associations
FRTAM	Federation of the Rubber Trade Associations of Malaysia
GIS	Geographic Information System
HCFC	Hydro Chlorofluorocarbon
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 Environmental 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 as required under Section 3(1) (i) of the Environmental Quality Act, 1974 to present the 1998 Environmental Quality Report. Besides fulfilling the mandatory requirement, it also provides an avenue to highlight the year's achievements, the successes as well as the shortcomings with the view to improvement, enhancement and maintenance of sound environmental conditions in our pursuit of national development.

Unlike the previous year, the Malaysian sky was relatively haze-free for almost the entire year. The lessons we learnt from the experience in 1997 have been invaluable and we are better prepared and equipped for such eventualities. At the ASEAN regional level, the Haze Technical Task Force and the Sub-Regional Fire-Fighting Arrangements for Sumatra and Borneo have been meeting regularly to design and implement both the preventive as well as the controlling measures, such as the haze early warning system, educational awareness campaigns as well as upgrading fire-fighting capabilities. At the national level, the Environmental Quality Act 1974 was amended to prohibit open burning specifically and to provide for increased penalties to deter such activities.

In the coming years the department is expected to face new challenges. New strategies and innovative steps will have to be formulated and be more target-oriented. Nevertheless a clean and safe environment cannot be achieved just by policies or programmes alone, it needs action and the commitment of each and every stakeholder

DOE will continue to inculcate interagency cooperation and coordination in all our environmental efforts. Capacity building and institutional strengthening will continue to be emphasized in tandem with the progress of the DOE Skills Development and Training Institute that has cleared the drawing board and is now under construction.

As development and industrialization efforts were fine-tuned and implemented in 1998, albeit at a lower phase due to the economic slowdown, environmental protection and conservation measures were not slackened. On the contrary, efforts were stepped up to consolidate and strengthen the existing institutional and regulatory framework, in preparing for the impending economic revival.

I am optimistic that all these efforts will bear fruits. Therefore I urge all Malaysians to think likewise and be more proactive in working together to keep our environment safe and clean for everyone, now and the future.

"ALAM SEKITAR BERKUALITI KE ALAF BARU"

A QUALITY ENVIRONMENT FOR THE NEW MILLENNIUM

With Best Wishes



HAJAH ROSNANI IBARAHIM
DIRECTOR-GENERAL OF ENVIRONMENTAL QUALITY
MALAYSIA

30 SEPTEMBER 1999

EXECUTIVE SUMMARY

1998 was a satisfying year for environmental management in Malaysia. On average the air quality in the country was good throughout the year except for a brief spell of hazy condition in and around the vicinity of Miri, Sarawak, when the API touched the hazardous level for a duration of about 3 weeks in the month of March. Local forest and peat fires were the cause of the problem.

From 8 April 1998, a surveillance programme codenamed 'Ops Bakar' was launched to prevent open burning activities. Altogether 39 patrol teams were formed to conduct surveillance throughout the country assisted by the Police Air Wing especially for locations not accessible by road. Up till 31 December 1998, a total of 495 cases of open burning were detected and investigated and follow-up action was taken including imposition of fines and prosecution.

As a further precautionary measure to prevent the recurrence of the 1997 widespread haze, the Environmental Quality Act 1974 was amended to prohibit open burning except for such activities as may be prescribed by the Minister published in the gazette. The penalty for contravening was substantially increased to five hundred thousand ringgit or imprisonment not exceeding 5 years or both.

On the other hand in terms of water quality, 33 rivers were found to be clean, 71 slightly polluted and 16 polluted. As in the previous years, the major sources of river pollution continued to be from livestock farming activities and domestic sewage discharges, earthworks and land-clearing activities and slightly less from the discharges of agro-based and manufacturing industries.

The coastal waters in all States remained contaminated with oil and grease, total suspended solids and *Escherichia coli*.

The groundwater monitoring programme that was initiated in 1997 and further intensified in 1998 detected contamination in areas where solid wastes and household garbage were dumped.

Enforcement activities to prevent and control pollution throughout the country were stepped up in 1998. Particular emphasis was given to solving pollution problem still prevalent among the agro-based industries such as the emission of black smoke and discharges of effluent exceeding the prescribed standards.

In 1998, the overall compliance for crude palm oil (CPO) mills and raw natural rubber (RNR) factories were 81% and 90.1% respectively. A total of 3889 manufacturing premises were inspected in 1998. Overall, the percentage of compliance with respect to the Environmental Quality (Clean Air) Regulations 1978 by manufacturing industries was found to be 78%. For the Environmental Quality (Sewage and Industrial Effluents) Regulations 1979, 86% of manufacturing industries were found to have complied with the regulations.

A total of 70 contravention licences were issued under Section 25(1) of the EQA 1974 in 1998. DOE continued to receive applications for contravention licences from IWK, of which 83% were for renewal of existing licences, 17% were new applications. Only 2 applications were approved for contravention under Section 22(1) of EQA 1974.

The most notable pollution abatement achievement in 1998 was the completion of the country's integrated scheduled waste treatment and disposal facility. The facility was officially declared opened on 7 November 1998 by the Rt. Honourable Prime Minister of Malaysia. The facility is expected to handle most of the scheduled wastes

generated in the country in an environmentally sound manner. For 1998 almost 400,000 MT of scheduled wastes were generated which required some form of treatment before final disposal.

Motor vehicles remained the major source of air pollution in the country. From 8.9 million motor vehicles registered in 1998, approximately 2 million tonnes of carbon monoxide, 237,000 tonnes of oxides of nitrogen, 111,000 tonnes of hydrocarbons, 38,000 tonnes of sulphur dioxide and 17,000 tonnes of particulate matters were emitted into the atmosphere. Under the enforcement programme for black smoke emission from diesel vehicles, codenamed AWASI, conducted throughout the country, a total of 28,019 vehicles were visually inspected, 1416 were summoned and 830 were issued with prohibition orders. In 1998, all 45 samples of leaded petrol randomly collected from service stations nationwide were found to comply with the lead concentration of 0.15 grams per litre as stipulated under the Environmental Quality (Control of Lead Concentration in Motor Gasoline) Regulations 1985. In 1998, 6550 motorcycles were tested and 1134 were summoned for violating the permissible noise limit as prescribed under the Environmental Quality (Motor Vehicle Noise) Regulations 1987.

In 1998, a total of 253 premises and companies were prosecuted in court and RM2,570,700.00 in fines were collected. Of the total number of cases prosecuted, 44 were open burning cases. In the same year, 1628 compounds were issued to premises and companies for various offences contravening the Environmental Quality (Clean Air) Regulations 1978 and Environmental Quality (Scheduled Wastes) Regulations 1989.

In 1998 there was a 43% drop in the number of EIA reports received for review compared to 1997. A total of 216 preliminary and 12 detailed EIA reports were received. Enforcement visits to EIA approved projects

were intensified to ensure compliance of EIA conditions.

The promotion of environmental awareness through various environmental campaigns, environmental camps, public seminars and information dissemination was a continuous year long effort. The notable activities were the Malaysia Environment Week Celebrations on 21 - 27 October 1998, Enviro-Camps, Wira Alam Project, Inter-iversity Environmental Debate, Environmental Poetry Writing and Recital Competition, Environmental Exhibitions, and Environmental Awareness Quizzes. In addition, various types of environmental materials were published and printed for distribution all over the country to further promote and enhance environmental consciousness among different target groups of society.

The Department continued to be actively involved in environmental programmes and activities at the regional and international level. In February 1998, Malaysia hosted the the Fourth Meeting of the Conference of Parties (COP4) to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal in Kuching, Sarawak. Other important activities included participation at various international environmental forum such as the Oil Spill Preparedness and Response (OSPAR) Management Committee Meeting, the Intergovernmental Negotiating Committee on Persistent Organic Pollutants (POPs), Meetings under the Montreal Protocol programme for reduction of Ozone Depleting Substances and the Prior Informed Consent (PIC) Procedure for Certain Chemicals and Pesticides in International Trade.

Bilateral environmental cooperation was intensified, in particular the Malaysia-Singapore Joint Committee on Environment (MSJCE), the Malaysia-Thailand Programme on Environmental Awareness and Education, Malaysia-Japan discussions

on various environmental aspects particularly on environmental laws and regulations, MalaysiaAustralia on coastal zone and resource management, Malaysia-USA cooperation on environmental auditing and the Malaysia-DANCED capacity building project.

At the regional level, the focus was on the ASEAN Environment Ministerial Meetings on Haze (AMMH), ASOEN Haze Technical Task Force Meetings, Sub-Regional FireFighting Arrangements (SRFAs),

Coordinating Body on South-East Asian Seas (COBSEA), the ASEAN Ministerial Meetings on Environment and the ASEAN Senior Officials Meeting on the Environment (ASOEN).

As we stand at the threshold of a new millennium, we can expect environmental management to be more challenging, if not more complex. DOE will remain committed and will reorientate itself to fulfilling the aspirations of Malaysians for a clean and safe environment.

Chapter 1

MALAYSIA ENVIRONMENTAL QUALITY REPORT 1998



STATE OF THE ENVIRONMENT

Introduction

One primary function of this Department of Environment is to continuously monitor the state of the environment and detect any change in environmental quality which may cause harm to human health and the environment. It also serves to support overall environmental management and planning activities in Malaysia. The scope of the monitoring programmes carried out by the Department included air, river, ground water, marine water quality and noise pollution.

AIR QUALITY

In 1998, 9 new Continuous Air Quality Monitoring (CAQM) stations were added addition to the existing 29 stations. These 38 CAQM stations are located strategically throughout the country as shown in Map 1.0. The stations serve to continuously monitor the presence of air pollutants emitted from sources such as motor vehicles, industries, open burning etc.

The air quality status for Malaysia is described in terms of the Air Pollutant Index (API). On the average, the overall air quality in Malaysia was good throughout the year (Figures 1.1 and 1.2) except in the vicinity of Miri, Sarawak (Figure 1.3) which deteriorated during the first quarter of 1998. The March API for Miri reached the hazardous level, mainly due the to high



Map 1.0 Malaysia: Location of Automated and Manual Air Quality Monitoring Stations, 1998

MIRI TOWN



Miri Town, with and without haze.

concentration of particulate matters (PM10) from the forest and peat fires around Miri and aggravated by the dry weather conditions. In addition, the API for Kota Kinabalu reached unhealthy levels during this period due to the same factor.

The concentrations of PM10 in Miri and Kota Kinabalu were high and exceeded the Recommended Malaysian Air Quality Guidelines during the first quarter of the year, whilst the concentrations of PM10 in other parts of the country in Malaysia were below the recommended standard (Figure 1.4).

Apart from PM10, the Department also monitored the concentrations of other major pollutants namely the sulphur dioxide (SO₂), nitrogen dioxide (NO₂), carbon monoxide (CO) and ozone (O₃). The concentrations of

these pollutants were found to be below the Recommended Malaysian Air Quality Guidelines (Figure 1.4 to Figure 1.8).

Airborne lead, largely contributed by motor vehicles, were also monitored throughout the country. The average ambient concentrations of lead monitored at all stations (Figure 1.9) were below the Recommended Malaysian Air Quality Guideline for lead (1.5 ug/m³). Though 33% of motor vehicles in Malaysia are in the Klang Valley, the average ambient lead concentrations in the area were below the Recommended Malaysian Air Quality Guidelines (Figure 1.10). This low average ambient concentration of lead in Malaysia was undeniably the outcome of the promotion of use of unleaded petrol by the government and oil industry since 1991.

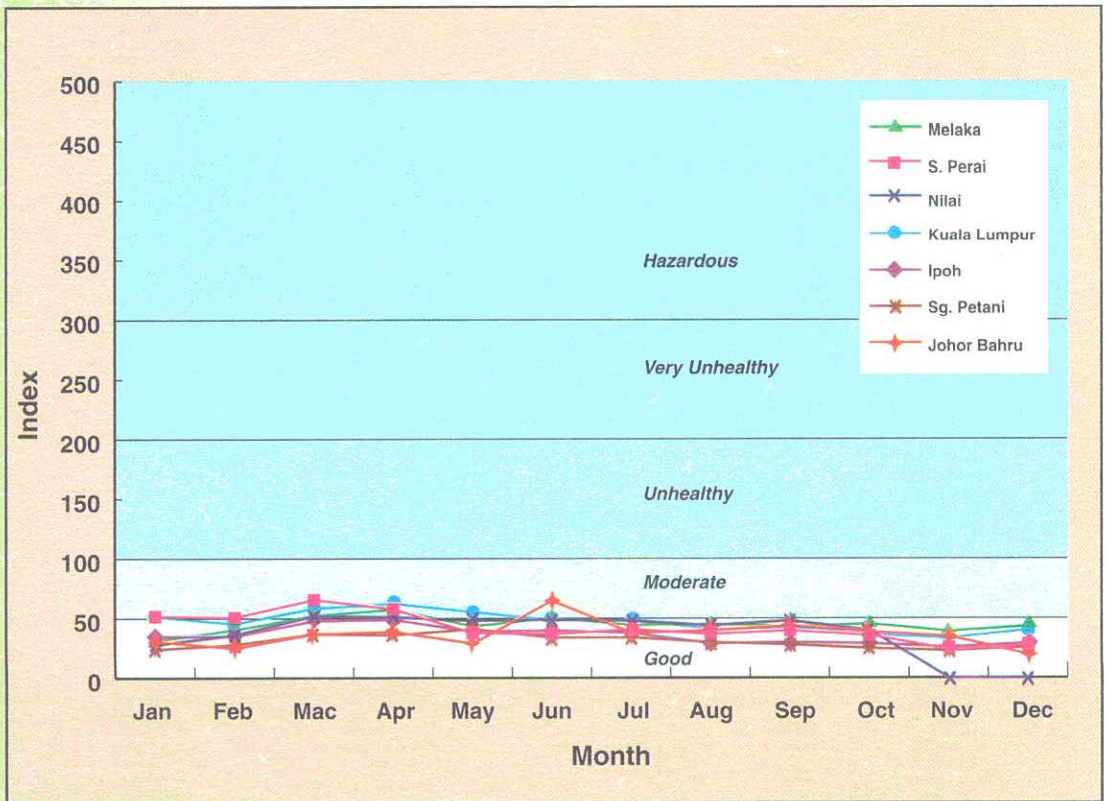


Figure 1.1 West Coast of Peninsular Malaysia: Air Pollutant Index (API), 1998

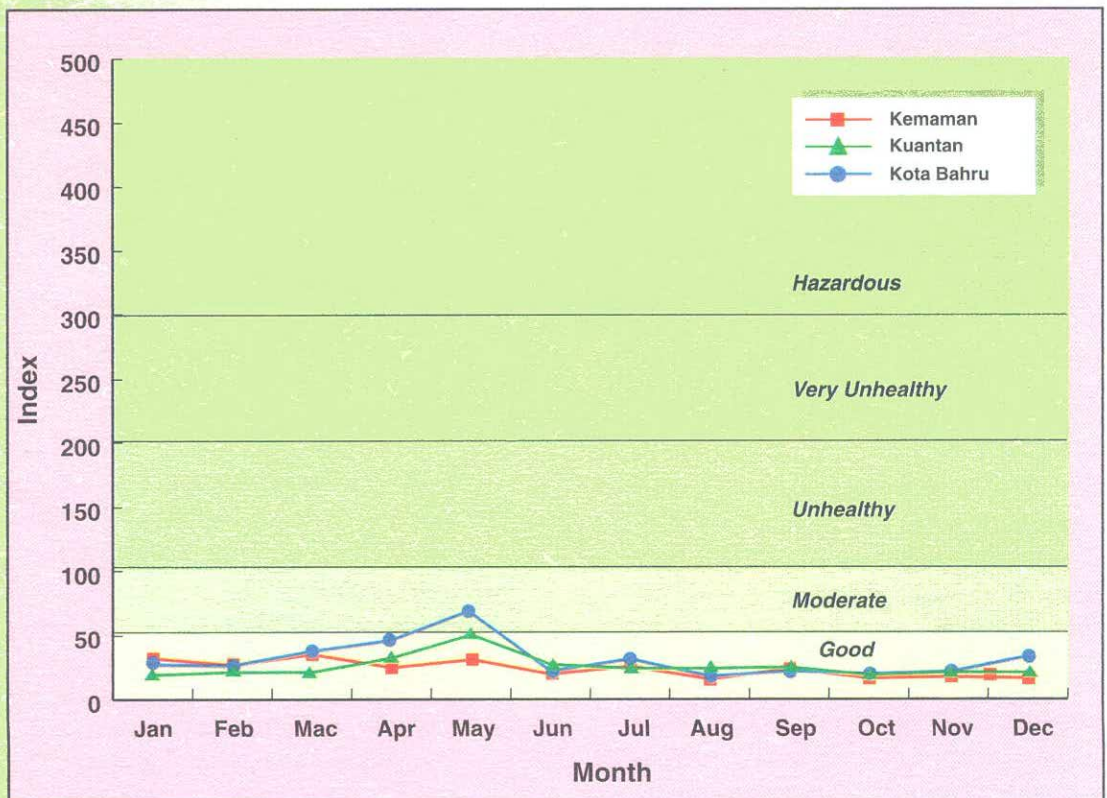


Figure 1.2 East Coast of Peninsular Malaysia: Air Pollutant Index (API), 1998

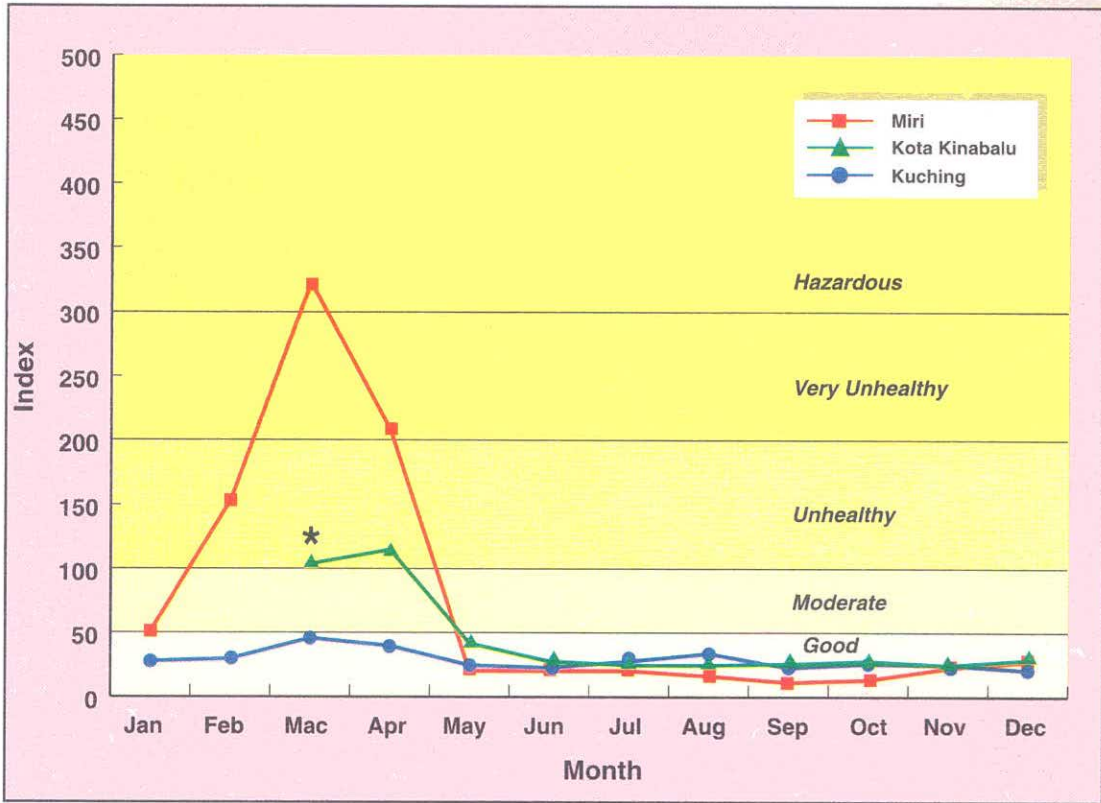


Figure 1.3 East Malaysia: Air Pollutant Index (API), 1998

Note: * Start Monitoring

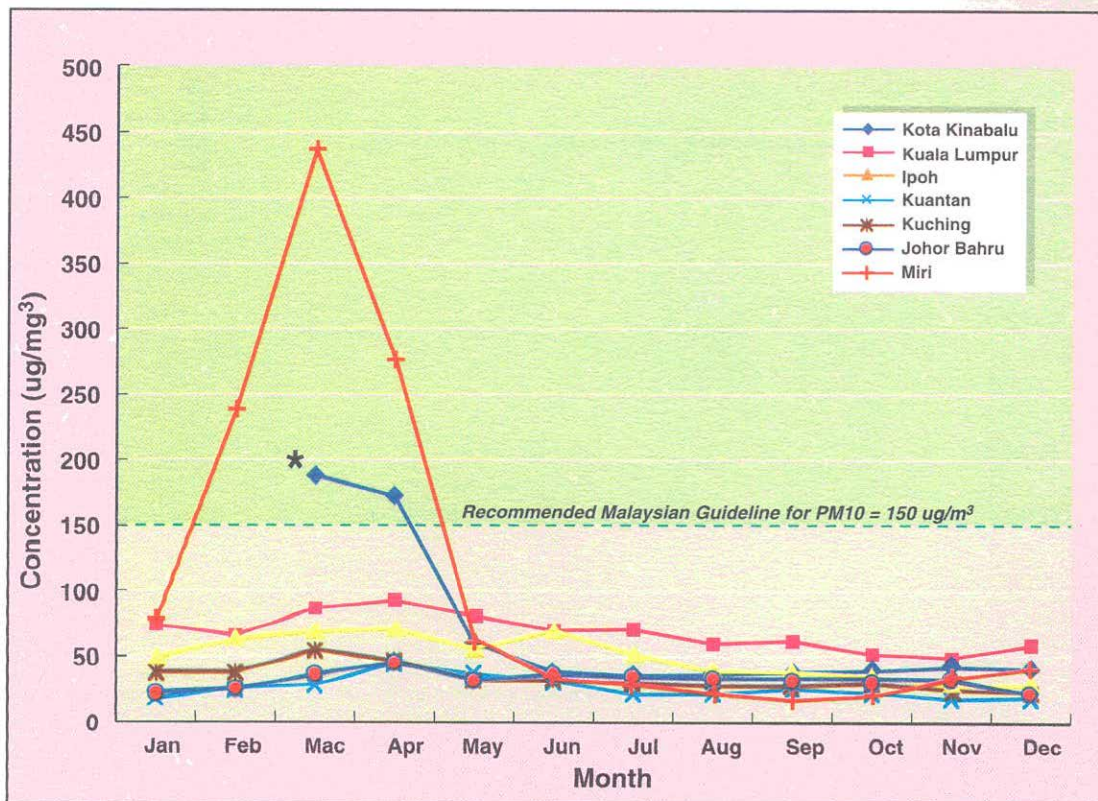


Figure 1.4 Malaysia: Concentration of Particulate Matter (PM10), 1998

Note: * Start Monitoring

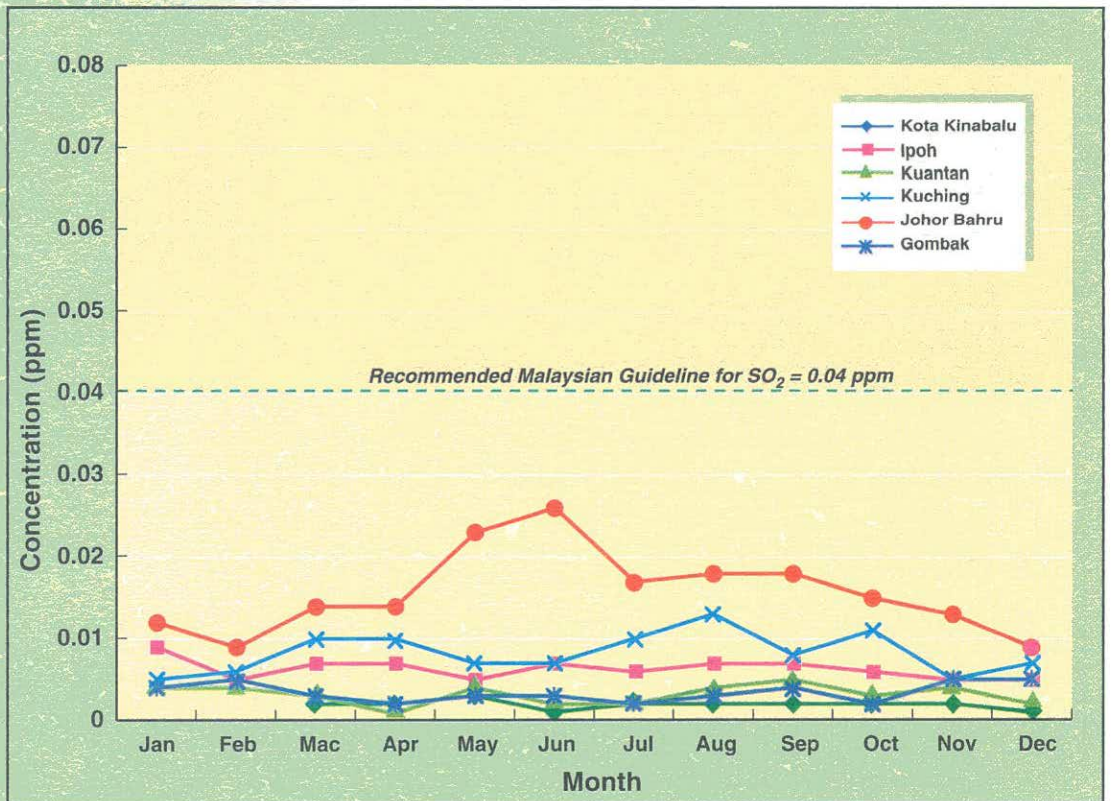


Figure 1.5 Malaysia: Concentration of Sulphur Dioxide (SO₂), 1998

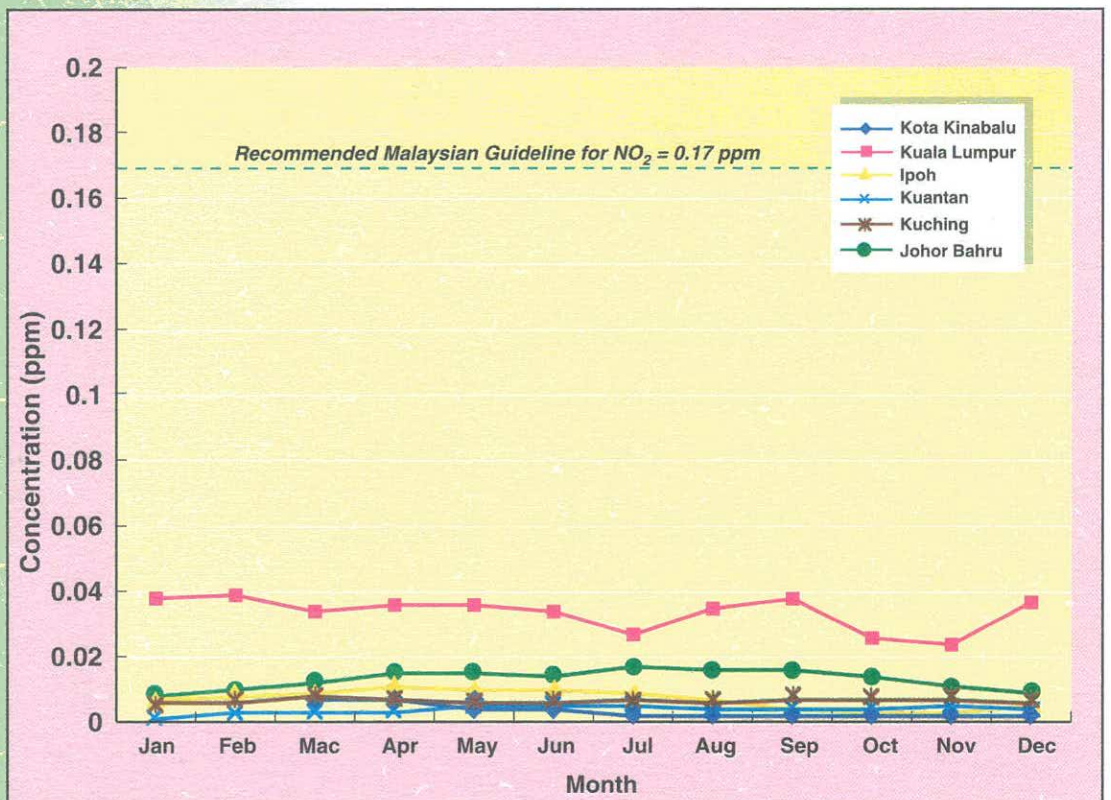


Figure 1.6 Malaysia: Concentration of Nitrogen Dioxide (NO₂), 1998

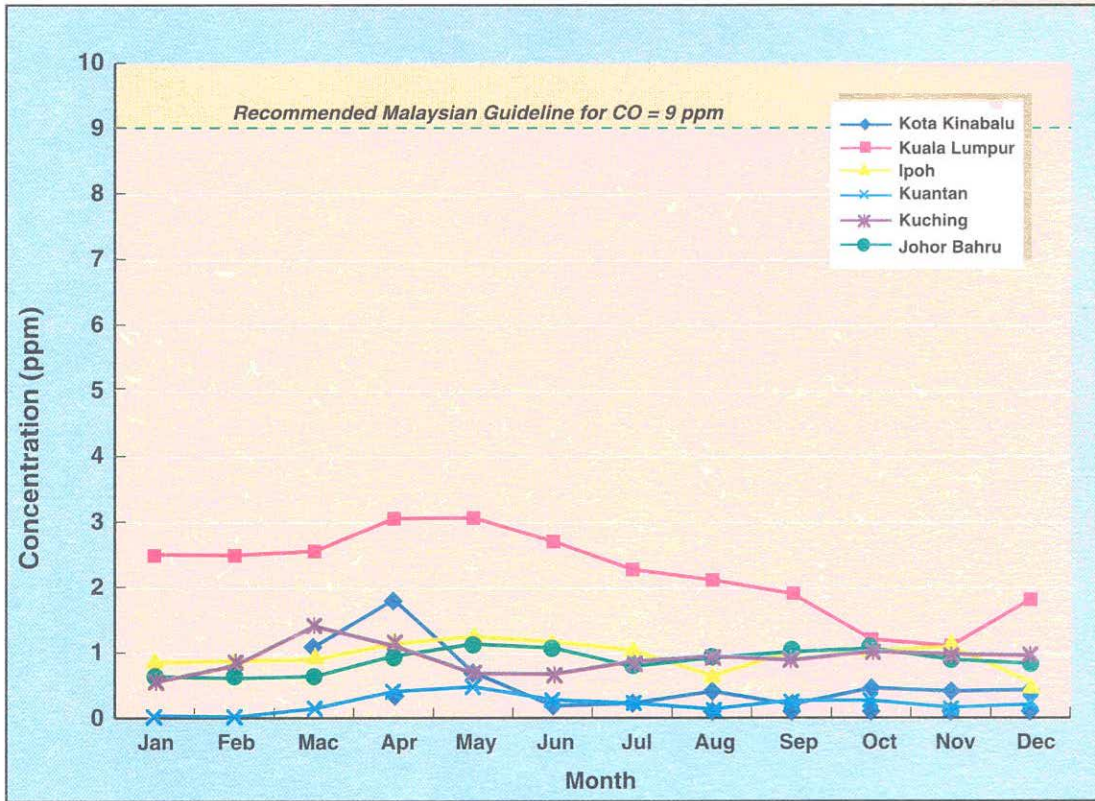


Figure 1.7 Malaysia: Concentration of Carbon Monoxide (CO), 1998

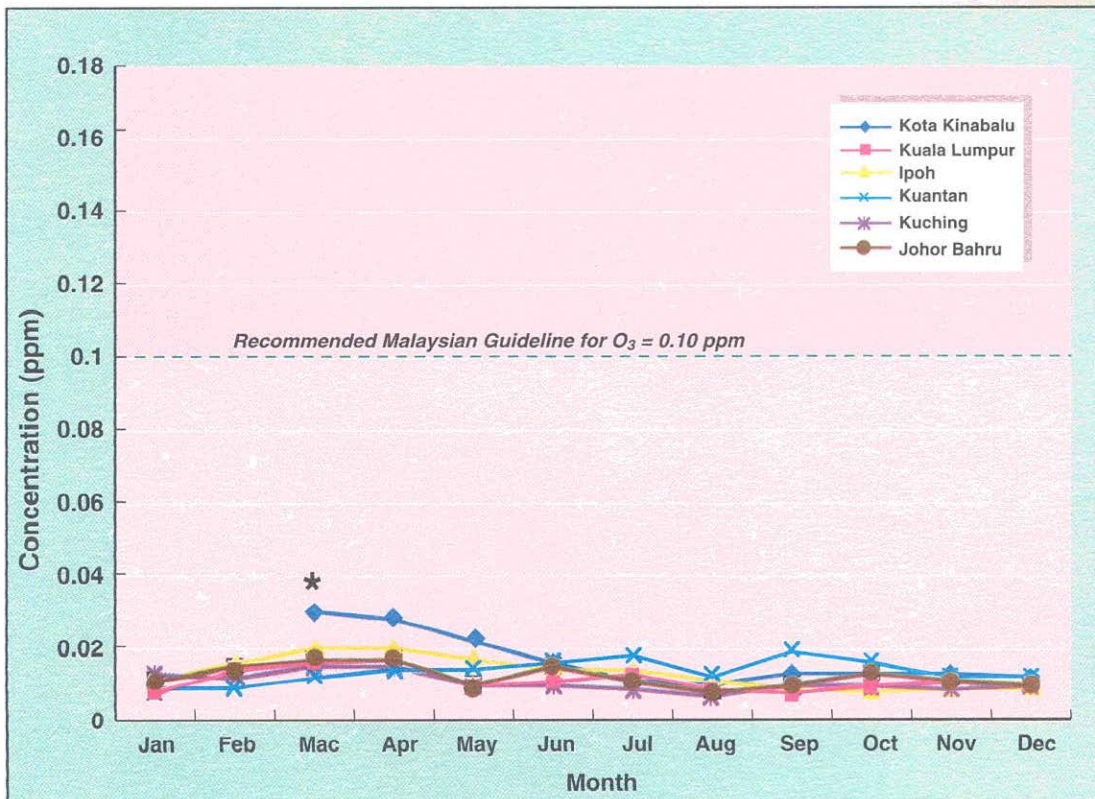


Figure 1.8 Malaysia: Concentration of Ozone (O₃), 1998

Note: * Start Monitoring

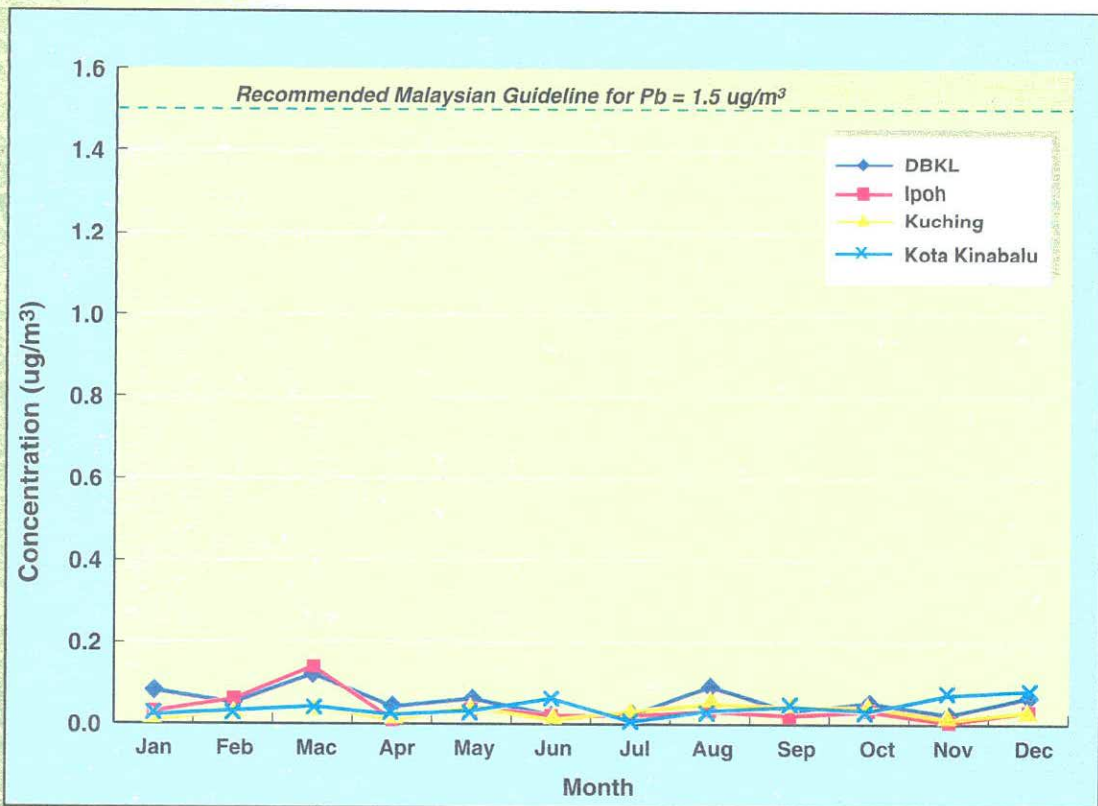


Figure 1.9 Malaysia: Ambient Lead Concentration, 1998

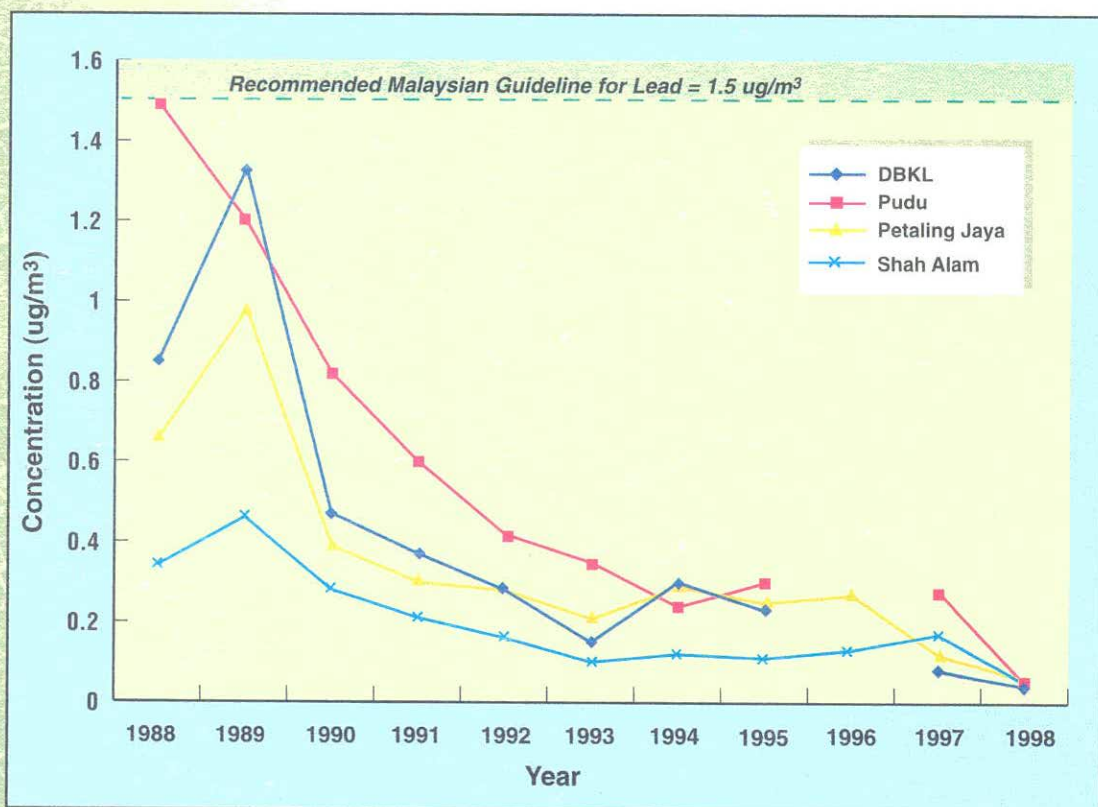


Figure 1.10 Klang Valley: Ambient Lead Concentration, 1998

WATER QUALITY

In 1998, a total of 900 stations located within 120 river basins were monitored. In terms of water quality of the 900 monitoring stations, 228 stations (25%) were found to be clean, 582 stations (65%) slightly polluted and 90 stations (10%) polluted (Table 1.0 (a), (b) and (c)). Generally, the stations located on the upstream stretches were clean, middle stretches slightly polluted and downstream polluted. In terms of river basin overall water quality, 33 rivers (28%) were clean compared to 24 in 1997, 71 (59%) slightly polluted and 16 (13%) polluted compared to 25 in 1997. The polluted rivers were Miri/Lutong, Balok, Merbok, Air Baloi, Buloh, Danga, Landas, Jimah, Jejawi, Kelang, Juru, Segget, Tukang Batu, Sepang, Kempas and Pinang.

Figure 1.11, illustrated the status of river water quality in relation to major pollution sources; 43% of rivers were polluted by ammoniacal nitrogen (NH₃-N) from

livestock farming and domestic sewage; 34% by suspended solids (SS) due to earthworks and land-clearing activities and 21% by biochemical oxygen demand (BOD) due to discharges from agro-based and manufacturing industries. The corresponding figures in 1997 were 80% NH₃-N, 31% SS and 69% BOD. The improvement in NH₃-N and BOD is substantiated by the fact that the number of polluted rivers had reduced from 25 in 1997 to 16 in 1998.

Out of the 900 monitoring stations, 345 stations were selected for comparative monitoring of the impact of effluent discharges from palm oil mills directly into watercourses (upstream and downstream). Of the stations downstream of the discharge, 116 stations (77%) showed no deterioration while 34 stations (23%) deteriorated in water quality in terms of BOD.



Sungai Air Melintas, Pulau Pinang.

Sungai Sayong, Johor.

Table 1.0a Malaysia: Status of Water Quality within the Clean River Basins, 1998

NO.	RIVER BASINS	STATE	TOTAL NUMBER OF STATIONS	NO. OF CLEAN STATIONS	NO. OF SLIGHTLY POLLUTED STATIONS	NO. OF POLLUTED STATIONS	OVERALL WQI
1	MELAKA	P. Langkawi	3	2	1	0	88
2	SEGAMA	Sabah	1	1	0	0	87
3	BESUT	Terengganu	4	4	0	0	87
4	DAMIT/TUARAN	Sabah	6	6	0	0	87
5	MERSING	Johor	1	1	0	0	87
6	KELANTAN	Kelantan	38	33	1	0	87
7	SUGUT	Sabah	6	5	1	0	86
8	PAPAR	Sabah	2	2	0	0	86
9	KADAMAIAN	Sabah	3	2	1	0	85
10	PADAS	Sabah	7	5	2	0	85
11	GOLOK	Kelantan	4	3	1	0	85
12	BRANTIAN	Sabah	1	1	0	0	85
13	SILABUKAN	Sabah	2	2	0	0	85
14	SELANGOR	Selangor	6	4	2	0	85
15	UMAS-UMAS	Sabah	1	1	0	0	84
16	DUNGUN	Terengganu	4	2	2	0	84
17	SETIU	Terengganu	3	2	1	0	84
18	TEMERLOH	Perak	2	1	1	0	84
19	TERENGGANU	Terengganu	9	7	2	0	83
20	LEPAR	Pahang	8	6	1	1	83
21	LABOK	Sabah	8	6	2	0	83
22	SIMILAJAU	Sarawak	1	1	0	0	83
23	MEMBAKUT	Sabah	1	1	0	0	83
24	BERTAM	Pahang	10	6	4	0	82
25	PAHANG	Pahang	53	30	23	0	82
26	JEMALUANG	Johor	2	2	0	0	82
27	TRUSAN	Sarawak	1	1	0	0	82
28	TAWAU	Sabah	5	4	1	0	82
29	ROMPIN	Pahang	18	10	8	0	81
30	MUDA	Kedah	9	6	2	1	81
31	LAWAS	Sarawak	2	1	1	0	81
32	MENGALONG	Sabah	3	2	1	0	81
33	KINABATANGAN	Sabah	4	2	2	0	81

Note :

WQI – Water Quality Index

c clean (81 – 100)

sp slightly polluted (60 – 80)

p polluted (0 – 59)

Table 1.0b Malaysia: Status of Water Quality within the Slightly Polluted River Basins, 1998

NO.	RIVER BASINS	STATE	TOTAL NUMBER OF STATIONS	NO. OF CLEAN STATIONS	NO. OF SLIGHTLY POLLUTED STATIONS	NO. OF POLLUTED STATIONS	OVERALL WQI
1	LIMBANG	Sarawak	5	2	3	0	80
2	KAYA	Sabah	1	0	1	0	80
3	KALUMPANG	Sabah	5	1	4	0	80
4	KEDAH	Kedah	6	4	2	0	80
5	TINGKAYU	Sabah	1	0	1	0	79
6	BRUAS	Perak	4	3	0	1	79
7	SEDILI BESAR	Johor	13	6	6	1	79
8	KURAU	Perak	5	3	2	0	79
9	TATAU	Sarawak	1	0	1	0	78
10	KERTIH	Terengganu	1	0	1	0	78
11	ANAK ENDAU	Johor	2	1	1	0	78
12	PAKA	Terengganu	10	4	6	0	78
13	BATANG SUAI	Sarawak	1	0	1	0	77
14	BATANG KEMENA	Sarawak	3	1	2	0	77
15	KUANTAN	Pahang	11	5	4	2	77
16	LUPAR	Sarawak	7	4	3	0	77
17	TENGI	Selangor	2	1	1	0	77
18	PERLIS	Perlis	10	4	6	0	76
19	BATANG KAYAN	Sarawak	4	1	3	0	76
20	JOHOR	Johor	44	22	16	6	76
21	BEBAR	Pahang	8	3	4	1	76
22	KEMAMAN	Terengganu	10	3	5	2	76
23	BERA	Pahang	5	1	4	0	76
24	BENGGOKA	Sabah	1	0	1	0	75
25	BERNAM	Selangor	10	7	0	3	75
26	BATANG KERIAN	Sarawak	3	1	2	0	75
27	PERAK	Perak	53	25	18	10	75
28	PUTATAN/MOYOG	Sabah	11	5	4	2	75
29	MENTIGA	Pahang	2	0	2	0	75
30	BENUT	Johor	7	3	3	1	74
31	BALINGIAN	Sarawak	2	0	2	0	74
32	B.PAHAT	Johor	23	8	10	5	74
33	PONTIAN	Pahang	3	0	3	0	74
34	TEBRAU	Johor	5	3	0	2	74
35	SARAWAK	Sarawak	15	4	10	1	74
36	MELAKA	Melaka	11	3	6	2	73
37	BINGKONGAN	Sabah	3	1	1	1	73
38	BATANG RAJANG	Sarawak	18	2	16	0	73
39	KALABAKAN	Sabah	2	0	2	0	73
40	MUAR	Johor	43	11	26	6	73
41	BTG. SADONG	Sarawak	6	1	5	0	73
42	BTG. SAMARAHAN	Sarawak	2	1	1	0	73
43	KEMASIN	Kelantan	1	0	1	0	72
44	ENDAU	Johor	29	8	17	4	72
45	SEPETANG	Perak	10	2	6	2	72
46	PALOI	Johor	2	0	2	0	71
47	KERIAN	Perak	10	2	6	2	71
48	SARIBAS	Sarawak	2	1	0	1	71

Table 1.0b Malaysia: Status of Water Quality within the Slightly Polluted River Basins, 1998 (continued)

NO.	RIVER BASINS	STATE	TOTAL NUMBER OF STATIONS	NO. OF CLEAN STATIONS	NO. OF SLIGHTLY POLLUTED STATIONS	NO. OF POLLUTED STATIONS	OVERALL WQI
49	MARANG	Terengganu	5	1	3	1	70
50	SIBUTI	Sarawak	6	0	5	1	70
51	SEMERAK	Kelantan	2	0	2	0	70
52	BARAM	Sarawak	4	0	4	0	70
53	BATANG MUKAH	Sarawak	4	0	4	0	70
54	OYA	Sarawak	3	0	3	0	69
55	KESANG	Melaka	8	2	4	2	69
56	LINGGI	N.Sembilan	15	1	9	5	69
57	PONTIAN KECHIL	Johor	2	1	0	1	68
58	CHUKAI	Terengganu	5	0	5	0	68
59	SKUDAI	Johor	8	1	5	2	67
60	IBAI	Terengganu	3	0	3	0	67
61	SEDILI KECHIL	Johor	5	1	3	1	66
62	LANGAT	Selangor	24	7	7	10	66
63	PONTIAN BESAR	Johor	5	1	3	1	66
64	SERTING	Pahang	7	0	6	1	65
65	BATANG NIAH	Sarawak	5	0	3	2	63
66	CHERATING	Pahang	1	0	1	0	63
67	PERAI	P. Pinang	22	3	9	10	63
68	DUYONG	Melaka	3	0	2	1	62
69	RAJA HITAM	Perak	4	0	2	2	61
70	WANGI/DERALIK	Perak	6	0	2	4	60
71	RAMBAH	Johor	2	0	1	1	60

Table 1.0c Malaysia: Status of Water Stations within the Polluted River Basins, 1998

NO.	RIVER BASINS	STATE	TOTAL NUMBER OF STATIONS	NO. OF CLEAN STATIONS	NO. OF SLIGHTLY POLLUTED STATIONS	NO. OF POLLUTED STATIONS	OVERALL WQI
1	MIRI/LUTONG	Sarawak	4	0	0	4	58
2	BALOK	Pahang	5	0	2	3	57
3	MERBOK	Kedah	10	0	4	6	57
4	AIR BALOI	Johor	3	0	0	3	53
5	BULOH	Selangor	5	0	1	4	53
6	DANGA	Johor	2	0	1	1	53
7	LANDAS	Terengganu	2	0	1	1	52
8	JIMAH	N. Sembilan	1	0	0	1	52
9	JEJAWI	P. Pinang	5	1	0	4	51
10	KELANG	Selangor	23	0	3	20	49
11	JURU	P. Pinang	8	0	1	7	46
12	SEGGET	Johor	5	0	0	5	45
13	TUKANG BATU	Johor	5	0	1	4	44
14	SEPANG	Selangor	3	0	0	3	40
15	KEMPAS	Johor	2	0	0	2	40
16	PINANG	P. Pinang	7	0	0	7	39

Note :

WQI – Water Quality Index c – clean (81–100) sp – slightly polluted (60–80) p – polluted (0–59)

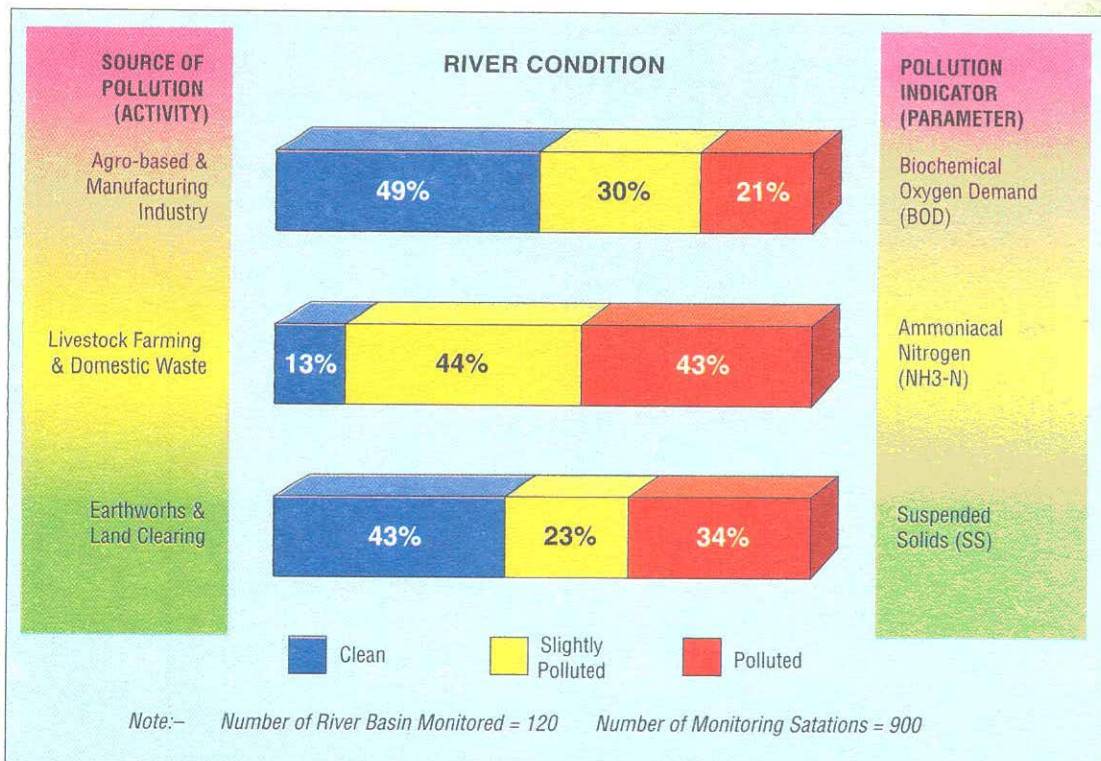


Figure 1.11 Malaysia: Status of River Water Quality Based on Activity, 1998

MARINE WATER QUALITY

In 1998, a total of 836 samples were collected from 231 marine monitoring stations, compared to 794 samples from 226 monitoring stations in 1997. As in previous years, the main contaminants of coastal waters in all States were oil and grease (OG), total suspended solids (TSS) and *Escherichia coli* (*E. coli*) (Figure 1.12).

Of the 836 samples analyzed, 94.5 % of samples exceeded the Proposed Marine Interim Standards for oil and grease, 73.7 % for total suspended solids and 29.7 % for *E. coli*. The marine water quality in 1998 had slightly deteriorated compared to the previous year before (Table 1.1).

Copper levels exceeding the Proposed Marine Interim Standards of 0.1 mg/l were recorded in Sarawak, Pulau Langkawi, Terengganu, Kedah/Perlis and Pulau Pinang. Mercury and lead levels exceeding the Proposed Marine Interim Standards of 0.001

mg/l and 0.1 mg/l respectively were observed in the coastal waters off Melaka and Sarawak. However the levels for cadmium, chromium and arsenic were within the Marine Interim Standards.

Island Marine Water Quality

A marine water quality monitoring project for selected islands was launched in July 1998. 85 monitoring stations at 71 islands were established. The islands were identified based on their categorization as Marine Parks (41), Resorts (27), Development (12) and Protected Islands (5). From the first batch of 274 samples collected, the analytical results showed that the overall island water quality was good except for Pulau Pinang and Pulau Labuan (both categorized as development islands) which registered high contamination of *E. coli* (26% exceeding interim standards) and total suspended solid

Table 1.1 Malaysia: Status of Marine Water Quality, 1998

STATE	Parameter Exceeding Interim Standard (%)										
	No. of Stations	No. of Samples	Oil and Grease	Total Suspended Solids	<i>Escherichia coli</i>	Copper	Mercury	Lead	Cadmium	Chromium	Arsenic
Pahang	14	36	100	100	36.1	0	0	0	0	0	0
Johor	42	225	100	12	17.8	0	0	0	0	0	0
Kedah/Perlis	5	12	100	100	NA	16.7	0	0	0	0	NA
Kelantan	10	40	100	70	37.5	0	0	0	0	0	0
Melaka	11	18	94.4	100	NA	0	22.2	0	0	0	0
Pulau Pinang	25	175	43.4	44.6	NA	7.6	0	0	0	0	0
Perak	13	63	100	100	50	0	6.3	3.2	0	0	0
Sabah	31	26	95.8	19.2	10	NA	NA	NA	NA	NA	NA
Sarawak	18	78	100	48.1	23.7	23.6	0	21.3	0	0	0
Terengganu	24	64	100	75	32.8	17.2	0	0	0	0	0
N. Sembilan	13	22	100	100	NA	0	0	0	0	0	0
Selangor	14	22	100	90.9	NA	0 4.5	0	0	0	0	0
P. Langkawi	11	55	94.5	98.2	NA	27.3	0	0	0	0	0
Total	231	836									
Average (%)			94.5	73.7	29.7	7.7	2.8	2.0	0.0	0.0	0.0

Note:

NA – Not Available

Marine Interim Standards

OG (0 mg/l)	TSS (50 mg/l)	<i>E.coli</i> (100MPN/100ml)	Cu (0.1 mg/l)	Hg (0.001 mg/l)	Pb (0.1 mg/l)	Cd (0.1 mg/l)	Cr (0.5 mg/l)	As (0.1 mg/l)
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(4% exceeding interim standards). At several resort islands off Selangor and Perak 7% of the samples exceeded the interim marine standards for oil and grease, while at several Marine Park islands off Terengganu and Pahang, 2% of the samples for oil and grease exceeded the marine interim standard. The marine water quality monitored at all the Protected Islands was found to be clean.

Tarball

Almost all Peninsular, Sarawak and Sabah beaches monitored in 1998 were found to be free from oil pollution in the form of tarballs,

except for some beaches of Johor (Table 1.2). Tarballs were spotted on those beaches between the months of February and April 1998 suspected to be due to shipping activities. During the island marine water quality monitoring activities in July 1998, tarballs were also spotted on the beaches of Pulau Besar (Melaka), Pulau Pangkor, Pulau Pangkor Laut and Pulau Sembilan in Perak and Pulau Langkawi in Kedah. The oil spill incident at Melaka Petronas Refinery on 19 September 1998 also polluted several beaches in Melaka, Port Dickson and Sepang where tarballs in quantities as much as 240g/metre strip were found.

Table 1.2 Malaysia: Beaches affected by Tarballs, 1998

State	Station	Sampling Date	Tar Ball g/m strip
Johor	Desaru Beach (1542914)	09-02-98	365
	Desaru Beach (1542914)	13-04-98	86
	Sri Pantai Beach (2339960)	27-02-98	187
	Sri Panta Beach (2339960)	14-04-98	135
	Telok Gorek Beach (2538958)	24-02-98	316
	Telok Gorek Beach (2538958)	14-02-98	117
	Air Papan Beach (2538959)	24-02-98	608
	Air Papan Beach (2538959)	14-04-98	210
	Tanjung Setapa Beach (1341961)	16-03-98	185
	Island		
Langkawi	Chenang Beach (P. Langkawi)	22-07-98	35
Perak	Puteri Dewi Beach (P. Pangkor)	17-07-98	5
	P. Pangkor Laut Beach	17-07-98	250
	P. Sembilan Beach	17-07-98	175
Melaka	P. Besar Beach	15-07-98	20

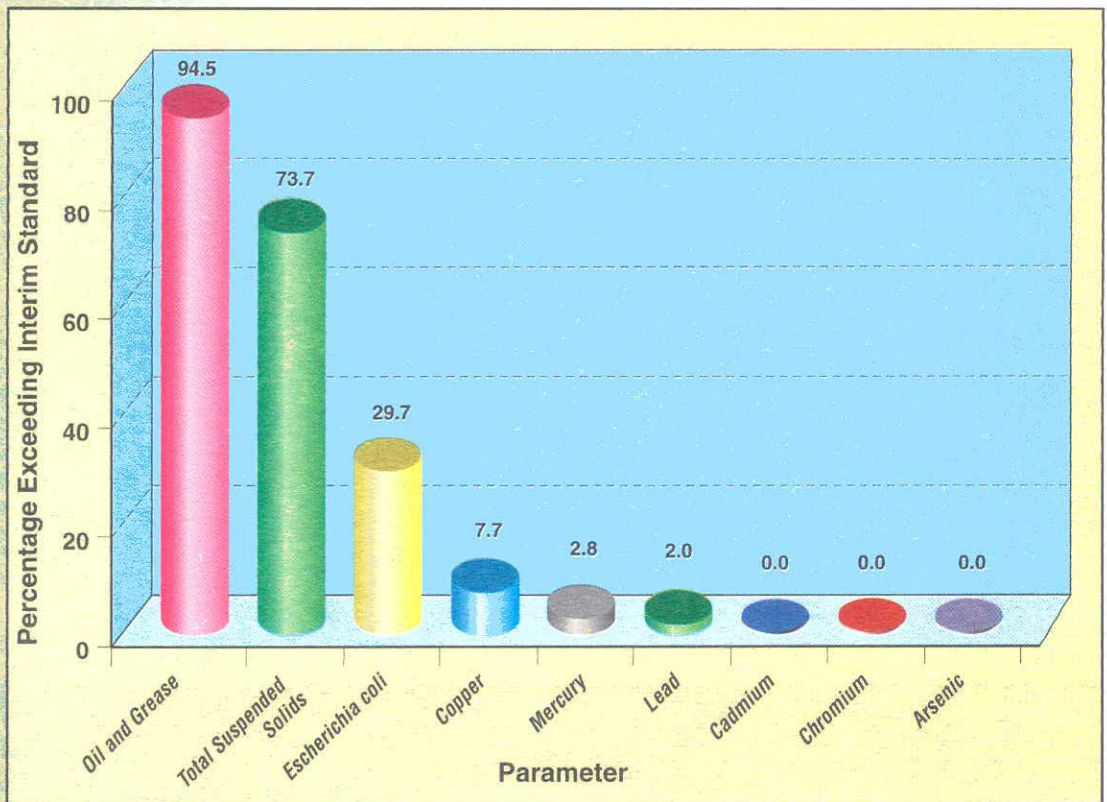


Figure 1.12 Malaysia: Status of Marine Water Quality, 1998

GROUNDWATER QUALITY

Groundwater monitoring was intensified in 1998. 78 samples from 49 wells were collected (Table 1.3). The monitoring wells were located at sites representing various land use categories such as agriculture, urban/suburban, industrial, solid waste dumping sites, golf courses and rural areas. The objective of the monitoring was principally to detect contamination of groundwater quality. The parameters monitored were volatile organic compounds (VOC), pesticides, heavy metals, anions, bacteria, phenolic compounds, radioactivity, total hardness, total dissolved solids, pH, temperature, electrical conductivity, and dissolved oxygen.

The monitoring results showed that the level of some parameters exceeded the acceptable value for raw water quality under the National Guidelines For Drinking Water Quality (1990) (Table 1.4), especially those located near the solid wastes dumping sites. Three percent of the samples taken from wells near solid wastes dumping sites were detected to exceed the acceptable value for Mercury (Hg), Cadmium (Cd) and Lead (Pb), whilst 46% were detected with value exceeding the acceptable value for Arsenic (AS) and 23% for phenolic compounds. (Figure 1.13). No significant levels of pollutants were observed at monitoring wells for other land use categories.

Table 1.3 Peninsular Malaysia: Monitoring Wells for Groundwater Quality.

No.	Land Used category	Wells Identification	Wells Location (Site)
1.	Agriculture areas	MW(7)-R3-1-15.72	Rimba Mas Perlis.
		MW(7)-KV-1-12.09	Padang Mat Sirat, Pulau Langkawi.
		MW(7)-KV-1-5.80	
		MW(7)-D6-1-7.58	Kg. Jembal, Kelantan.
		MW(7)-D15-1-4.05	Kg, Beris Lalang, Kelantan.
		MW(7)-D21-1-6.16	Sek. Keb. Alor Peroi, Kg. Tok Saboh,
		MW(7)-D21-1-22.13 MW(7)-D21-1-45.82	Terengganu.
2.	Golf Courses	MW(7)-S12-1-5.37	Royal Selangor Golf Club, Selangor.
		MW(7)-S13-1-12.69	Subang, Selangor.
		MW(7)-S13-1-5.45	
		MW(7)-D6-4-4.47	Kubang Kerian, Kelantan.
		MW(7)-D6-4-31.29	
3.	Industrial site	MW(7)-K3-1-8.45	Kulim Hitech, Kedah.
		MW(7)-P1-1-6.50	Mak Mandin, Pulau Pinang.
		MW(7)-P1-1-4.50	
		MW(7)-P2-1-4.34	Bayan Lepas, Pulau Pinang.
		MW(7)S8-1-5.27	Bukit Raja, Selangor.
		MW(7)-S9-1-8.20	Shah Alam, Selangor.
		MW(7)-S9-1-20.21	
		MW(7)-M1-1-8.1	Petronas Oil Refinery, Melaka.
		MW(7)-N4-1-6.44	Senawang, Negeri Sembilan.
		MW(7)-J5-1-7.34	Pasir Gudang, Johor.
		MW(7)-J5-2-7.49	
		MW(7)-T15-1-5.68	Kertih, Terengganu.
		MW(7)-T16-1-5.57	Teluk Kalong, Terengganu.
MW(7)-D6-2-51.38 MW(7)-D6-2-4.24	Pengkalan Chepa, Kelantan.		
4.	Solid Waste: Dumping Sites	MW(7)-A11-1-6.05	Pusing, Perak.
		MW(7)-A12-1-6.82	Lahat, Perak*.
		MW(7)-T10-1.5.45	Kubang Badak, Terengganu.
		MW(7)-D6-3-5.34	Panji, Kelantan.
		MW(7)-D6-3-14.43	
		MW(7)-D8-1-5.22	Pasir Mas, Kelantan.
		MW(7)-S11-1-5.57	Jalan Sungai Besi, Kuala Lumpur.
		MW(7)-S11-1-5.54	
		MW(7)-S11-1-5.50	
		MW(7)-S11-1-14.80	
		MW(7)-S11-1-14.78	
		MW(7)-N5-1-8.00	Bukit Nenas, Negeri Sembilan.
MW(7)-N5-1-5.37			
MW(7)-J3-1-9.25	Bukit Bakri, Johor.		
5.	Rural areas	MW(7)-D11-1-6.10	Sek. Keb. Jelawat, Kelantan.
		MW(7)-D11-2-5.09	Kg, Gelong Badak, Kelantan.
6.	Urban/suburban areas	MW(7)-R4-1-5.41	Arau, Perlis.
		MW(7)-R4-1-19.80	
		MW(7)-C13-1-45.97	Bandar Nenas, Pahang.
		MW(7)-D7-1-6.10 MW(7)-D7-1-20.23	Rantau Panjang, Kelantan.

Table 1.4 Malaysian Acceptable Value for Raw Water Quality*

Parameters	Acceptable Value
Coliform	5000 MPN
Sulfate	400 mg/l
Chloride	250 mg/l
Hardness (as CaCO ₃)	500 mg/l
Phenolic compounds	0.002 mg/l
Nitrate (as N)	10 mg/l
Total dissolved solids	1500 mg/l
Iron (Fe)	1 mg/l
Manganese (Mn)	0.2 mg/l
Cooper (Cu)	1 mg/l
Chromium (Cr)	0.05 mg/l
Lead (Pb)	0.1 mg/l
Zinc (Zn)	1.5 mg/l
Cadmium (Cd)	0.005 mg/l
Arsenic (As)	0.05 mg/l
Mercury (Hg)	0.001 mg/l
Selenium (Se)	0.01 mg/l

*Source : Ministry of Health Malaysia (October 1990). National Guidelines for Drinking Water Quality.

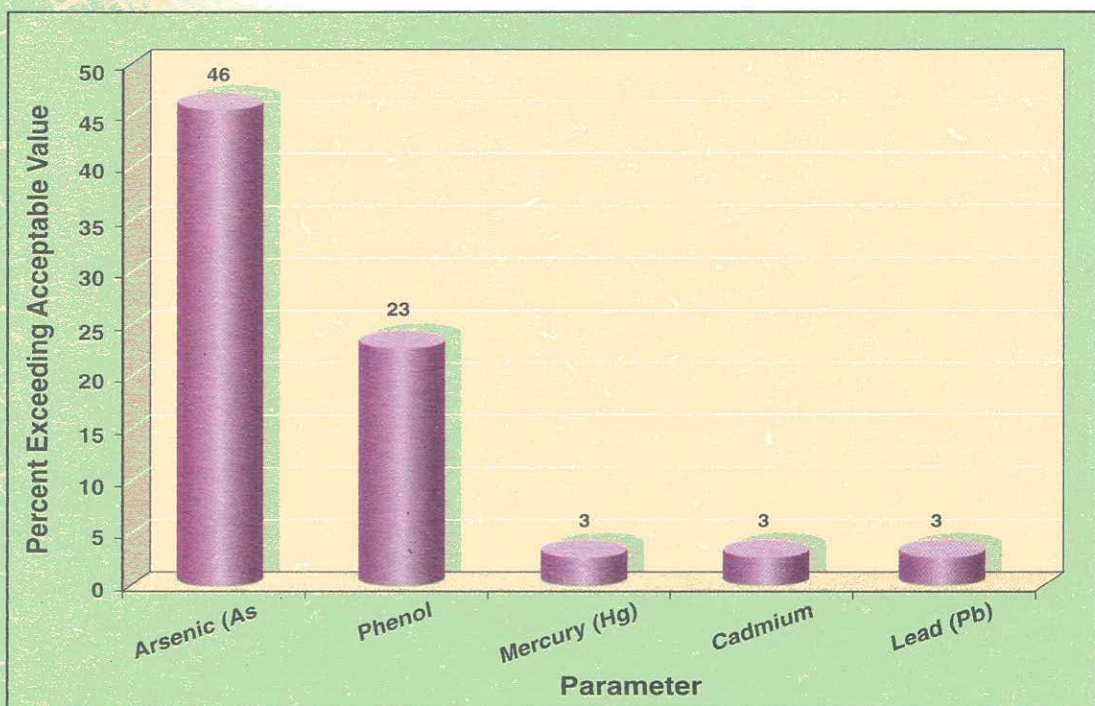


Figure 1.13 Peninsular Malaysia: Groundwater Quality, 1998 (Measured In The Vicinity Of Solid Wastes Dumping Sites)

NOISE

In 1998, DOE conducted a traffic noise monitoring programme in major urban centres through out Peninsular Malaysia. The recorded noise levels in those selected urban areas were found to be in the range of 76.4

dB(A) to 83.8 dB(A) (Figure 1.14). Compared to the 1992 values, the noise levels recorded in 1998 showed a significant increase in all the urban centres monitored.

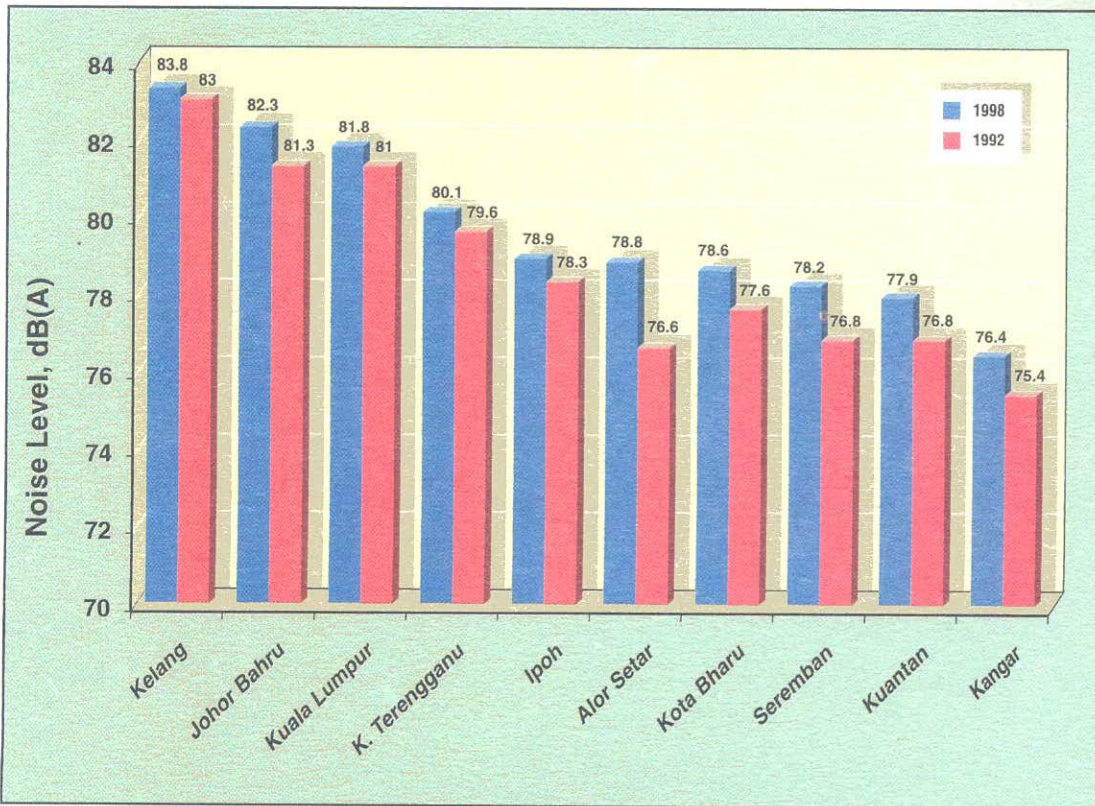


Figure 1.14 Malaysia: Traffic Noise Levels in Selected Urban Areas in 1998 and 1992

Chapter 2

MALAYSIA ENVIRONMENTAL QUALITY REPORT 1998



POLLUTION

ABATEMENT

INTRODUCTION

Throughout 1998, the Department of Environment continued to enforce the Environmental Quality Act, 1974 and its regulations as required by the Act in order to abate and control pollution. This remained an important thrust of the Department to secure compliance with environmental standards and requirements by the various sources of pollution. Abatement and pollution control activities were essential to address current environmental problems faced by the country so as to ensure minimum damage and prevent further deterioration of environmental quality.

PRESCRIBED PREMISES – AGRO-BASED

Raw natural rubbery (RNR)

factories and crude palm oil (CPO) mills are agro-based industries prescribed under Section 18 of the Environmental Quality Act 1974, whereby licences from the Department of Environment are required for the use and occupation of such premises.

In 1998, 143 RNR factories and 326 CPO mills were licenced under the Environmental Quality (Prescribed Premises)(Raw Natural Rubber) Regulations 1978 and Environmental Quality (Prescribed Premises)(Crude Palm Oil) Regulations 1977 respectively. While the normal licencing period is one year only, certain premises with excellent compliance record can be given extended licencing period of two to three years. Of the 143 RNR factories, 123 factories were licenced for a period of one year, 14 factories for two years and 6 factories for three years, effective 1 April 1998. However in the case of CPO mills, 229 mills were given one-year licenses, 70 mills two years and 27 mills for three years, effective 1 July 1998.

Two types of fees are payable to obtain a license, ie. processing fees and effluent-related fees, which is calculated based on the quantity of effluent discharged and the mode of disposal in accordance with the Polluter Pay Principle. The amount of fees collected in 1998 totalled RM696,191.89.

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

In 1998, a total of 477 enforcement inspections were carried out by DOE State officers. The overall compliance for CPO mills and RNR factory were 80.5% and 90.1% respectively. Thirty-one CPO mills and one RNR factory were taken to court, while forty-one CPO mills and one RNR factory were compounded for various offences under the regulations. Breakdown of the various regulatory actions according to States are as shown in Figure 2.1 and 2.2.

In line with the Malaysian Incorporated concept actively promoted by the Government, a Consultative Committee comprising of operators of prescribed premises, palm oil and rubber associations and the DOE had been established. The objectives of the Committee are two-fold: firstly, to review and to exchange information on the latest available environmental pollution control technology, and secondly to enhance environmental compliance among operators of prescribed premises with regard to environmental standards and licensing conditions. At the State level, annual dialogues with operators of prescribed premises were held. A Technical Working

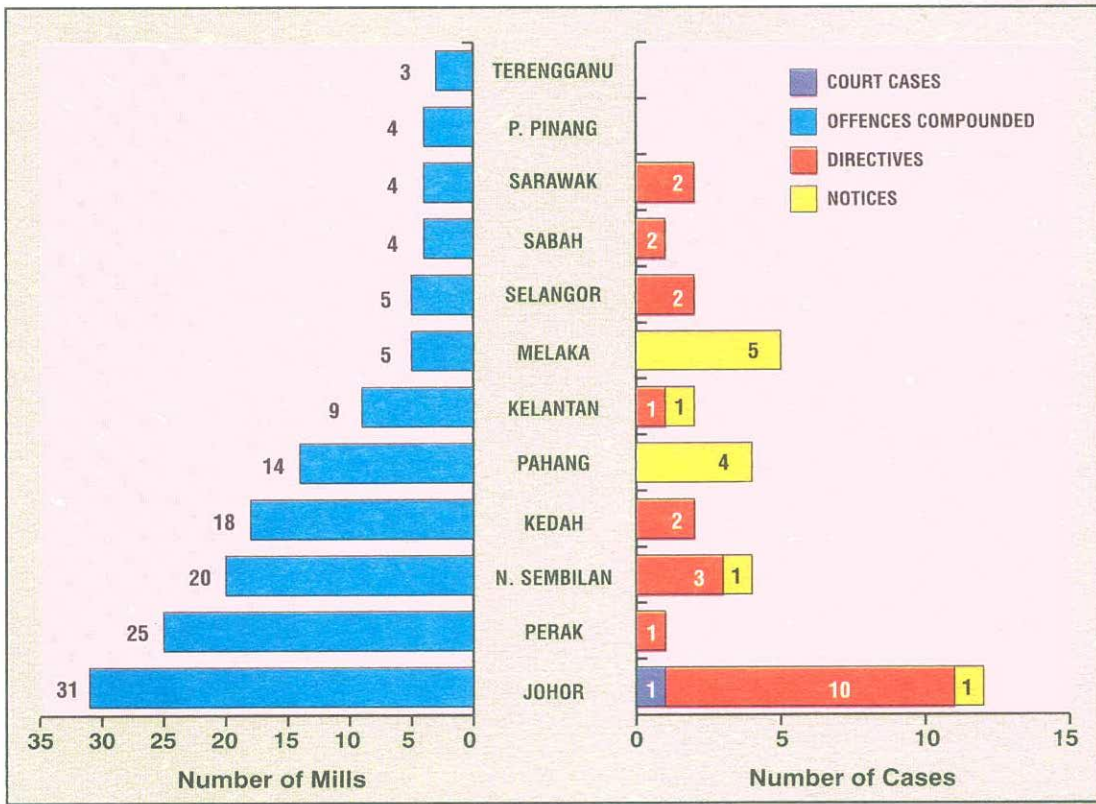


Figure 2.1 Department of Environment: Enforcement on Raw Natural Rubber Factories, 1998

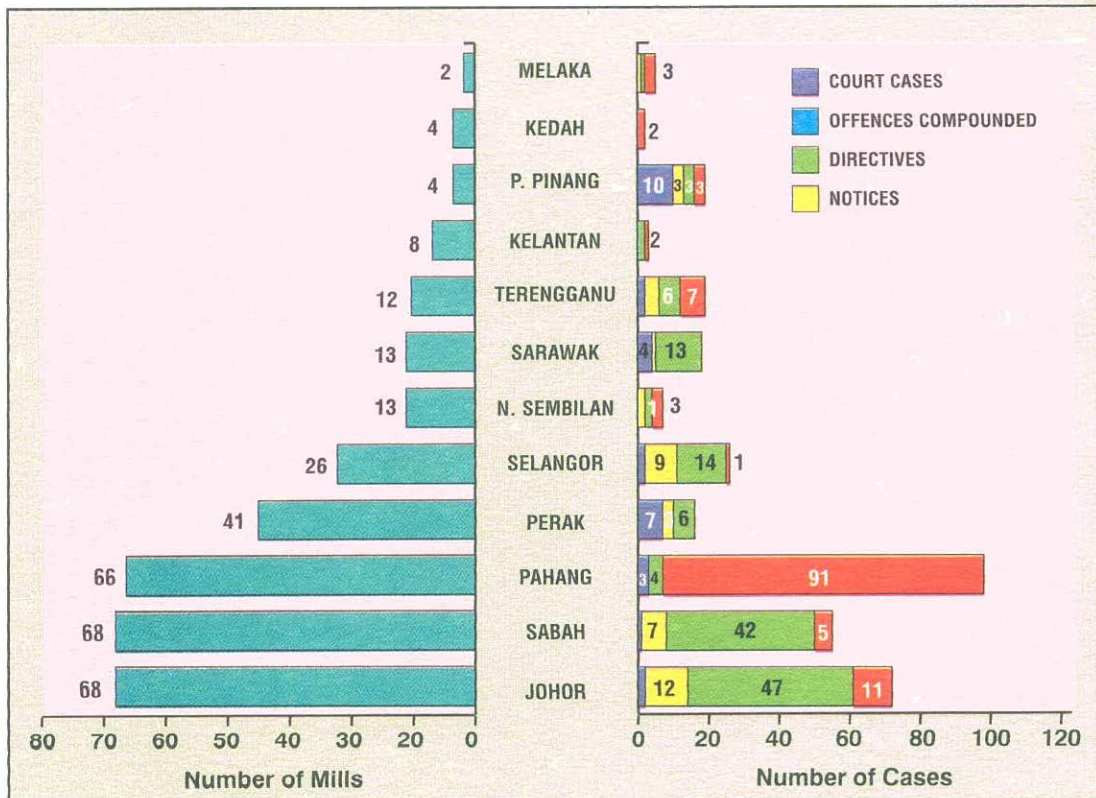


Figure 2.2 Department of Environment: Enforcement on Crude Palm Oil Mills, 1998

Group comprising of officials from DOE the and Malaysian Rubber Board had been formed to deal with odour measurement procedure and standards for RNR factories.

Emissions of dust and black smoke are the two common causes of air pollution from these two industries. Excessive emissions of the dust and black smoke could be due many causes such as poor feeding systems for boilers, inefficient air pollution control

systems, poor maintainance, use of old boilers, etc. The discharge standards for dust and black smoke emission as stipulated in the above regulations are 0.4gm/Nm³ and shade number 2 on the Ringlemann Chart, respectively. For smoke control, installation of smoke detector and recorder would help millers to monitor the intensity of the smoke emmision. In 1998, a total of 41 offences under the above regulations were compounded.

NON-PRESCRIBED PREMISES

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

In 1998, a total of 3889 manufacturing industries were inspected. This figure was less than that of 1997 as priority was placed on curbing open burning activities. Overall, the percentage of compliance to the Environmental Quality (Clean Air) Regulations 1978 (C.A.R) by manufacturing industries was 78%. The textile industrial sector achieved the highest percentage of compliance (99%), followed by paper industries (95%) and chemical industries (94%). Rice mills had the lowest compliance of only 46%. (Figure 2.3) Low-compliance by rice mills was due to the lack of proper storage of padi husk and the lack of proper air pollution control equipment in complaints of air pollution by residents of surrounding areas.

Other common offences by the manufacturing industries included open burning; lack of air pollution control equipment; pollution control equipment not in operation or not functioning due to lack of proper maintenance resulting in the emission of excessive dust and total suspended particulates; emission of black smoke or foul odour; installation or erection of chimneys and fuel burning equipment without prior written approval by the Director-General of Environmental Quality.

Compliance by these manufacturing industries could be improved significantly if the pollution control equipment was properly maintained at all time, or upgraded to cater for the increase in production capacity.

Status of compliance with the Environmental Quality (Sewage And Industrial Effluents) Regulations, 1979

In 1998 a total of 3889 manufacturing industries were inspected under the Environment Quality (Sewage And Industrial Effluents) Regulations 1979, out of which 3348 (86 %) were found to have complied with these regulations (Figure 2.4). Industrial premises such as textile, metal finishing and electroplating, paper and food & beverage achieved 60, 65, 71 and 72 percent compliance respectively.

Many industries particularly small and medium sized metal finishing and electroplating premises had difficulty complying with the stipulated standards of biochemical oxygen demand, chemical oxygen demand, suspended solids, oil & grease and heavy metals such as like nickel, copper and lead in their wastewater discharges. Many such industries are operating without proper effluent treatment facilities.

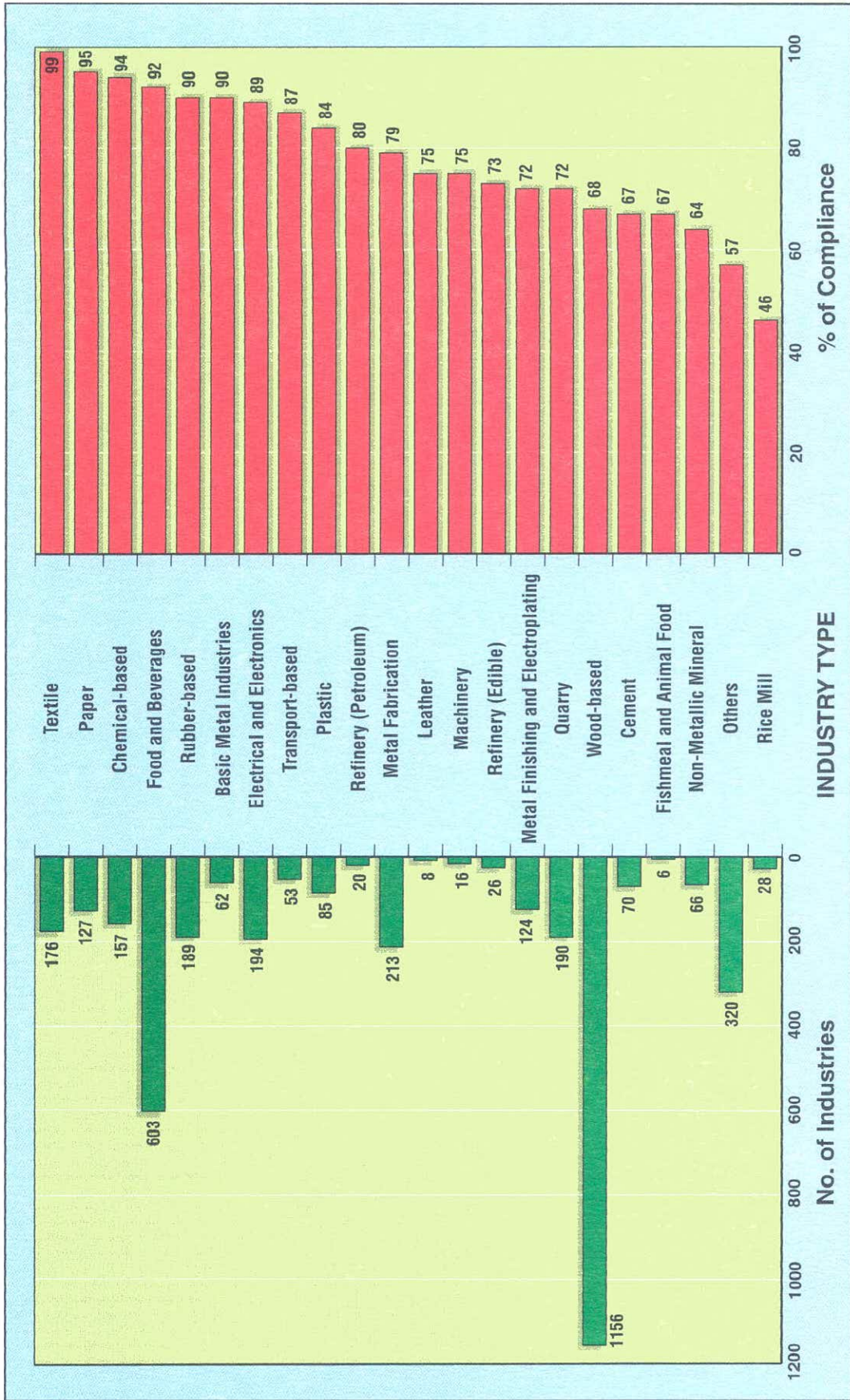


Figure 2.3 Department of Environment: Environmental Quality (Clean Air) Regulations, 1978. Compliance by Industries, 1998.

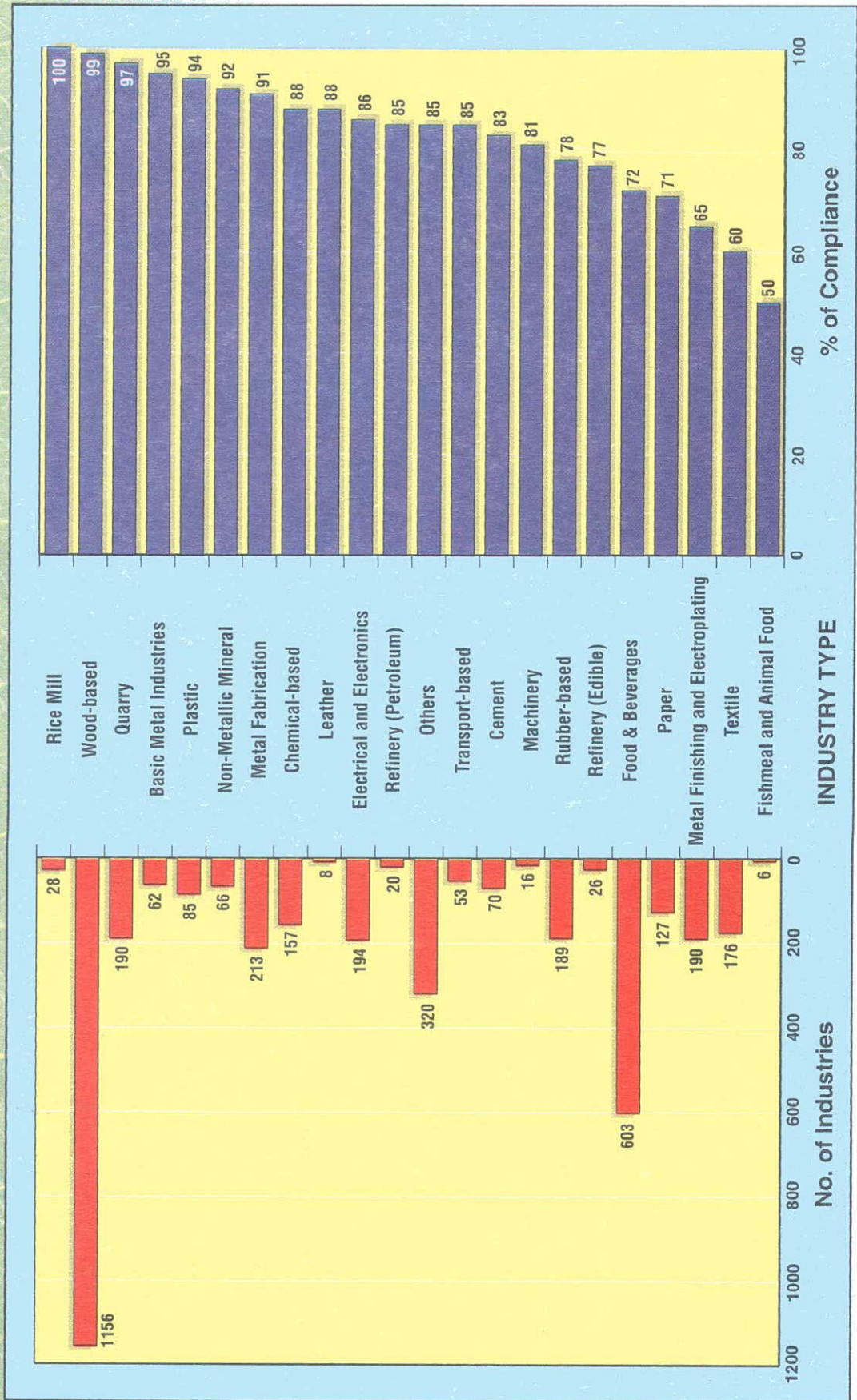


Figure 2.4 Department of Environment: The Environmental (Sewage and Industrial Effluents) Regulations, 1979. Compliance by Industries, 1998.

SCHEDULED WASTES MANAGEMENT

Many initiatives were taken in 1998 to enhance the country's scheduled wastes management programme. The two most significant achievements were the completion of Malaysia's only integrated scheduled waste treatment and disposal facility in June 1998 and the Fourth Meeting of the Conference of Parties to the Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and their Disposal 1989 held in Kuching in February 1998. These activities marked Malaysia's commitment towards environmentally sound and safe management of hazardous wastes. The integrated facility for instance represented the government's seriousness to have the state-of-the-art infrastructure deal with the country's scheduled wastes arising from the industrialisation drive.

Other notable initiatives were the review of the scheduled waste regulations and a survey on waste minimization effort undertaken by

the local industries. The main thrust of the review was to identify possible approaches to recategorise the scheduled wastes lists by taking into consideration current development in waste management and the experiences gained by DOE and the industries since the regulations came into force in 1989.

Integrated Hazardous Waste Treatment and Disposal Facility

Following its completion in June 1998, the integrated facility operated by Kualiti Alam Sdn. Bhd. (KA) was ready to accept all types of scheduled wastes generated by the Malaysian industries. Only three groups of waste, namely explosives, radioactive and clinical wastes are not included in KA's scope of treatable and disposable wastes. On 7 November 1998, the Rt. Honourable Prime Minister of Malaysia, YAB Dato' Seri Dr. Mahathir Mohamed officiated the opening



Official Opening of the Integrated Scheduled Waste Treatment and Disposal Facility by the Rt. Honourable Prime Minister of Malaysia at Bukit Nanas, Negeri Sembilan in November 1998

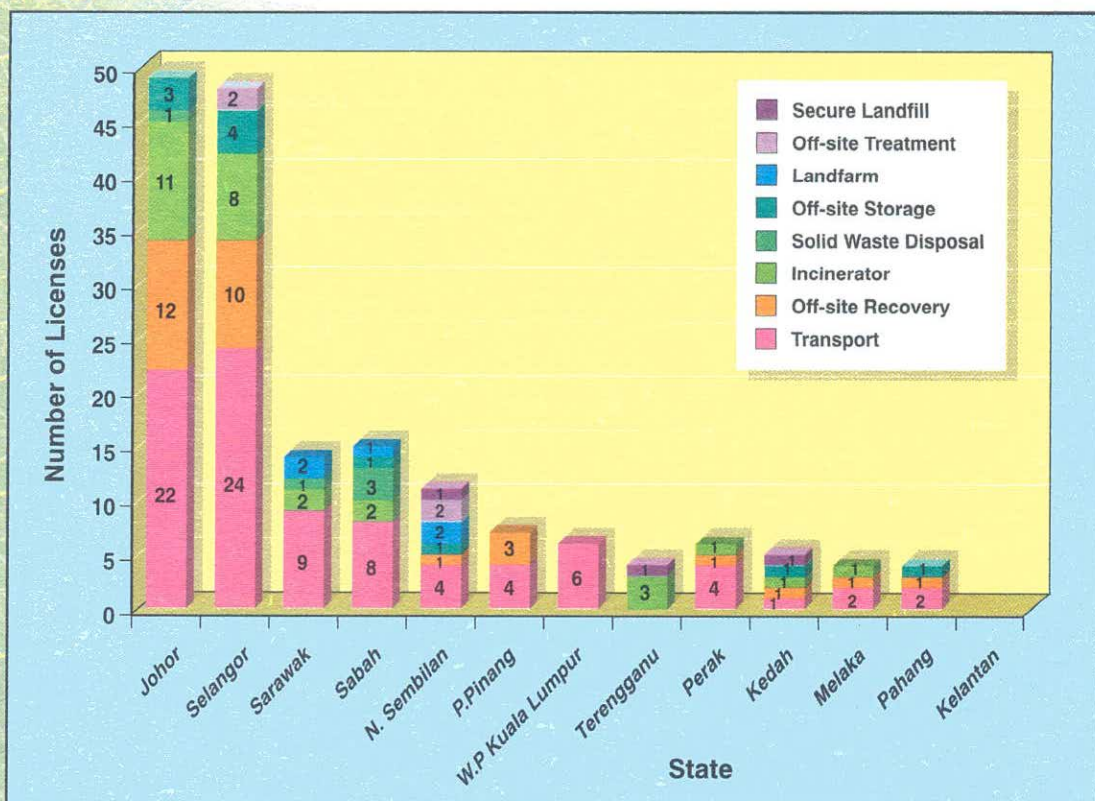


Figure 2.5 Malaysia: Distribution of Licensed Scheduled Wastes Treatment and Disposal Facilities by States, 1998

of the facility. The Prime Minister advised industries and businesses to properly manage their wastes in order to protect their workers, the public and the environment from undue harm and pollution and also reminded KA, as the operator of the facility, to maintain professionalism when providing services to its clients and to place great emphasis on running an efficient and competent operation.

Written Permission/Enquiries/Licenses To Handle Scheduled Wastes

Nineteen new licenses were issued and 155 licenses were renewed to operate facilities for scheduled wastes. Of the 19 new licenses, 6 were for off-site recovery, 12 for scheduled waste transportation, 1 each for solid waste landfill and off-site treatment. (Figure 2.5)

Johor and Selangor recorded the highest number of licenses for transport contractors. The number of licenses for disposal of hazardous wastes at solid waste landfills had reduced (Figure 2.6).

Notification of Scheduled Wastes Generation

In 1998, a total of 4,059 notifications by waste generators were received compared to 1843 in 1997. The notifications indicated that a total of 398,518 MT of wastes were generated (Figure 2.7) with Pulau Pinang accounting for 38.3% (151,436 MT) of the total wastes generated the highest amount of wastes (Figure 2.8). Dross/slag/clinker accounted for the largest quantity of wastes generated (Figure 2.9), while the metal industry sector was the main waste generator (Figure 2.10).

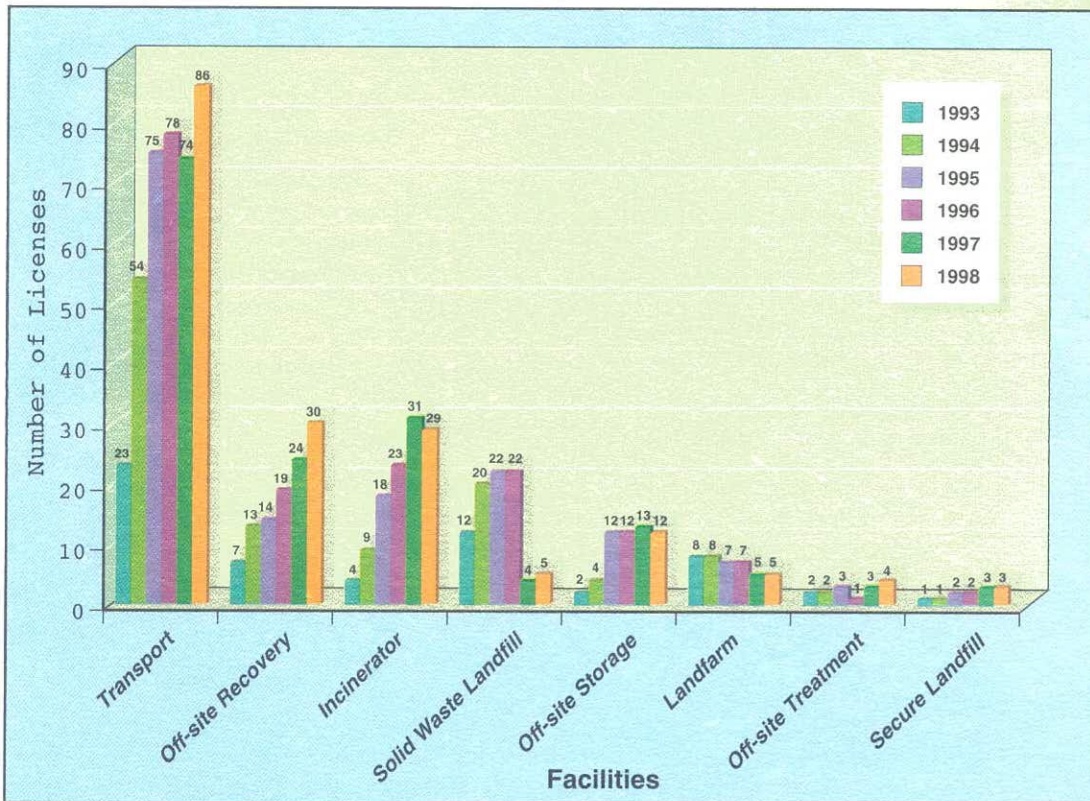


Figure 2.6 Malaysia: Scheduled Wastes Treatment and Disposal Facilities Licensed, 1993–1998

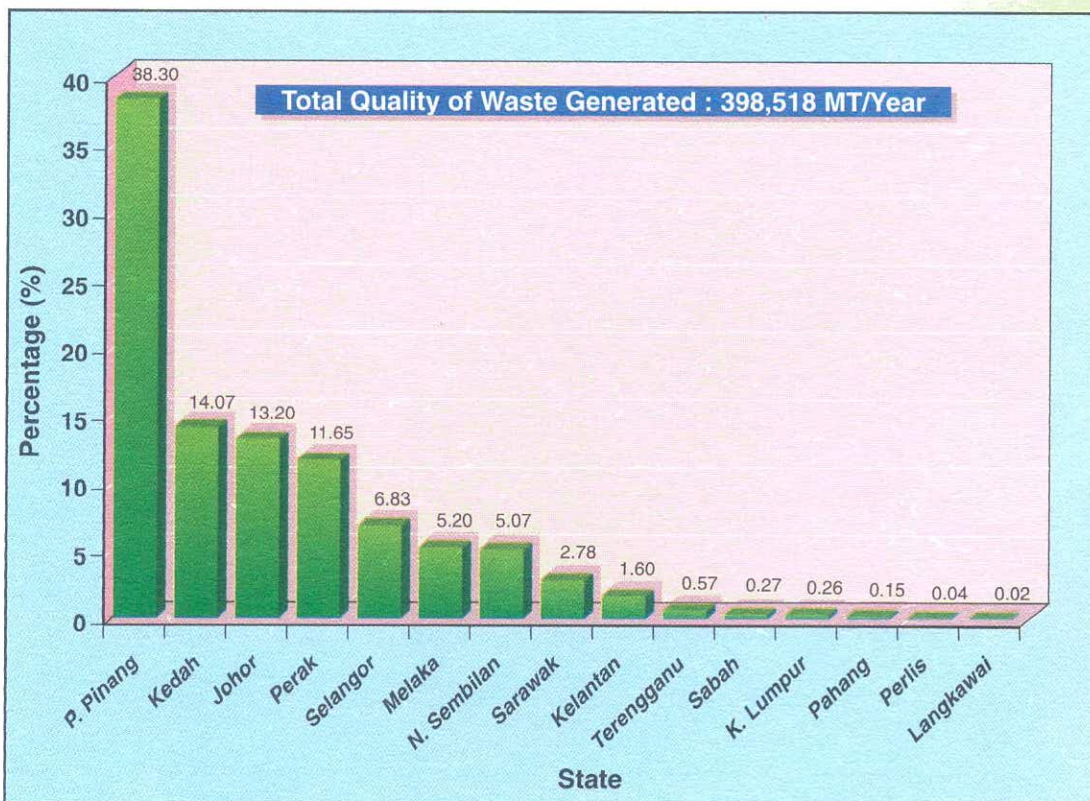


Figure 2.7 Malaysia: Distribution of Scheduled Waste Generated by States, 1998

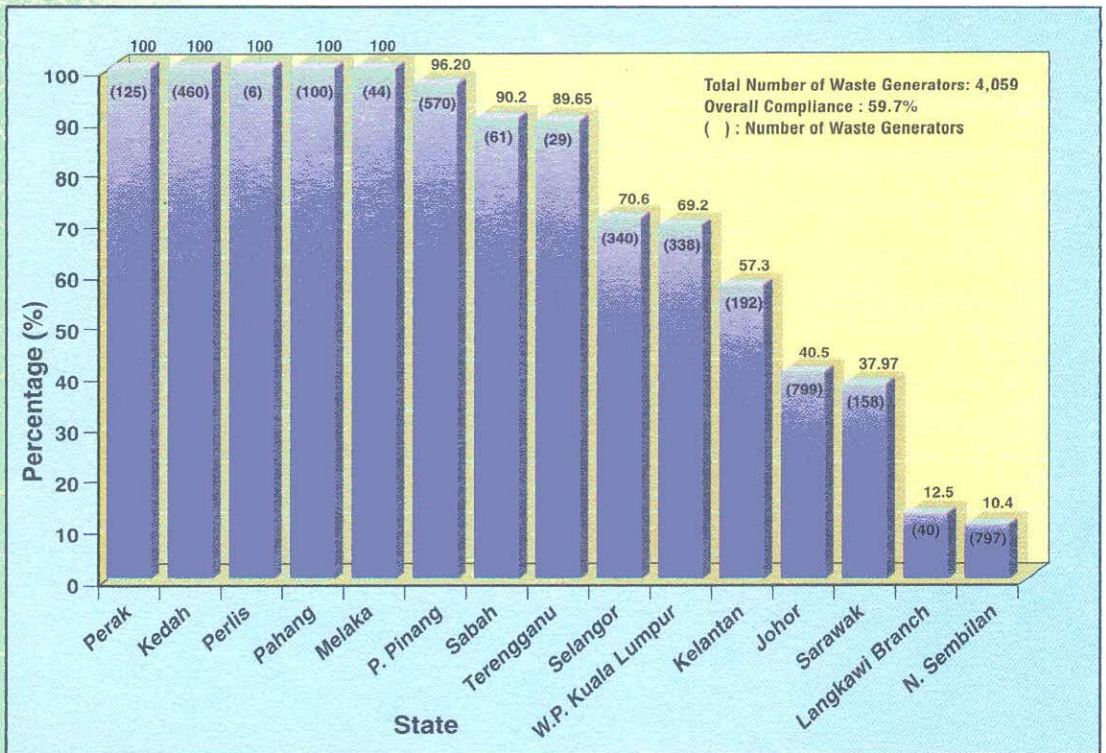


Figure 2.8 Department of Environment: Status of Compliance to Notification Environmental Quality (Scheduled Wastes) Regulations, 1989, Regulation 3 of Scheduled Wastes by States, 1998.

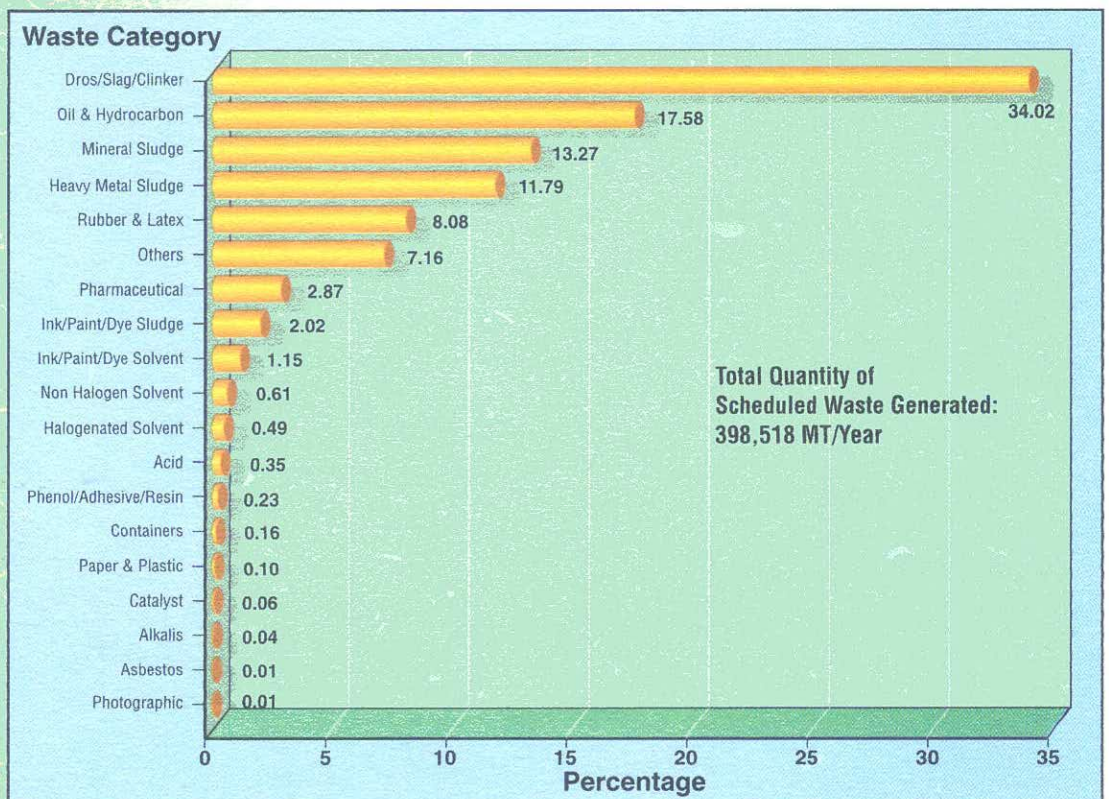


Figure 2.9 Malaysia: Quantity of Scheduled Wastes Generated According to Waste Category, 1998

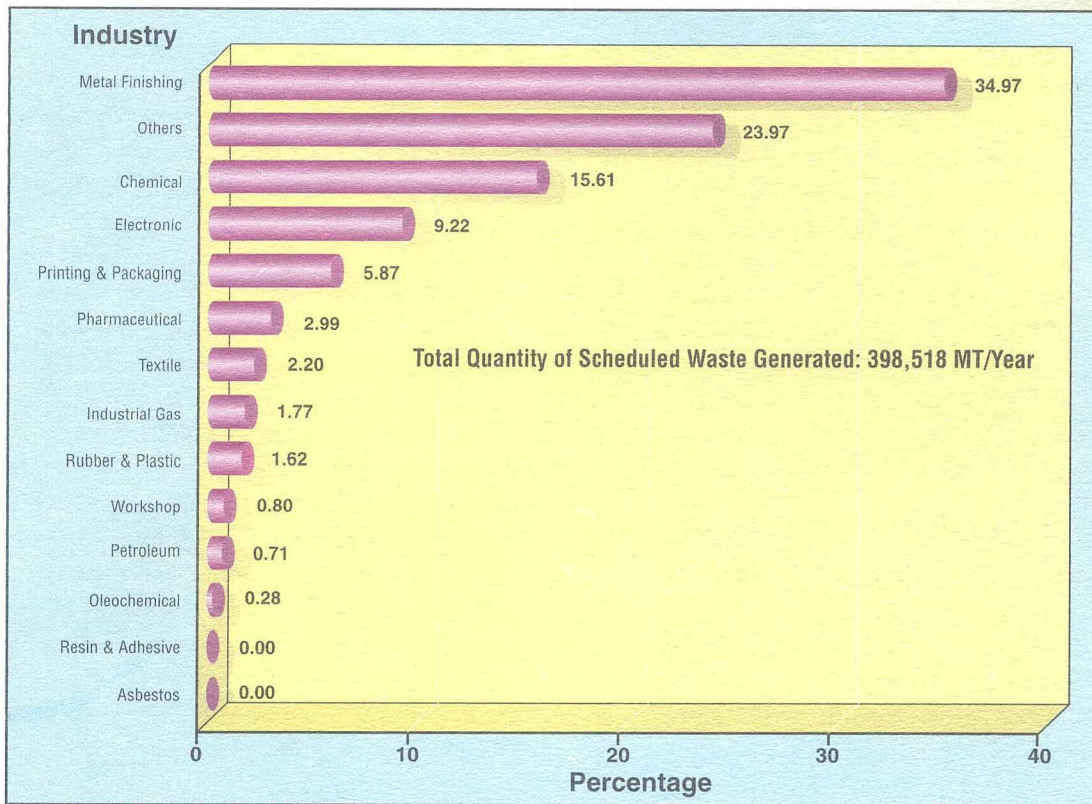


Figure 2.10 Malaysia: Quantity of Scheduled Wastes Generated According to Industry, 1998



Opening Speech by Hon. Datuk Law Hieng Ding, Minister of Science, Technology and the Environment, at the 4th Meeting of the Conference of Parties to the Basel Convention.

Of the 398,518 MT of scheduled wastes generated, 52.6% were sent to off-site recovery facilities meant for recovery of solvents, waste oils, lead dross and lead batteries 13.9% were delivered to KA for final treatment and disposal, 6.0% were treated on-site and 2.2% were exported to foreign waste recovery facilities. The estimation indicated that 25.3% (100,807 MT) of these scheduled wastes were still being kept or stored by waste generators in the country and the main groups of stored wastes are metal sludges and print wastes.

Transboundary Movements of Scheduled Wastes Under the Basel Convention

Applications to export scheduled wastes for metal recovery increased in 1998 and a wider range of destination were sought by industries. An estimated 8,626 metric tonnes

of wastes were exported by 30 companies to 11 countries in 1998, a marked increase from the amount of 2,694 metric tonnes approved in 1997 (Figure 2.11). The largest quantity was shipped to Japan, mainly by Japanese-based multi-national companies operating in the country. In order to facilitate the procedures involved in processing of export applications, general criteria for evaluation of applications for wastes destined for recovery operations were developed by DOE. One major criteria was the introduction of minimum percentage limits of recoverable components allowable for export, such as for the export of heavy metal sludge and spent catalysts. 18 applications for import of scheduled wastes such as copper slags for blasting and steel mill slags for cement production were received in 1998, of which only one application was not approved (Figure 2.12).

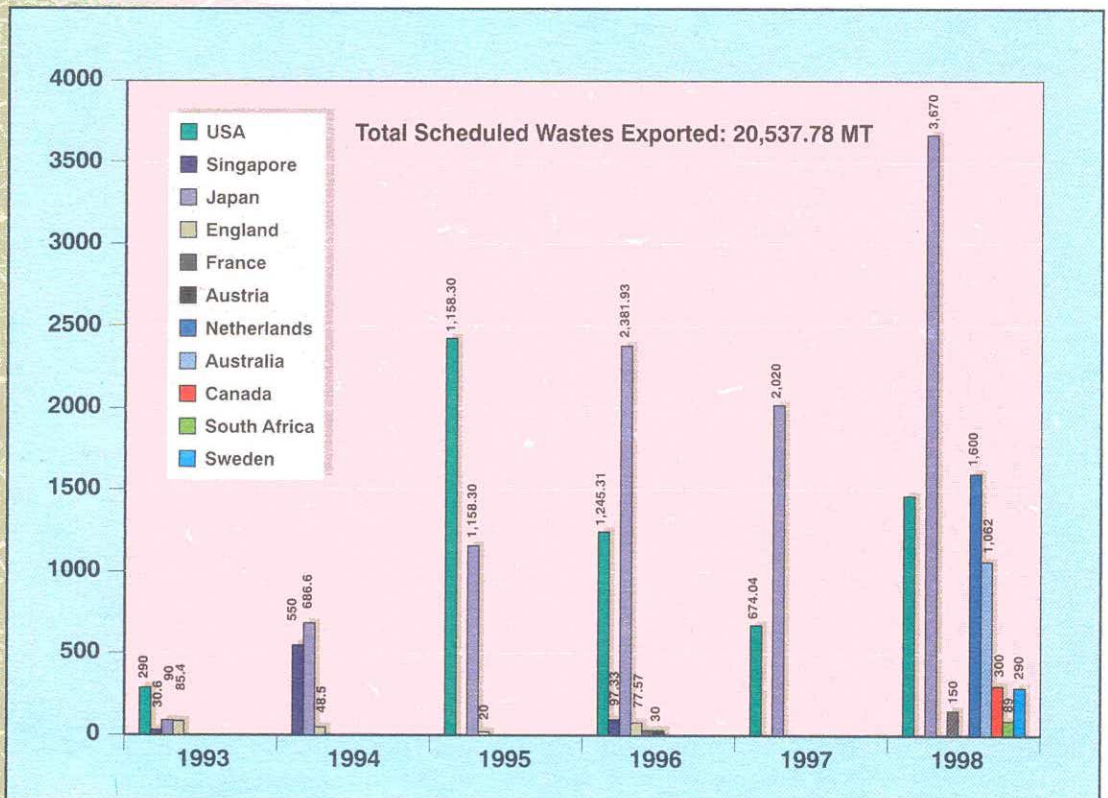


Figure 2.11 Malaysia: Quantity of Scheduled Wastes Exported, 1993–1998

Fourth Meeting of the Conference of the Parties To the Basel Convention

Malaysia hosted the Fourth Meeting of the Conference of the Parties (COP4) to the Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and Their Disposal, which was held in Kuching, Sarawak from 23 to 27 February 1998. The Meeting was attended by about 400 delegates from 117 State Parties to the Basel Convention as well as observers from Non-Parties, Inter-Governmental Organizations, Non-Governmental Organizations and Specialized Bodies under the United Nations umbrella. The Meeting was chaired by Madam Hajah Rosnani Ibrahim, then the Deputy Director General, Department of Environment, who was also

elected as President of the Fourth Meeting of the Conference of the Parties to the Basel Convention for the 1998/99 session.

The Meeting discussed various matters pertaining to the control of movements and disposal of hazardous wastes; proposals to amend the Basel Convention submitted by the European Community, Chile, Israel and Monaco; reports of the outcome of the work of the Technical Working Group on the lists of wastes; the drafting of a Protocol on liability and compensation for damages as a result of transboundary movements of hazardous wastes and their disposal; Emergency Fund; information exchange system; the establishment of Regional Centres for training and technology transfer; bilateral and multilateral agreements for the transboundary movements of hazardous wastes; technical guidelines for the

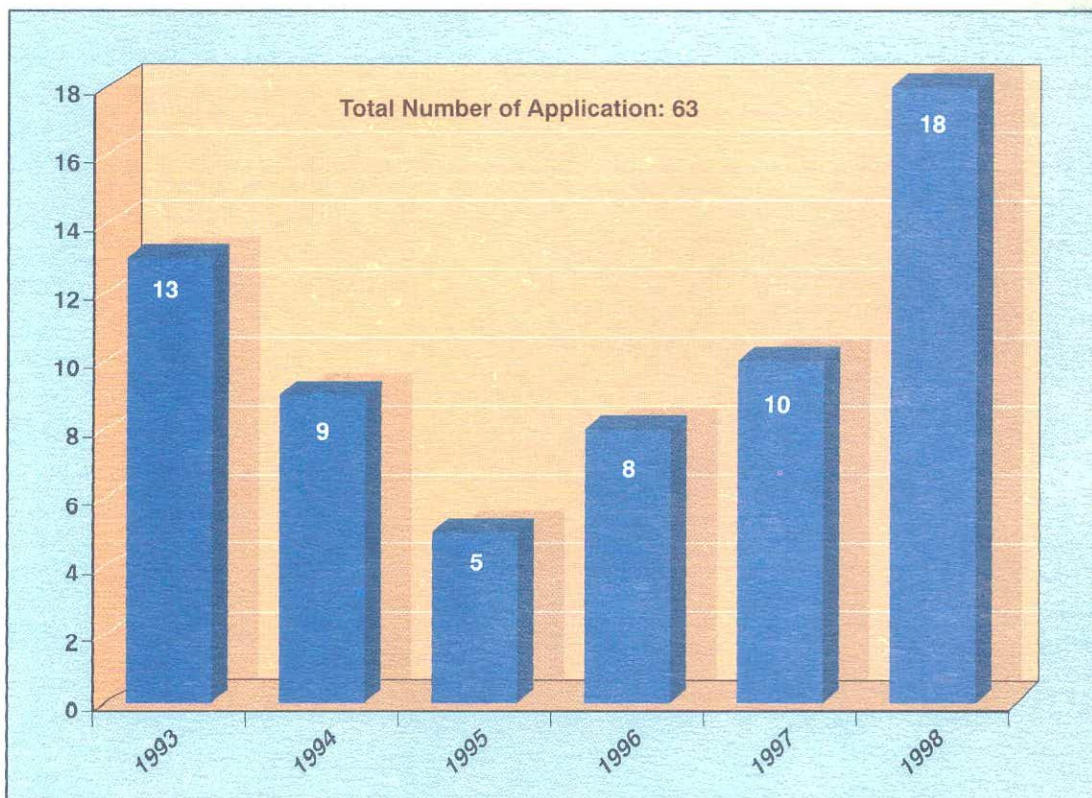


Figure 2.12 Malaysia: Number of Application to Import Scheduled Waste, 1993–1998

management of hazardous wastes; and the 1999-2000 budget for the implementation of the Basel Convention.

Malaysia supported the inclusion of the lists of hazardous wastes as new Annexes to the Convention so as to ensure rapid adoption by Parties, facilitate the implementation of the control of export and import of hazardous wastes. With the review mechanism in place, changes to the lists of wastes could be made anytime and detailed study to determine the suitability and appropriateness of the amendments to the lists could be carried out by the Technical Working Group.

The Malaysian delegation participated actively in the various negotiation sessions especially those that the Group of 77 and China were involved in order to achieve a common stand on various issues. With the participation of representatives from various government agencies such as the Ministry of Science, Technology and the Environment, Ministry of International Trade and Industry, the Department of Environment and the Attorney General's Office and industry representatives in the Malaysian delegation, sectoral and national interests were taken into account in the negotiations.

COP4 was a success due to cooperation between the Department of Environment, the Secretariat of the Basel Convention the Prime Minister's Department and the Sarawak State Government. It had also enhanced the country's image for a hosting international

conventions besides contributing towards promoting local tourism.

Working Groups of The Basel Convention

Following the mandate given by COP4, the following Working Groups continued with their given tasks in which Malaysia participated:

- Thirteenth Session of the Technical Working Group of the Basel Convention, 27-29 April 1998, Geneva
- Third Session of the Consultative Sub-Group of Legal and Technical Experts, 22-23 June 1998, Geneva
- Sixth Session of the Ad Hoc Working Group of Legal and Technical Experts on Liability and Compensation, 24-26 June 1998, Geneva
- Seventh Session of the Ad Hoc Working Group of Legal and Technical Experts on Liability and Compensation, 7-9 October 1998, Geneva
- Fourteenth Session of the Technical Working Group of the Basel Convention, 2-5 November 1998, Pretoria, South Africa
- Fourth Session of the Consultative Sub-Group of Legal and Technical Experts, 6-7 November 1998, Pretoria, South Africa.

ENFORCEMENT AGAINST OPEN BURNING

As a precautionary measure to prevent the occurrence of haze due to local sources, all relevant government agencies concerned were directed to step up their surveillance and enforcement against open burning. In response to this directives, on 8 April 1998 DOE launched “*Ops Bakar*” (*Operasi Mencegah Kebakaran*) in the Klang Valley which was subsequently expanded nationwide.

DOE mobilised a total of 39 ground patrol teams throughout the country. Aerial surveillance were provided by the Police Air Wing particularly in areas not accessible by road. Upon aerial detection of open burning activities, the information would be transmitted to the DOE Control Centre, which would communicate with the DOE patrol teams for investigation and enforcement action. The Fire and Rescue Department would also be notified to put out the fires.

Between 8 April and 31 December, 1998 a total of 495 cases of open burning were detected and investigated. The breakdown of

cases by States is as shown in Figure 2.13.

The largest open burning case involved 2,038 hectares of plantation in the district of Sepang, Selangor. As surveillance intensified, the number of open burning cases significantly decreased (Figure 2.13).

Satellite Detection of “Hot Spots”

Open burning could also be detected via the National Oceanic and Atmospheric Administration (NOAA) satellite. The information retrieved from the ASEAN Specialised Meteorological Centre (ASMC) through the Malaysian Meteorological Services Department (MMS) would be immediately transmitted to the patrol teams as well as to the Police Air Wing for verification and detailed investigations. In 1998, only 74% of the total number of “hot spots” detected were actual cases of open burning, while the rest were due to other activities such as gas flares at refineries, industrial activities, sea thermals, etc.

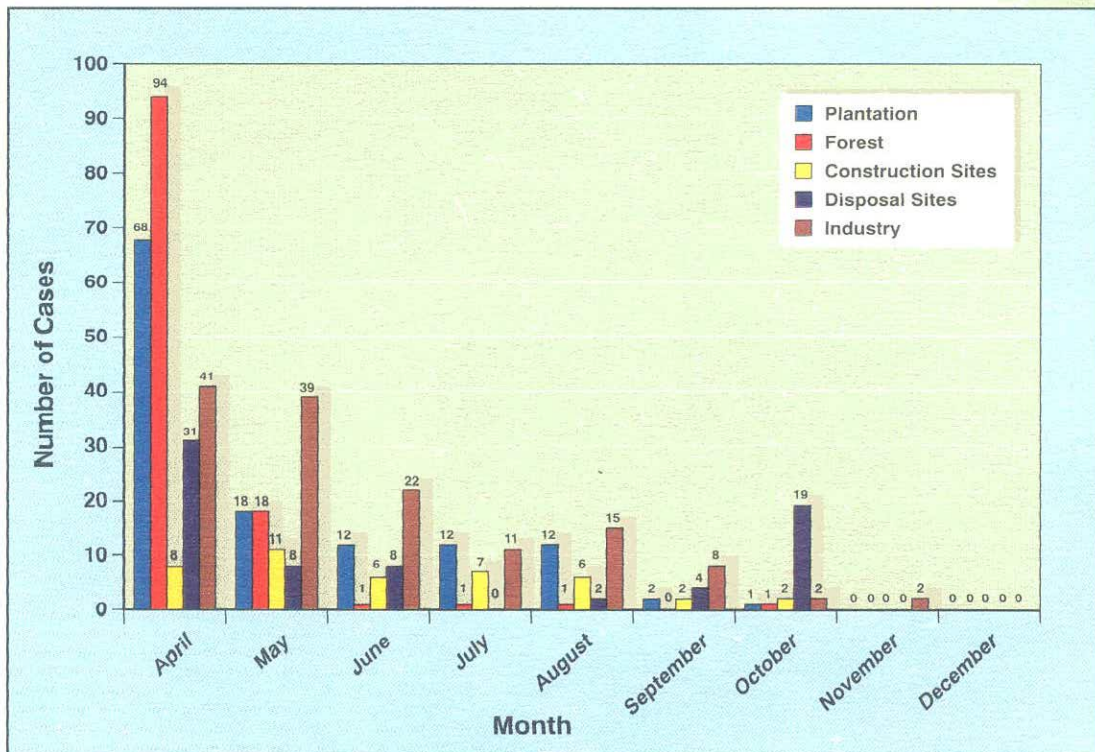


Figure 2.13 Malaysia: Number of Open Burning Cases (April 8 – December 31, 1998)



Illegal Open Burning at a Solid Waste Disposal Site.



Open Burning at Illegal Roadside Dumping Ground.

CONTRAVENTION LICENCE

Figure 2.14 shows the total number of applications for contravention licences received since 1986 under Section 22(1) and 25(1) of the Environmental Quality Act 1974 to emit air pollutants and discharge effluents exceeding prescribed standards.

The number of applications for contravening Section 22(1) decreased from 12 in 1997 to 4 in 1998. Out of these four applications, two were approved and two rejected due to inadequate information.

However, application for contravention under Section 25(1) increased from 78 in 1997 to 94 in 1998. (Figure 2.14). Seventy applications for contravention were approved, while 24 were rejected due to inadequate supporting data and information. Contravention licences were mostly given to the food and rubber-based industries. (Figure 2.15)

SEWAGE TREATMENT AND DISPOSAL

Partially treated or untreated domestic sewage discharges had been a significant source of river water pollution for many years. Consequently the sewage services was privatised to Indah Water Konsortium (IWK) to maintain, to upgrade and install new sewage treatment plants in the country. DOE

had been closely monitoring the implementation of the programme and the improvement of the quality of the sewage discharges. Based on the overall analysis in 1998, it was found that only 16.5% of the 5409 treatment plants taken over by the Konsortium could comply with the discharge standard specified in the Environmental Quality (Sewage and Industrial Effluent) Regulations 1979. The remaining 83.5% were given contravention licences under Section 25(1) EQA 1974 during the interim period while the plants were being upgraded. The number of such contravention licences however decreased from 3263 issued in 1997 to 2762 in 1998, of which 83% were for renewal of existing licences, while the other 17% were new applications.

By year end, IWK reported that about 1558 refurbishment works has begun, which involved a total cost of RM 119.3 million. So far, 379 plants had been fully refurbished and were closely monitored for 16 weeks to ensure compliance with the stipulated effluent discharge standards.

Under IWK's refurbishment programmes, priority would be given for refurbishment of sewage treatment plants located upstream of water-intake points as well as discharge into the ten most polluted rivers identified by DOE in 1997.

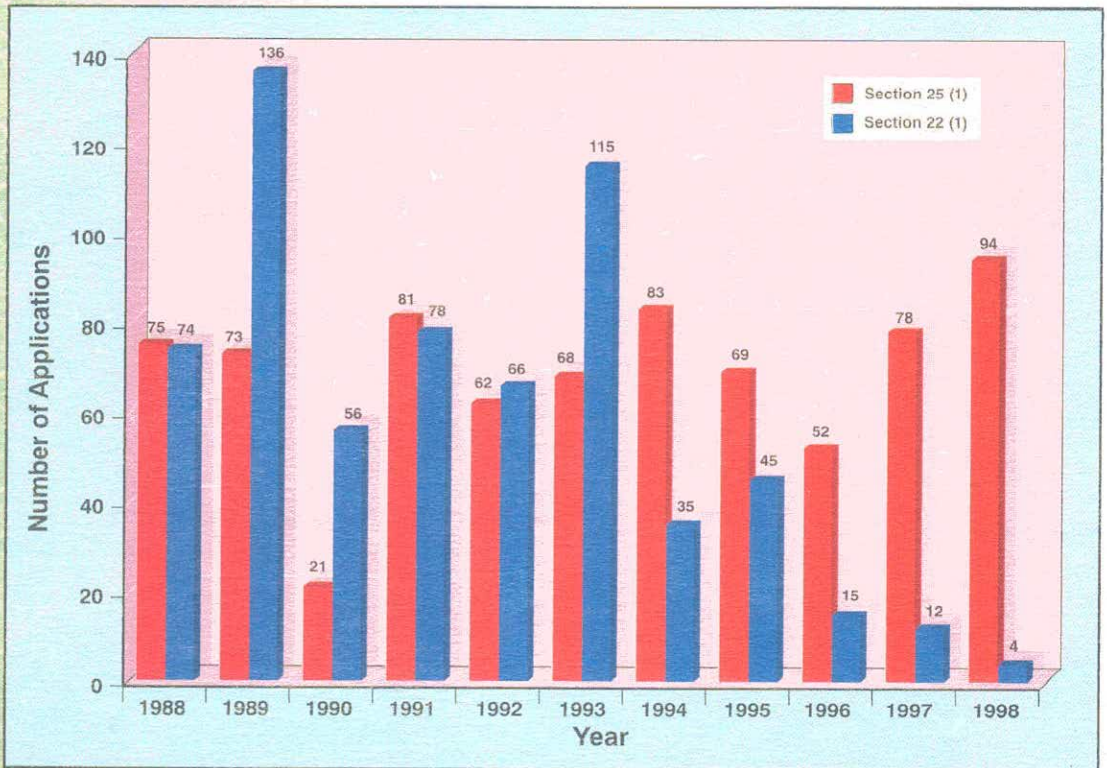


Figure 2.14 Department of Environment: Number of Applications for Contravention Licence under Sections 25(1) and 22(1), Environmental Quality Act 1974, 1988–1998

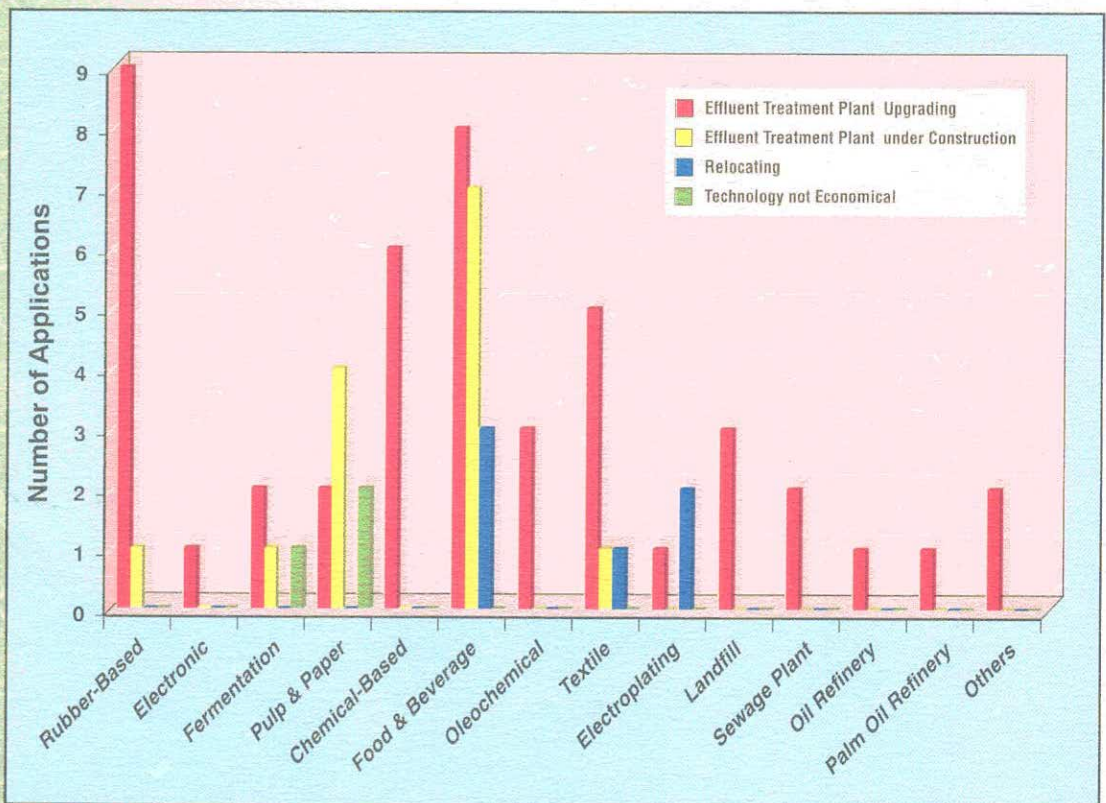


Figure 2.15 Department of Environment: Applications for Contravention Licences under Sections 25(1), EQA 1974 by Industry Type, 1998

Air pollution from motor vehicles could be a threat to human health. By the end of 1998, the number of motor vehicles registered for use in Malaysia was 8.9 million, an increase of 414,607 vehicles (4.9%) compared to 1997. Out of this total, 4.5 million (51%) were motorcycles, 3.5 million (39%) cars, and the remainder being utility vehicles, trucks and buses.

It was estimated that these vehicles were responsible for emitting approximately 2 million tonnes of carbon monoxide (CO), 236,600 tonnes of oxides of nitrogen (NOx), 111,300 tonnes of hydrocarbons (HC), 38,200 tonnes of sulphur dioxide (SO₂) and 17,300 tonnes of particulate matter into the atmosphere.

Black Smoke Emission

The enforcement of black smoke emissions from diesel powered vehicles is regulated under the Environmental Quality (Control of Emission from Diesel Engines) Regulations 1996. Enforcement campaigns were conducted under the AWASI (Area Watch And Sanction Inspection) programme, whereby mobile squads would patrol urban streets and would stop and test diesel vehicles observed to emit excessive black smoke.

From the AWASI campaigns conducted throughout the country in 1998, a total of 28,019 vehicles were visually inspected, out of which 1416 were summoned and 830 vehicles issued with prohibition orders. The prohibition order would only be lifted after the vehicle had undergone repairs and passed a smoke retest. (Figure 2.16 and Figure 2.17) Lorries were the main offenders with 466

summons, followed by buses (384 summons), small lorries (271 summons), vans (153 summons) and light duty trucks (115 summons) and taxis and private cars (27 summons). The overall percentage of compliance was 94.9%, showing an improvement of 2.9% compared to the figure in 1997 (Figure 2.18). A total of 98 drivers and vehicle owners were prosecuted for non-compliance.

Lead in Motor Gasoline

Under the Environmental Quality (Control of Lead Concentration in Motor Gasoline) Regulations 1985, lead content was reduced to 0.4 grams per litre on 1st January 1986 and to 0.15 grams per litre on 1st January 1990.

In 1998, all 45 samples of leaded petrol randomly collected from gasoline stations nationwide were found to comply with the lead content of 0.15 gramme per litre as specified under the said regulations. Nationwide retail sale of unleaded petrol has increase tremendously from 31% in 1992 to 84% in 1998. (Figure 2.19). Airborne lead in urban areas had greatly reduced since the introduction of unleaded petrol.

Sulphur Content in Diesel

The sulphur content of diesel in the Malaysian market is presently at 0.5% wt. maximum since its reduction from 1% in April 1994. Efforts have been initiated with related parties to reduce further the sulphur content in diesel with a view to improving diesel quality.

Motor Vehicle Noise

Noise emission from motor vehicles is regulated under the Environmental Quality (Motor Vehicle Noise) Regulations 1987, which came into force on 16 July 1987.

In 1998, 98 enforcement campaigns were conducted throughout the country by the Department of Environment with the cooperation of the Royal Malaysian Police. Out of the 6550 motorcycles tested, 1134 (17.3%) were summoned for violating the permissible noise limit as prescribed under the above regulations. (Figure 2.20 and Figure 2.21).

In addition, for the purpose of verifying conformity with the emission level under the above Regulations, motor vehicle assemblers were required to conduct noise level tests on new vehicles of each model assembled in Malaysia and results were submitted to the Department of Environment on a monthly basis. A total of 2594 new motorcycles from 23 different models assembled locally were tested (Figure 2.22). The test showed that all models complied with the stipulated noise emission standards.

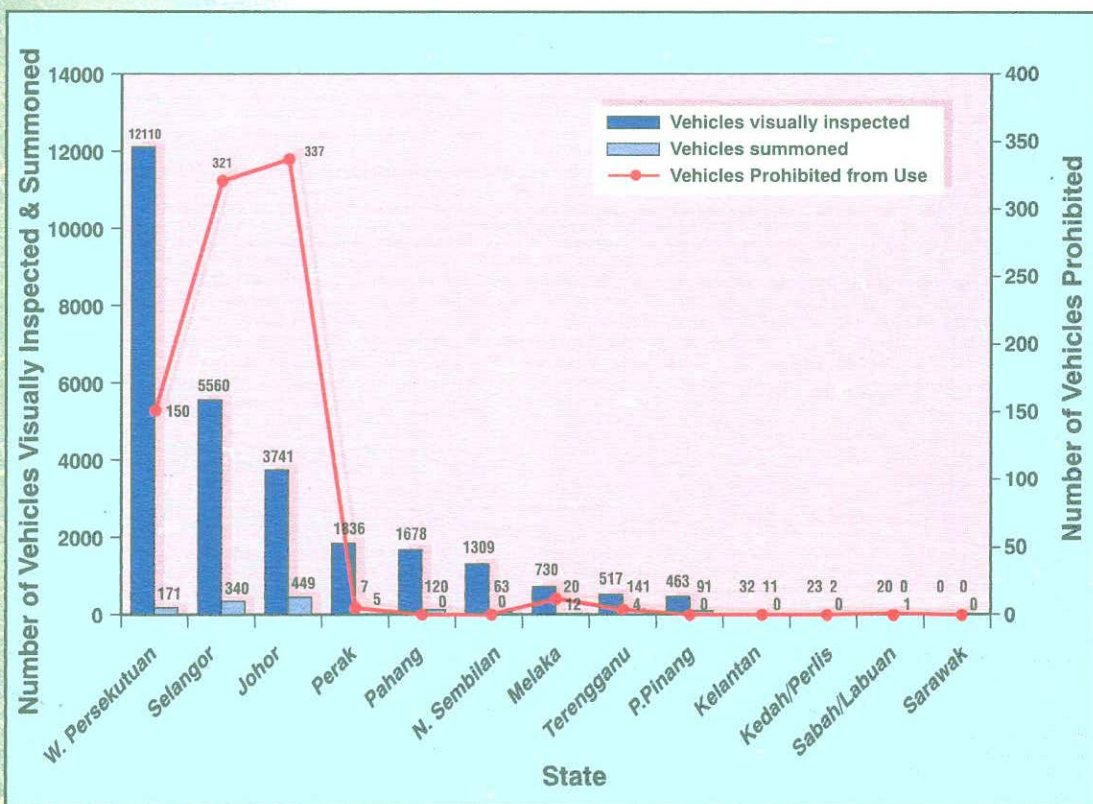


Figure 2.16 Department of Environment: Enforcement of Environment Quality (Control of Emission from Diesel Engines) Regulations 1996. Vehicles Visually Inspected, Summoned and Prohibited under the AWASI Programme according to States, 1998.

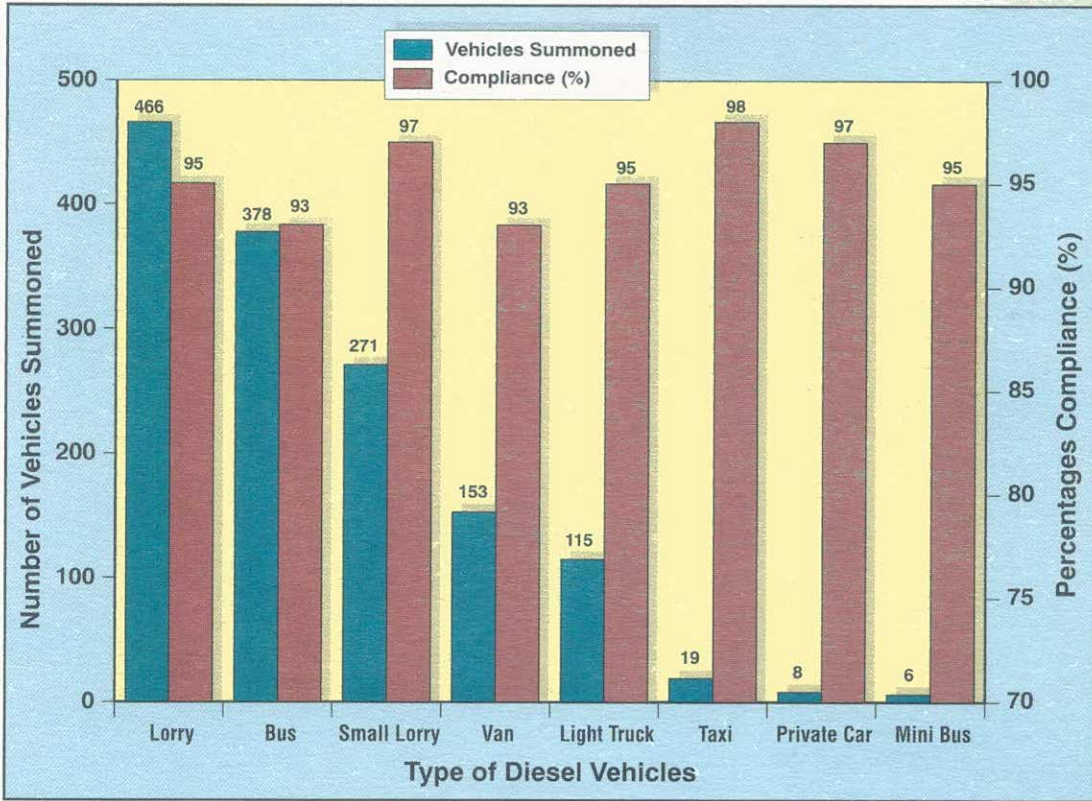


Figure 2.17 Department of Environment: Enforcement of Black Smoke Emission. Vehicles Summoned and Percentages of Compliance, According to Type of Vehicles, 1998.

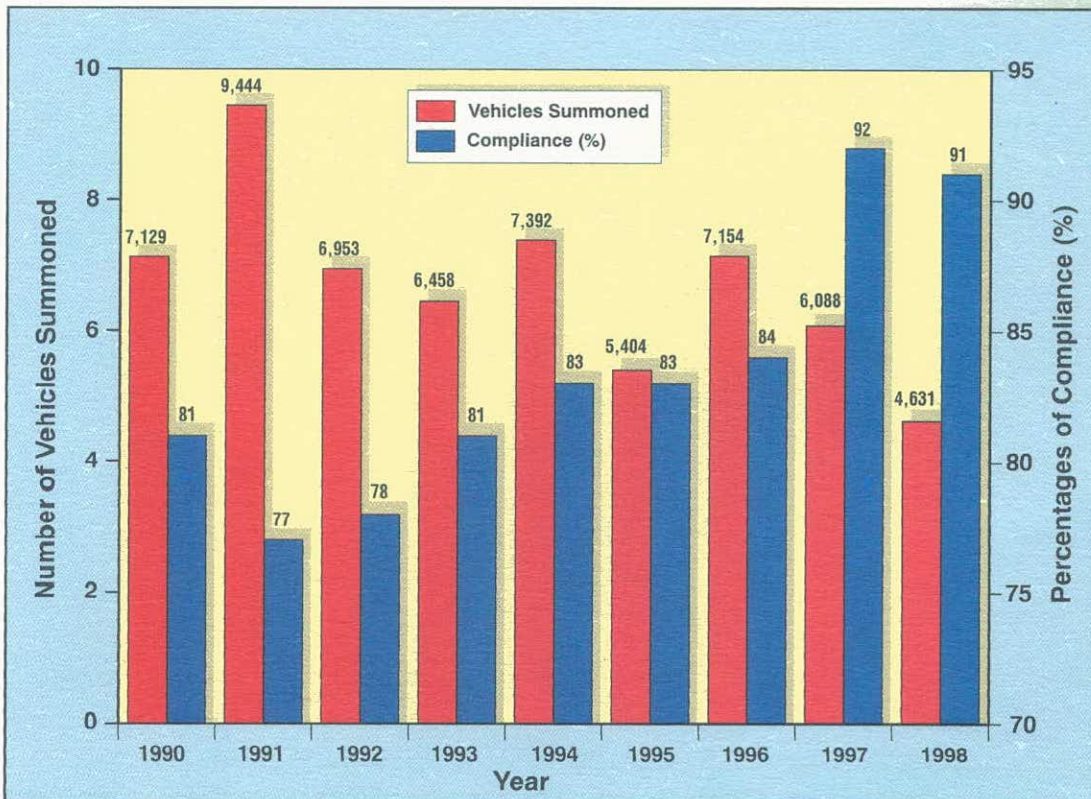


Figure 2.18 Department of Environment: Enforcement of Vehicular Black Smoke Emission, 1990–1998.

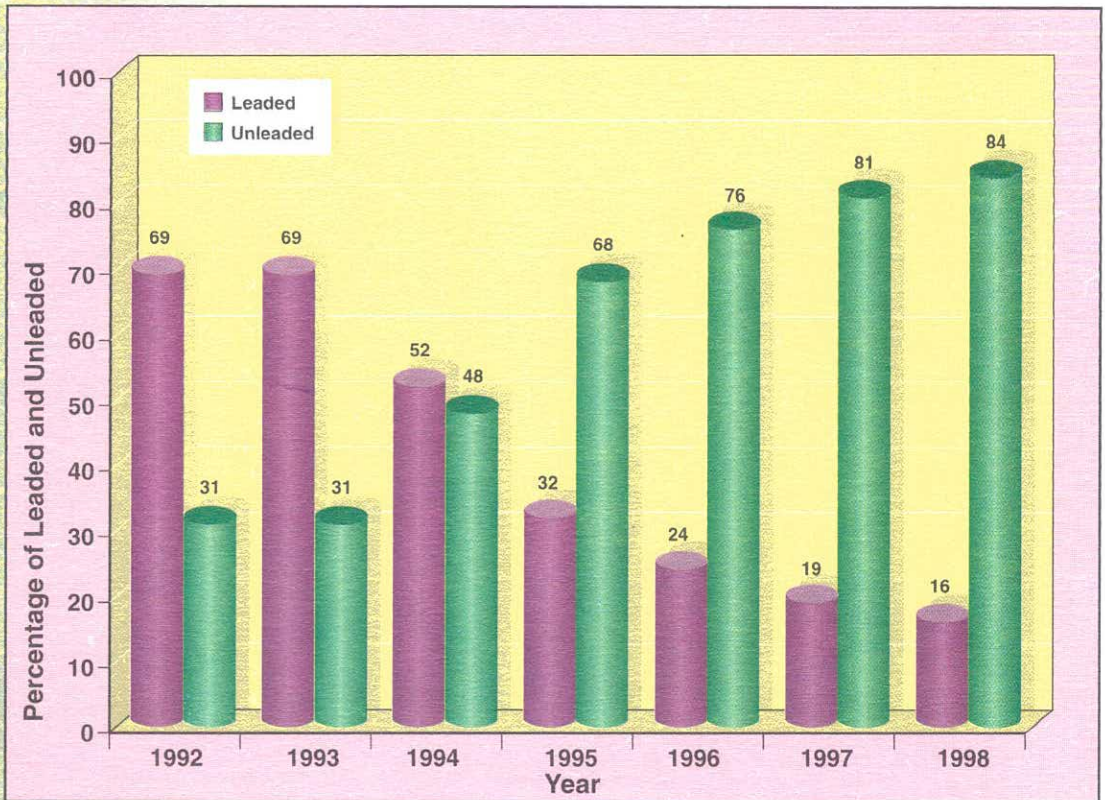


Figure 2.19 Malaysia: Percentage of Sale of Leaded and Unleaded Gasoline, 1992–1998.

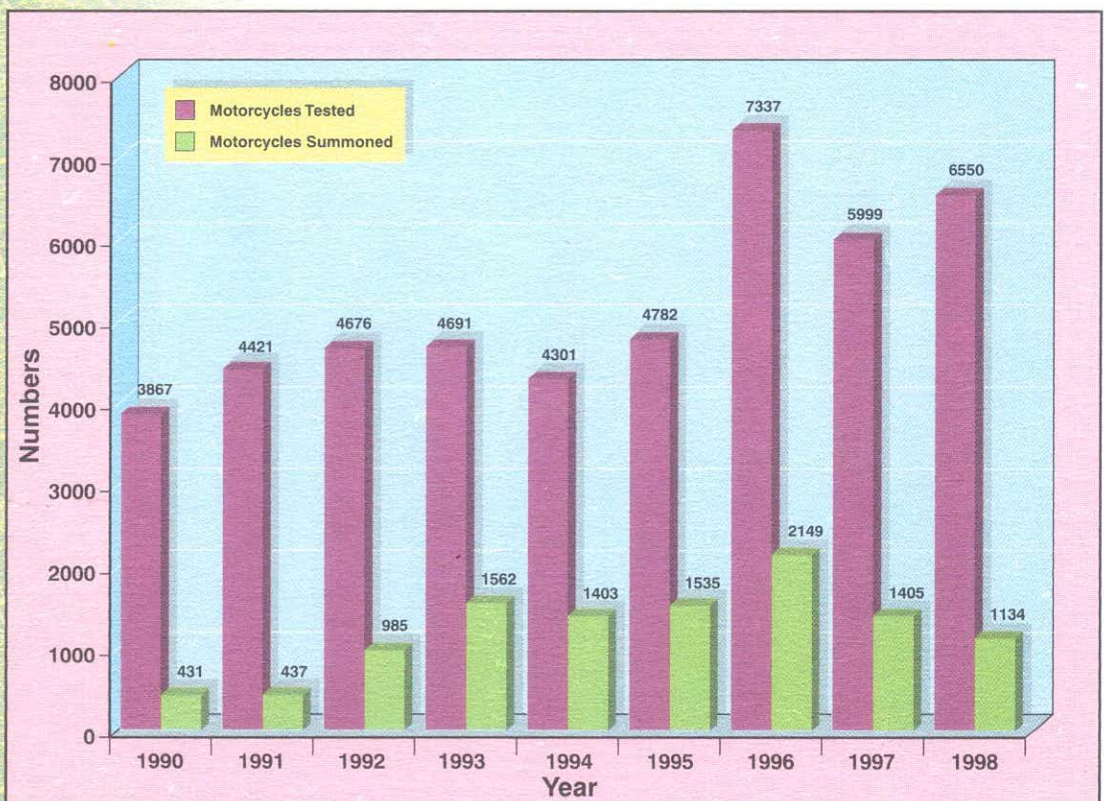


Figure 2.20 Department of Environment: Enforcement of Environmental Quality (Motor Vehicle Noise) Regulations 1987. Number of Motorcycles Tested and Summoned, 1990–1998.

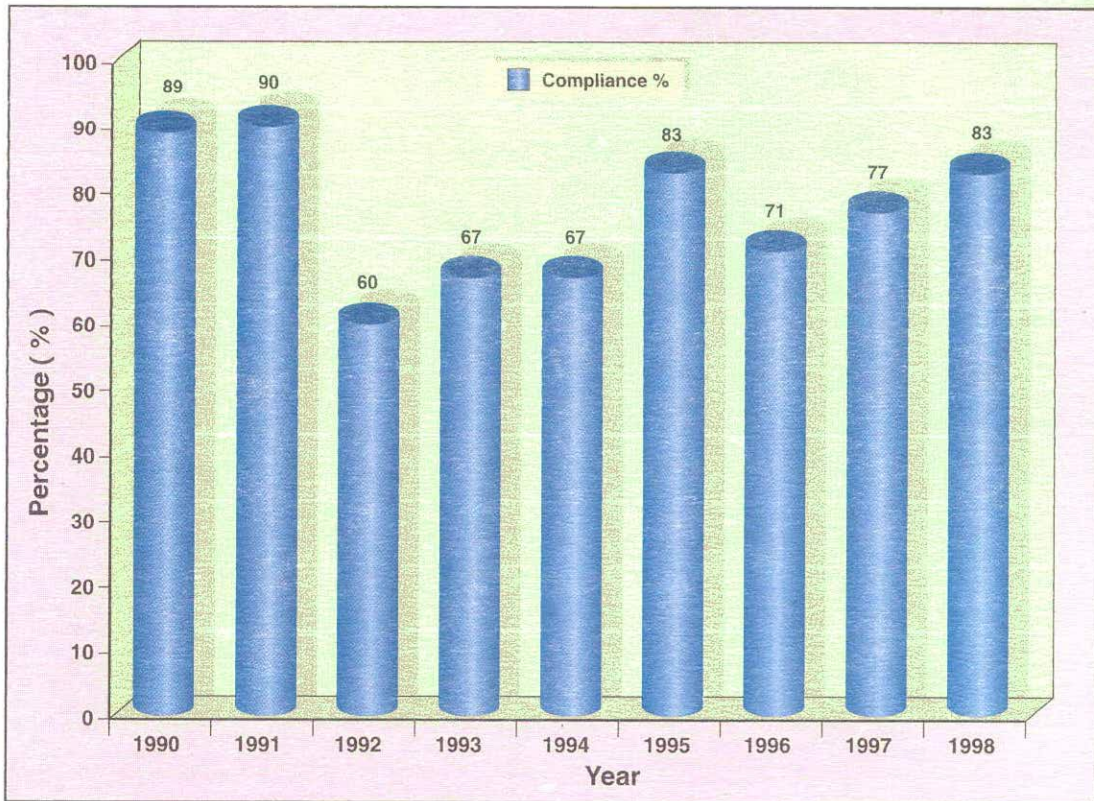


Figure 2.21 Department of Environment: Environmental Quality (Motor Vehicle Noise) Regulations, 1987. Percentage of Compliance at Kerbside, 1990–1998.

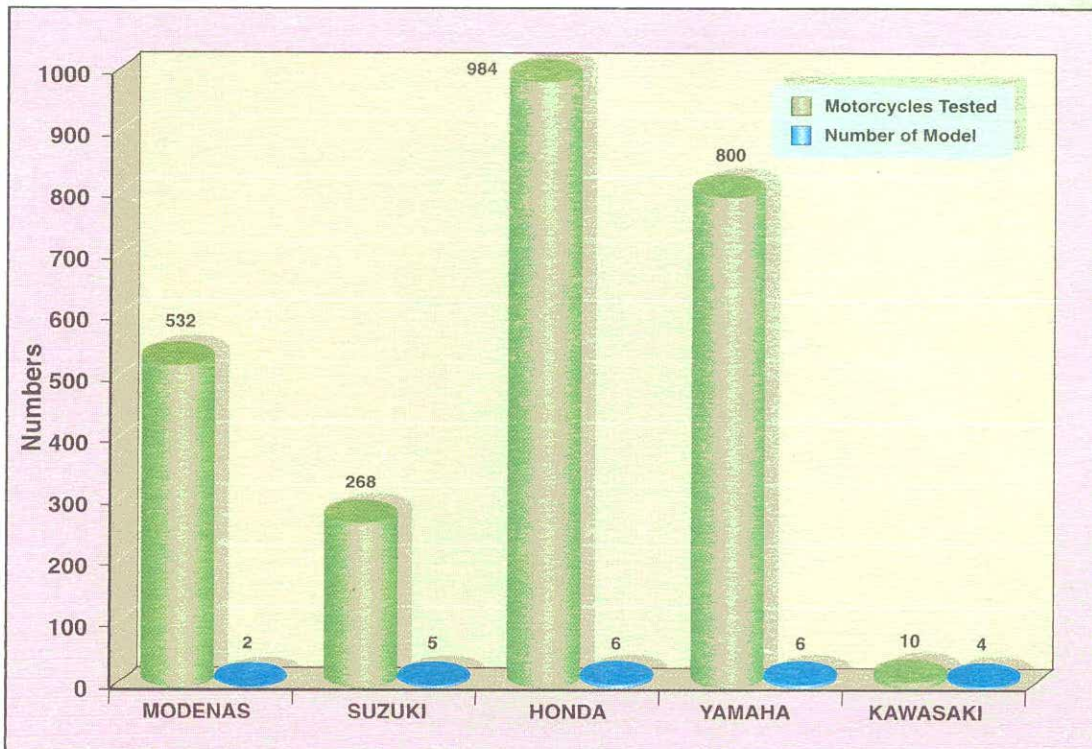


Figure 2.22 Department of Environment: Locally Assembled Motorcycles Noise Emission Test, 1998.

OIL SPILL RESPONSE

In 1998, 16 cases of oil spillage in Malaysian waters were reported to DOE, of which, 12 spills originated from vessels. The sources and causes of the spillage are as shown in Table 2.1. Based on evidence obtained, 2 cases were prosecuted and fined a total of RM158,170.00.

Major Oil Spill Incident

On 19 September 1998, Sungai Udang Port, Melaka reported sighting floating oil at its outfall. The spilled oil was low sulphur waxy residue (LWSR). It originated from a leaking flange at an onshore metering station at the Melaka Petronas Refinery. The incident

resulted in spillage of about 5800 barrels of which about 1500 barrels escaped to the sea. Due to the effect of current and waves and weathering, several beaches in Melaka, Port Dickson and Sepang were affected by tarballs. The Melaka Petronas Refinery Contingency Plan (Tier One) was activated to coordinate, control and conduct clean-up operations to avoid spill from dispersing and affecting other sensitive areas. Beach inspection and clean-up activities started on 19 September 1998 and continued daily for about a month. About 7000 man-days from Petronas Melaka, contractors, army and local authority personnel were mobilized in the clean-up operation.

Table 2.1 Department of Environment: Reported Cases of Oil Spillages in Malaysian Waters

Source of Spill	Cause	No. of Cases
Oil Well Blow-Out	Mechanical failure	1
	Human error	0
Pipeline	Rupture	0
Vessel	Collision	0
	Grounding	0
	Explosion and/or fire	0
	Illegal Discharging	12
	Desludging	1
Terminal and Depot	Overfilling	0
	Burst hose	0
	Explosion and/or fire	0
	Leaking valves and flanges	1
	Tank washing and deballasting	0
Unknown	Unknown	1
Total Number of Cases		16



Pollution by Low Sulphur Waxy Residue at Pantai Tanah Merah, Tanjung Keling, Melaka due to Oil Spill at Melaka Petronas Refinery Plant on 19 September 1998.



Pantai Tanah Merah, Tanjung Keling, Melaka after Beach Cleaning Up.

AIRBORNE SURVEILLANCE

The Airborne Surveillance Programme jointly conducted by the Department of Environment and the Police Air Wing provided useful and speedy information on violations of the Environmental Quality Act 1974. Helicopters and fixed-winged aircrafts were used.

Airborne surveillance was carried out to detect illegal oil and oily waste discharges in the Malaysian waters, black smoke emissions from industries, forest fires, open burning at solid waste dumping sites, illegal

dumping sites, construction sites, and land clearing activities. Such surveillance also helped to enhance ground enforcement on open burning and stack emissions from industries. In 1998 a total of 368 flights were carried out and 451 cases were detected.

In addition, the Royal Malaysian Air Force regularly assisted the Department to detect illegal oil and oily waste discharges in the Melaka Straits and the South China Sea.



Aerial view during an Airborne Surveillance Flight.

RESPONSE TO PUBLIC COMPLAINTS

The Department of Environment received a total of 2,708 complaints on environmental pollution in 1998, a decrease of 57 percent over 1997. The yearly trend of complaints since 1988 is shown in Figure 2.23.

Analysis of the complaints received showed that the State of Kuala Lumpur recorded the highest number of complaints (16 percent), followed by Johor, Melaka and Perak. The least number of complaints were received from Perlis followed by Sabah. The breakdown of complaints received throughout the country is as shown in Figure 2.24.

As in previous years, in numerical terms complaints of black smoke emission from motor vehicles made up about 74% of all complaints received. (Figure 2.25)

Figure 2.26 illustrates the breakdown of sources of air pollution complaints in 1998.

In respect of water pollution complaints, analysis showed that non-industrial sources, sewerage and food & beverage industries were major causes of water pollution complaints as shown in Figure 2.27.

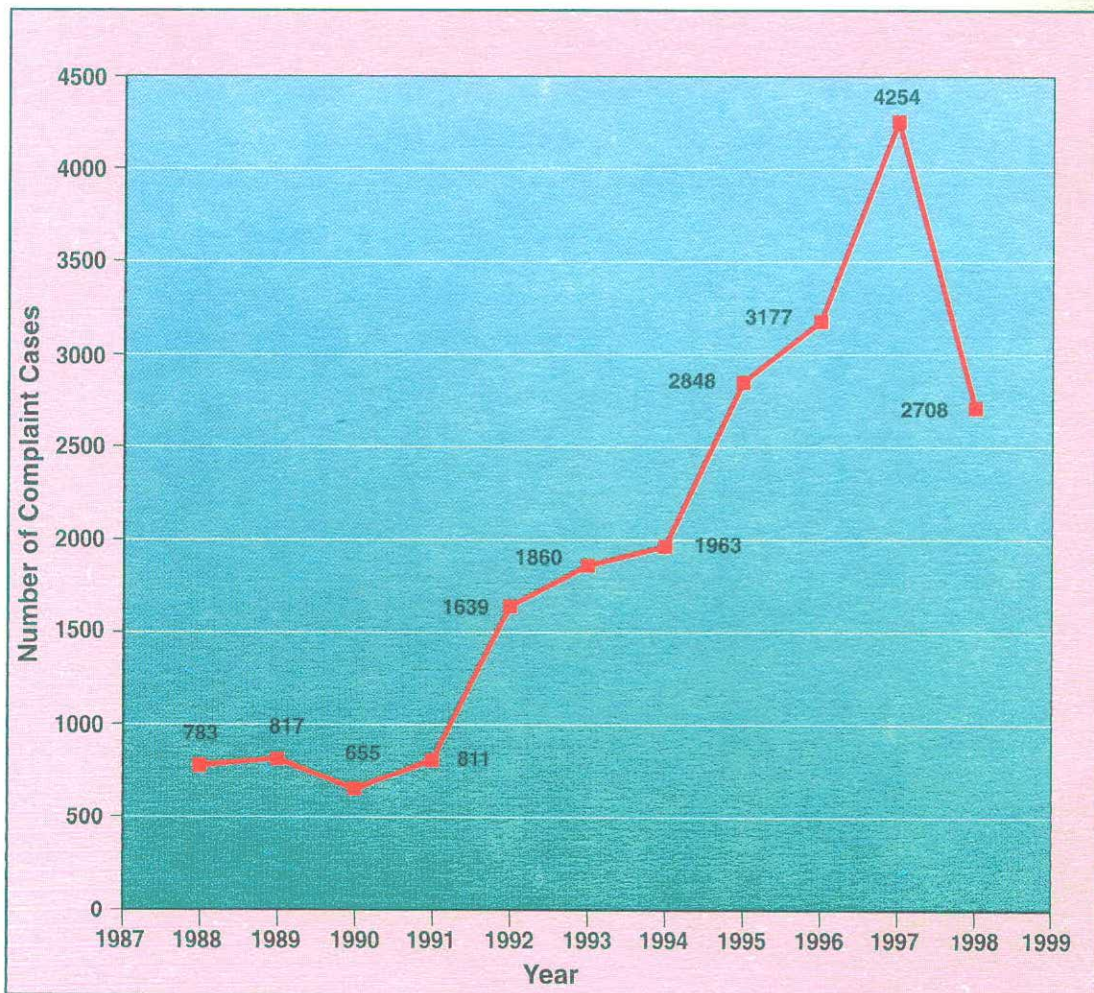


Figure 2.23 Department of Environment: Number of Complaint cases, 1988 – 1998

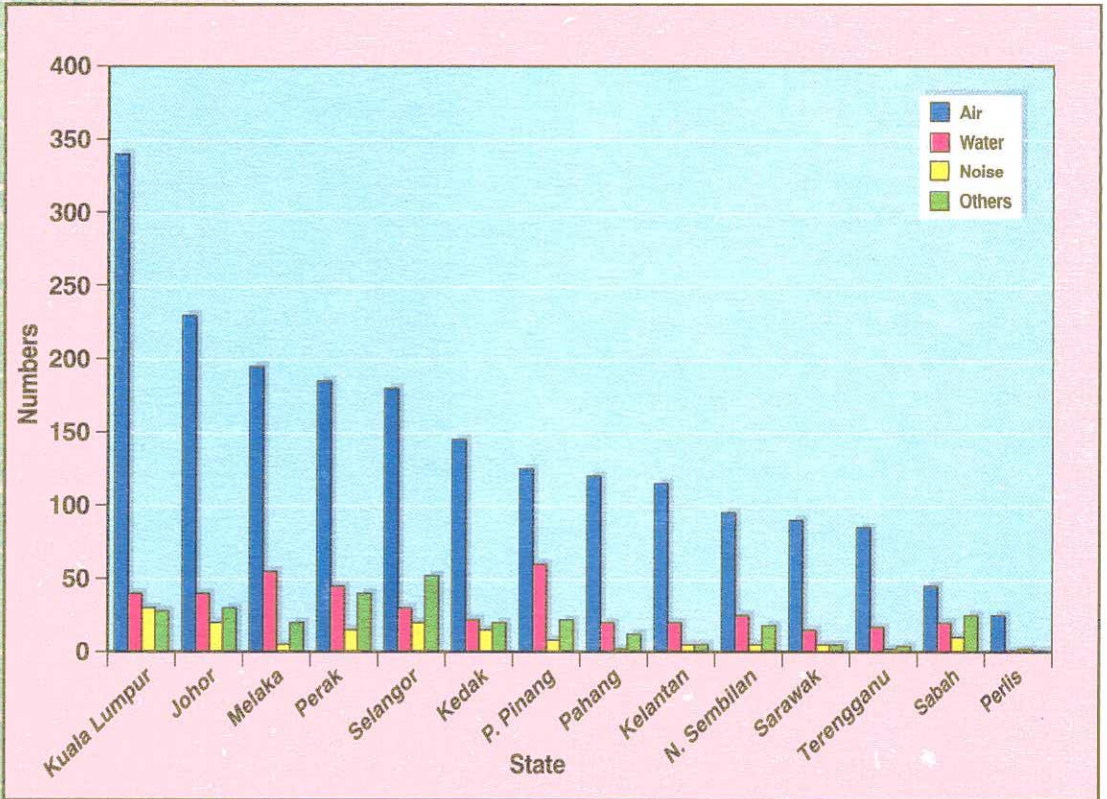


Figure 2.24 Department of Environment: Types of Pollution Compliants by States, 1998.

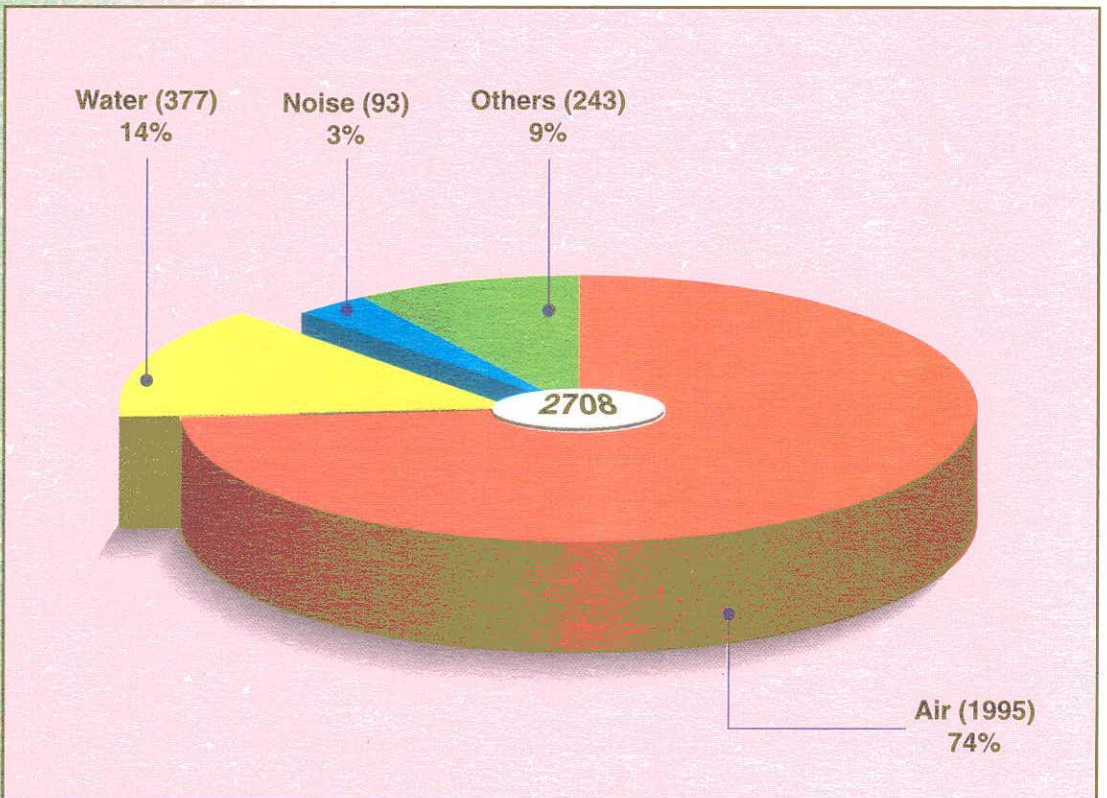


Figure 2.25 Department of Environment: Types of Complaints, 1998

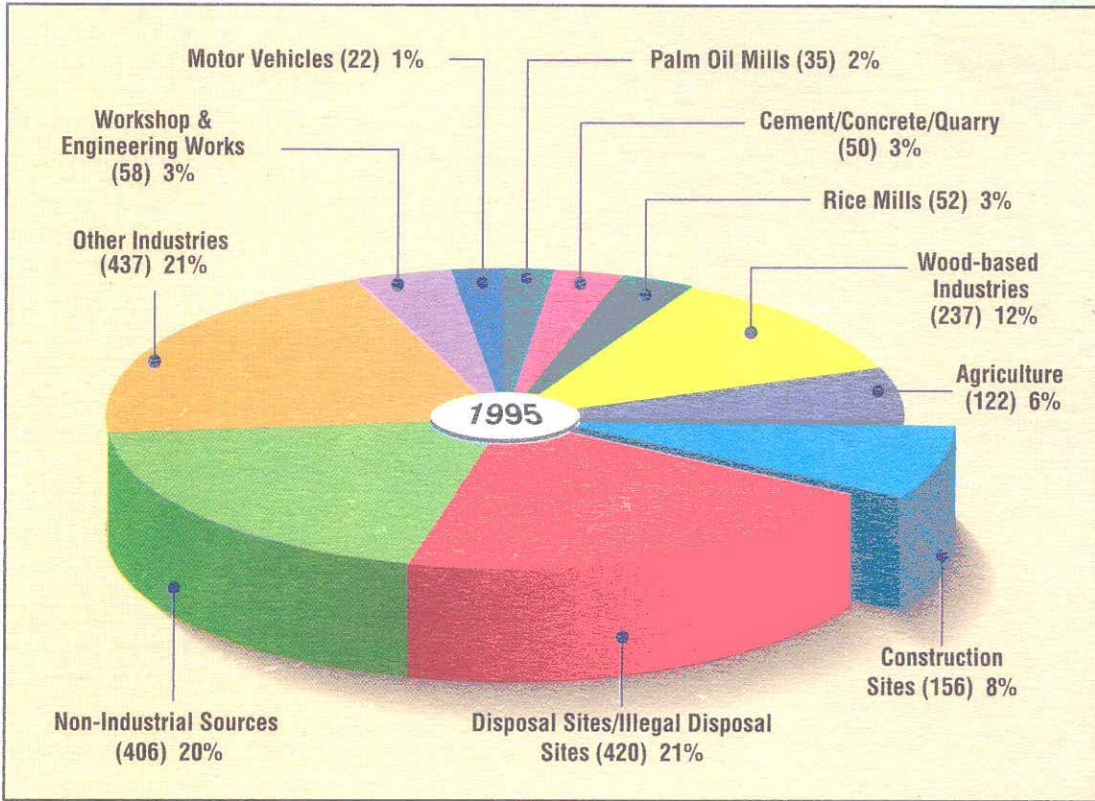


Figure 2.26 Department of Environment: Sources of Air Pollution Complaints, 1998

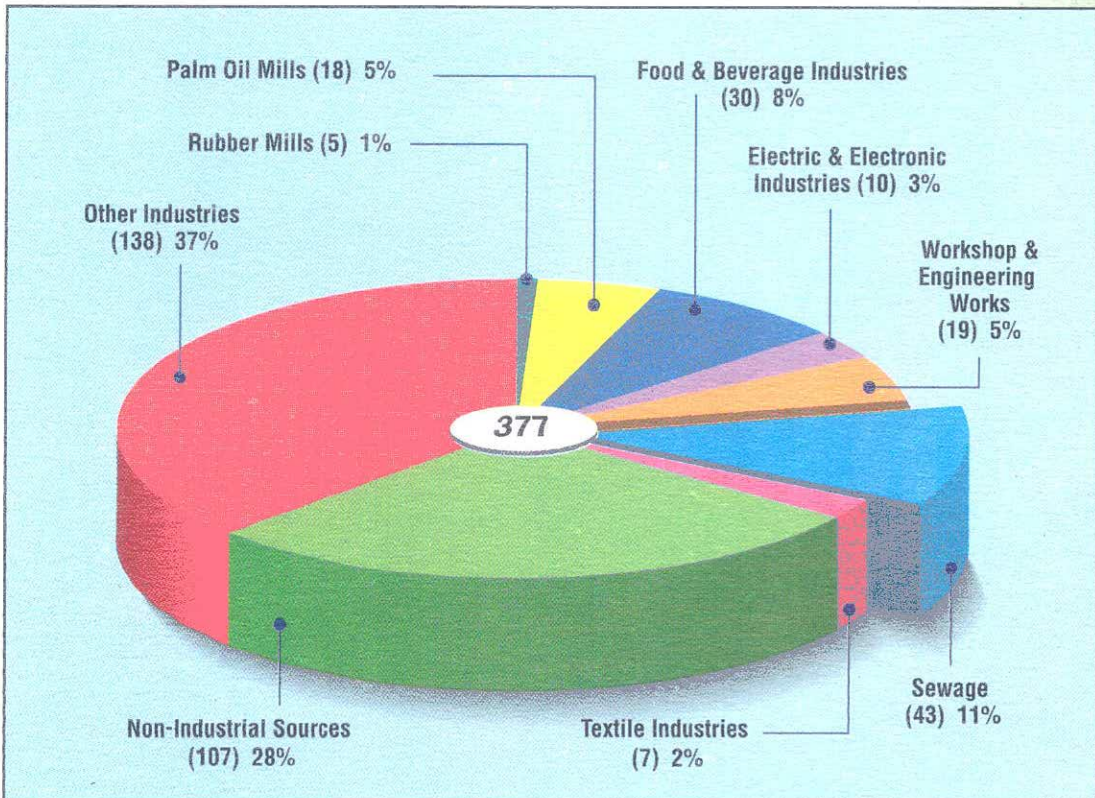


Figure 2.27 Department of Environment: Sources of Water Pollution Complaints, 1998

Prosecution

In 1998 a total of 253 premises and companies were prosecuted in court and a total of RM 2,570,700.00 in fines were collected. This represented a decrease of 8% in number of cases as compared to 1997, but an increase of 8% in terms of fines collected. Of the total number of cases prosecuted, 44 cases were for open burning. Total number of fines collected from these offences was RM361,700.00.

The types and numbers of prosecution cases are as shown in Figure 2.28. Figure 2.29 shows the total number of offences prosecuted between 1988-1999, while Figure 2.30 indicates the number of cases prosecuted and fines collected in 1998.

Compounds

A total number of 1628 compounds were issued to premises and companies for various offences contravening the Environmental Quality (Clean Air) Regulations, 1978 and Environmental Quality (Scheduled Wastes)

Regulations, 1989 (Figure 2.31). A sum of RM2,248,650.00 in compound fines was collected. Sixty eight percent of the cases were offences under the Clean Air Regulations (Figure 2.32), while 32% were offences involving handling of scheduled wastes.

Prohibition Orders

Under Section 31A, the Director-General of Environment may issue prohibition orders to owners or occupiers of industrial plants or processes to stop operation and releases of environmentally hazardous substances of pollutants into the environment. Such prohibition orders are imposed when the release of such pollutants may pose or cause serious damage to the environment or may threaten the well-being of the public living in the vicinity. In 1998, 6 prohibition orders were issued; 3 for offences pertaining to pollution of inland waters and 3 for air pollution. The prohibition will be lifted once remedial measures to prevent further releases of pollutants are implemented.

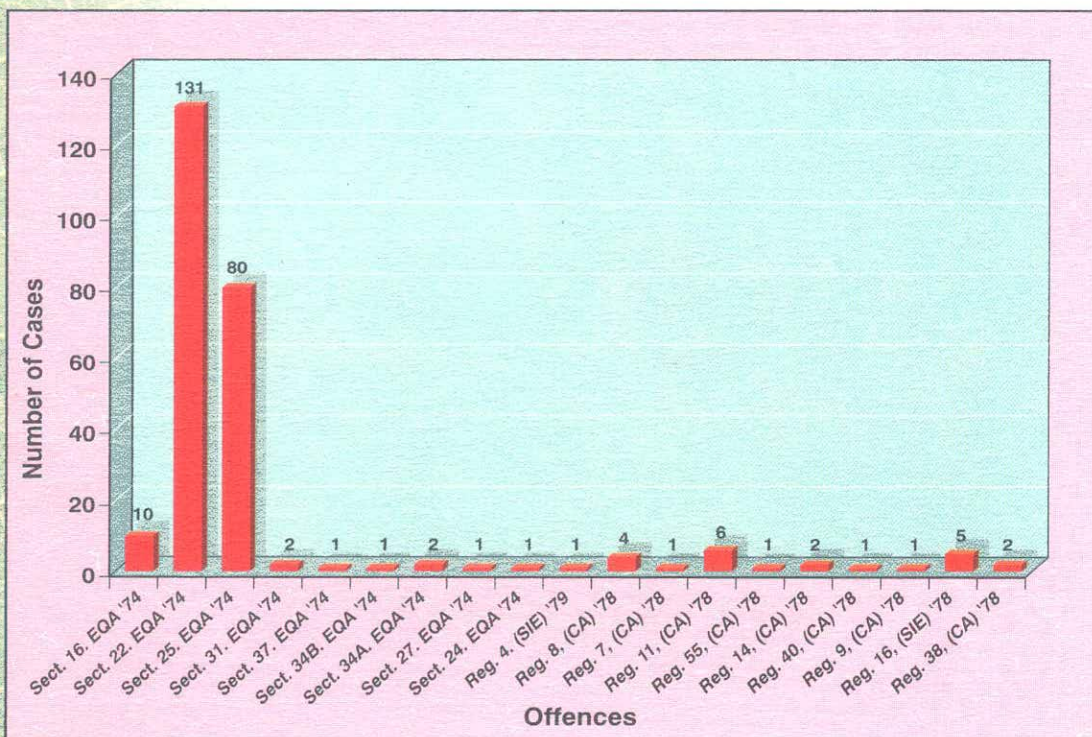


Figure 2.28 Department of Environment: Number of Cases Prosecuted according to Offences, 1998.

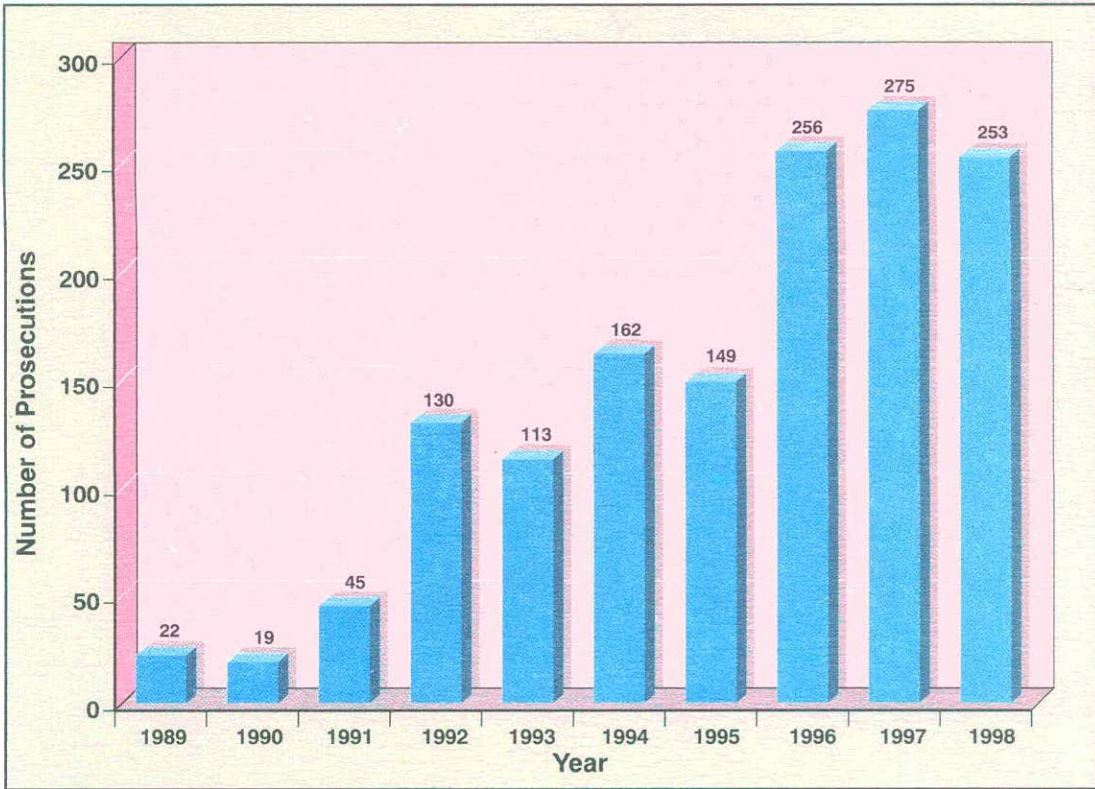


Figure 2.29 Department of Environment: Number of Offences Prosecuted under the Environmental Quality Act, 1974 and Regulations made thereunder, 1989-1998.

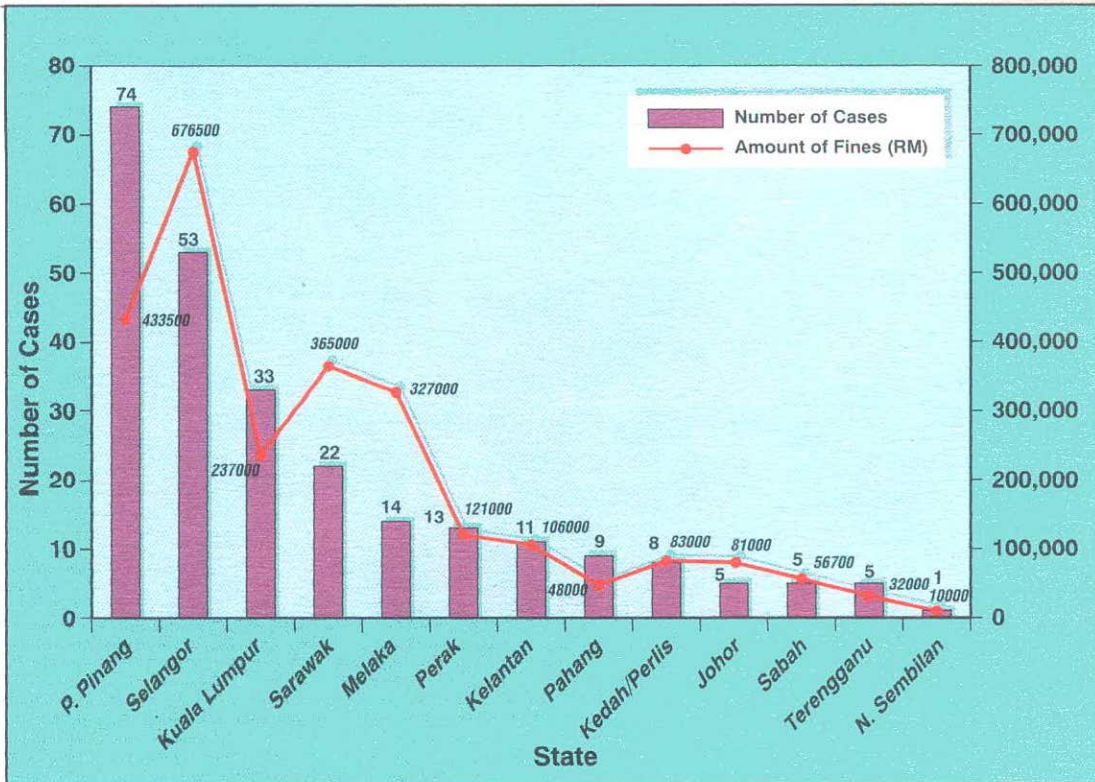


Figure 2.30 Department of Environment: Cases Prosecuted and Fines Imposed by States, 1998.

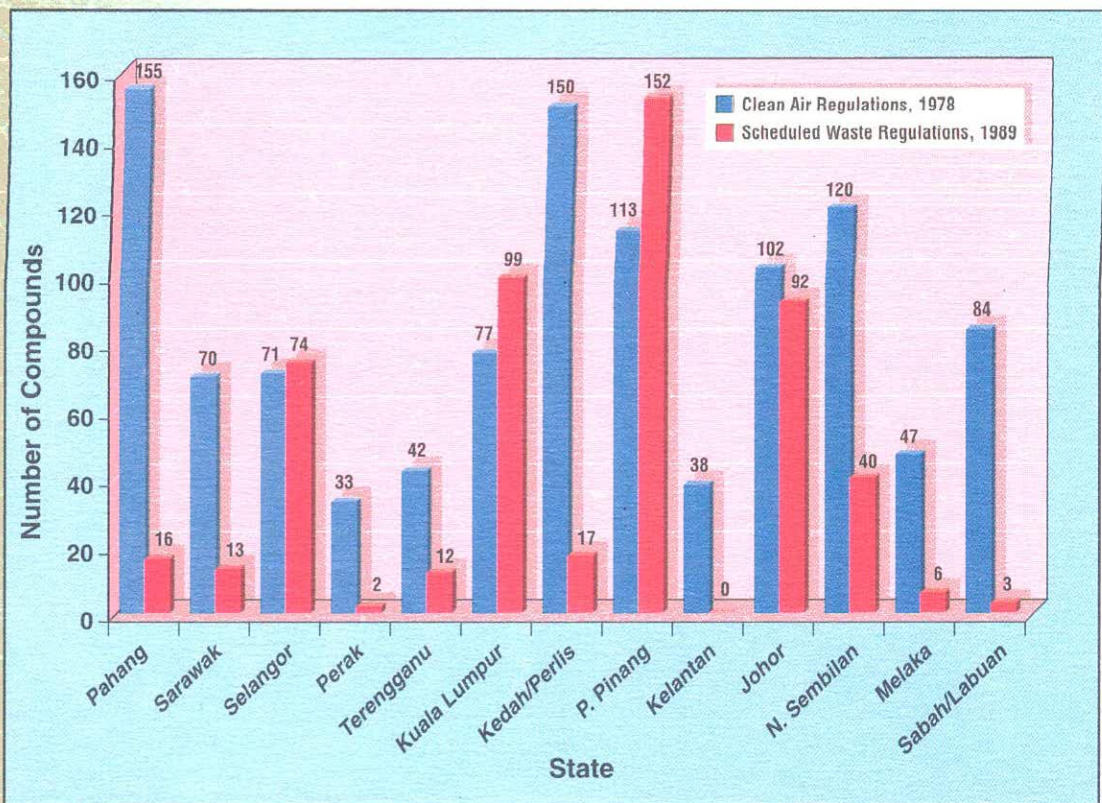


Figure 2.31 Department of Environment: Number of Compounds Issued to Premises by States and Types, 1998

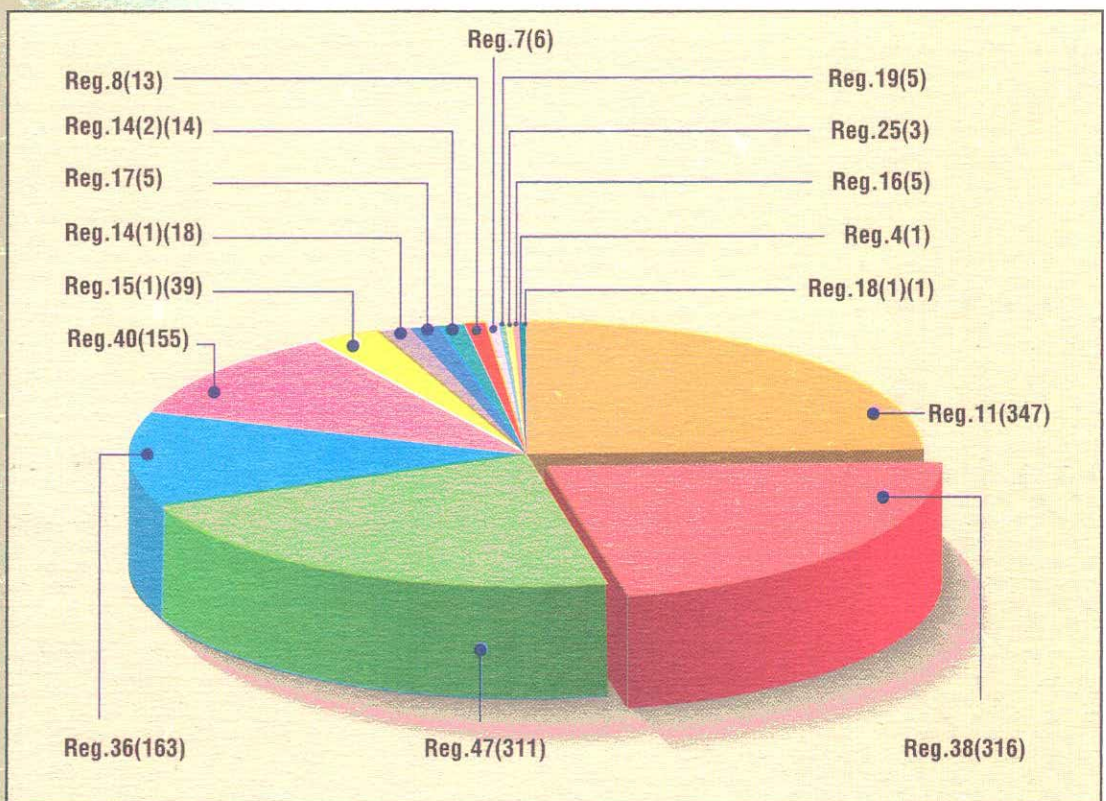


Figure 2.32 Department of Environment: Cases Compounded under the Clean Air Regulations 1998