



Laporan Tahunan **2003** *Annual Report*



Jabatan Alam Sekitar, Malaysia
Department of Environment, Malaysia

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Bank Pembangunan Asia	ADB	Asian Development Bank
Tahun Alam Sekitar ASEAN	AEY	ASEAN Environment Year
Akta Kualiti Alam Sekeliling	AKAS	Environmental Quality Act
Mesyuarat Menteri-Menteri ASEAN Mengenai Alam Sekitar	AMME	ASEAN Ministerial Meeting on the Environment
Pertubuhan Negara-Negara Asia Tenggara	ASEAN	Association of South East Asian Nations
Pegawai Kanan Alam Sekitar ASEAN	ASOEN	ASEAN Senior Officials on the Environment
Area Watch and Sanction Inspection	AWASI	Area Watch and Sanction Inspection
Buangan Terjadual	BT	Scheduled Wastes
Brunei-Indonesia-Malaysia-Filipina	BIMP	Brunei-Indonesia-Malaysia-Philippines
Keperluan Oksigen Biokimia	BOD	Biochemical Oxygen Demand
Bahan Pemusnah Ozon	BPO	Ozone Depleting Substances
Udara Bersih	CA	Clean Air
Pusat bagi Alam Sekitar, Teknologi dan Pembangunan Malaysia	CETDEM	Centre for Environment, Technology and Development Malaysia
Klorofluorokarbon	CFC	Chlorofluorocarbon
Majlis Industri Kimia Malaysia	CICM	Chemical Industries Council of Malaysia
Pusat Pengurusan Pantai	CMC	Coastal Management Centre
Badan Penyelaras Mengenai Laut Asia Timur	COBSEA	Co-ordinating Body for the Seas of East Asia
Keperluan Oksigen Kimia	COD	Chemical Oxygen Demand
Kelapa Sawit Mentah	CPO	Crude Palm Oil
desibel	dB	decibel(s)
Jabatan Alam Sekitar	DOE	Department of Environment
Sistem Pengurusan Dokumen	DOKUMAS	Document Management System
Kawasan Pertumbuhan ASEAN Timur	EAGA	East ASEAN Growth Area
Escherichia coli	E.coli	Escherichia coli
Zon Ekonomi Eksklusif	EEZ	Exclusive Economic Zone
Penilaian Kesan Kepada Alam Sekeliling	EIA	Environment Impact Assessment

Persatuan Perlindungan Alam Sekitar Malaysia	EPSM	Environment Protection Society of Malaysia
Unit Perancang Ekonomi	EPU	Economic Planning Unit
Majlis Kualiti Alam Sekeliling	EQC	Environmental Quality Council
Laporan Kualiti Alam Sekeliling	EQR	Environmental Quality Report
Pesuruhjaya Ekonomi & Sosial Asia Pasifik	ESCAP	Economic & Social Commission for Asia and the Pacific
Institut Alam Sekitar Malaysia	EIMAS	Environment Institute of Malaysia
Ahli Mesyuarat Kerajaan Negeri	EXCO	Executive Councillors
Persekutuan Pekilang-Pekilang Malaysia	FMM	Federation of Malaysian Manufacturers
Persekutuan Pertubuhan Pengguna-Pengguna Malaysia	FOMCA	Federation of Malaysian Consumers' Associations
Institut Penyelidikan Hutan Malaysia	FRIM	Forest Research Institute of Malaysia
Gabungan Persatuan-Persatuan Perdagangan Getah Malaysia	FRTAM	Federation of Rubber Trade Associations of Malaysia
Kemudahan Alam Sekitar Global	GEF	Global Environment Facility
Sistem Maklumat Geografik	GIS	Geographical Information System
Hydro Klorofluorokarbon	HCFC	Hydro chlorofluorocarbon
Pengurusan Zon Pantai Bersepadu	ICZM	Integrated Coastal Zone Management
Unit Asap Hartridge	HSU	Hartridge Smoke Unit
Institut Diplomasi & Hal Ehwal Luar	IDHL	Institute of Diplomacy and Foreign Relations
Indeks Kualiti Air Negara	IKAN	National Water Quality Index
Organisasi Maritim Antarabangsa	IMO	International Maritime Organisation
Sistem Rujukan Antarabangsa untuk Sumber - Sumber Maklumat Mengenai Alam Sekitar	INFOTERRA	International Referral System for Sources of Environmental Information
Institut Tadbiran Awam Negara	INTAN	National Institute of Public Administration
Program Antarabangsa Mengenai Keselamatan Bahan Kimia	IPCS	International Programme on Chemical Safety
Pendaftaran Antarabangsa Bagi Bahan Kimia Yang Berpotensi Berbahaya	IRPTC	International Register of Potentially Toxic Chemicals
Institut Kajian Strategik dan Antarabangsa	ISIS	Institute of Strategic and International Studies

Agensi Kerjasama Antarabangsa Jepun	JICA	Japan International Co-operation Agency
Jabatan Perkhidmatan Awam	JPA	Public Service Department
Kementerian Sains, Teknologi dan Alam Sekitar	MOSTE	Ministry of Science, Technology and the Environment
Kumbahan & Effluent-Effluent Perindustrian	KEEP	Sewerage & Industrial Effluents
Kilang Kelapa Sawit Mentah	KKSM	Crude Palm Oil Mill
Kementerian Sains, Teknologi dan Alam Sekitar	KSTAS	Ministry of Science, Technology and the Environment
Penyaman Udara Kenderaan	MAC	Mobile Air Conditioning
Pusat "Remote Sensing" Malaysia	MACRES	Malaysian Centre for Remote Sensing
Minggu Alam Sekitar Malaysia	MASM	Malaysia Environment Week
Menteri dan Ahli Majlis Mesyuarat Kerajaan Negeri yang Bertanggungjawab ke atas Alam Sekitar	MEXCOE	Ministers and State Executive Councillors Responsible for Environmental Matters
Dewan Perdagangan dan Industri Antarabangsa Malaysia	MICCI	Malaysian International Chamber of Commerce and Industry
Institut Penyelidikan Ekonomi Malaysia	MIER	Malaysian Institute of Economic Research
Institut Teknologi Nuklear Malaysia	MINT	Malaysian Institute of Nuclear Technology
Persatuan Pemasang Kenderaan Bermotor Malaysia	MMVAA	Malaysian Motor Vehicle Assemblers Association
Persatuan Pencinta Alam Malaysia	MNS	Malaysian Nature Society
Kementerian Perdagangan Antarabangsa dan Industri	MITI	Ministry of International Trade and Industry
Pertubuhan Kelapa Sawit Malaysia	MPOA	Malaysia Palm Oil Association
Kementerian Pertanian	MOA	Ministry of Agriculture
Kementerian Kesihatan	MOH	Ministry of Health
Kementerian Pembangunan Sumber Manusia	MOHR	Ministry of Human Resources
Kementerian Pengangkutan	MOT	Ministry of Transport
Memorandum Persefahaman	MOU	Memorandum of Understanding
Majlis Pengeluar-Pengeluar Getah Malaysia	MRPC	Malaysian Rubber Products Manufacturers' Council

Jawatankuasa Bersama Malaysia-Singapura Mengenai Alam Sekitar	MSJCE	Malaysia-Singapore Joint Committee on the Environment
Pertubuhan Bukan Kerajaan	NGO	Non-Governmental Organisation
Amoniakal Nitrogen	NH ₃ N	Ammoniacal Nitrogen
Pertubuhan Kerjasama Ekonomi dan Pembangunan	OECD	Organisation for Economic Co-operation and Development
Kerjasama Pengurusan Alam Sekitar bagi Laut Asia Timur	PEMSEA	Partnership in Environmental Management for the Seas of East Asia
Kebenaran Makluman Awal	PIC	Prior Informed Consent
Persatuan Pekilang-Pekilang Minyak Kelapa Sawit Malaysia	POMA	Palm Oil Millers' Association
Institut Penyelidikan Minyak Kelapa Sawit	PORIM	Palm Oil Research Institute of Malaysia
Ringgit Malaysia	RM	Ringgit Malaysia
Institut Penyelidikan Getah Malaysia	RRIM	Rubber Research Institute of Malaysia
Urusetia Konvensyen Basel	SBC	Secretariat for Basel Convention
Agensi Pembangunan Antarabangsa Sweden	SIDA	Swedish International Development Agency
Institut Standard dan Penyelidikan Industri Malaysia	SIRIM	Standard Industrial Research Institute of Malaysia
Udara Bersih	UB	Clean Air
Universiti Islam Antarabangsa	UIA	International Islamic University
Universiti Kebangsaan Malaysia	UKM	Universiti Kebangsaan Malaysia
Universiti Malaya	UM	Universiti Malaya
Persidangan Bangsa-Bangsa Bersatu Mengenai Alam Sekitar dan Pembangunan	UNCED	United Nations Conference on Environment and Development
Program Pembangunan Bangsa-Bangsa Bersatu	UNDP	United Nations Development Programme
Program Alam Sekitar Bangsa-Bangsa Bersatu	UNEP	United Nations Environment Programme
Universiti Tenaga Malaysia	UNITEN	Universiti Tenaga Malaysia
Unit Perancang Ekonomi	UPE	Economic Planning Unit
Universiti Putra Malaysia	UPM	Universiti Putra Malaysia
Universiti Sains Malaysia	USM	Universiti Sains Malaysia

Universiti Teknologi Malaysia	UTM	Universiti Teknologi Malaysia
Universiti Utara Malaysia	UUM	Universiti Utara Malaysia
Pertubuhan Kesihatan Sedunia	WHO	World Health Organisation
Indeks Kualiti Air	WQI	Water Quality Index
Dana Pertubuhan Pemeliharaan Alam Sekitar	WWF	Worldwide Fund for Nature
Wilayah Persekutuan Kuala Lumpur	WPKL	Federal Territory of Kuala Lumpur
Penyaman Udara Refrigeran	RAC	Refrigerant Air Conditioning
Getah Asli Mentah	RNR	Raw Natural Rubber
Industri Kecil Dan Sederhana	SMI	Small and Medium Industry
Mesyuarat Pegawai-Pegawai Kanan	SOM	Senior Officials' Meeting
Pepejal Terampai	SS	Suspended Solids
Buangan Terjadual	SW	Scheduled Wastes
Jumlah Partikulat Terampai	TSP	Total Suspended Particulate
Gasolin Tanpa Plumbum	ULG	Unleaded Gasoline
Polisi Alam Sekitar Kebangsaan	NPOE	National Policy on the Environment
Badan Sumber Asli dan Alam Sekitar	NREB	Natural Resources and Environment Board
Bahan Pemusnah Ozon	ODS	Ozone-Depleting Substance
Program Pemantauan Kualiti Air Kebangsaan	NAQMP	National Air Quality Monitoring Programme
Pusat Rujukan Kebangsaan	NFP	National Focal-Point
Kumpulan Petugas Terbuka	OEWG	Open-Ended Working Group
Bahan Partikulat 10 micron	PM ₁₀	Particulate Matter 10 micron
Yang Amat Berhormat	Y.A.B	The Right Honorable
Yang Berhormat	Y.B.	The Honorable
Polis DiRaja Malaysia	PDRM	Royal Malaysian Police
Wilayah Kualiti Air	WQR	Water Quality Region



Prakata Foreword

Saya dengan sukacitanya membentangkan Laporan Tahunan Jabatan Alam Sekitar 2003 yang menghuraikan aktiviti-aktiviti utama dan pencapaian Jabatan dalam tahun semasa.

Menyedari bahawa peranan melindungi alam sekitar memerlukan komitmen dari pelbagai pihak, Jabatan Alam Sekitar (JAS) telah memperluaskan program promosi kesedaran alam sekitar bagi meliputi lebih banyak kumpulan sasaran. Penganjuran Persidangan Wanita dan Alam Sekitar, contohnya, berjaya mengetengahkan kepentingan peranan wanita dalam menjaga alam sekitar. Tahun 2003 juga telah menyaksikan pelancaran dua program baru iaitu Bandar Lestari-Anugerah Alam Sekitar dan Anugerah Sekolah Lestari. Kedua-dua program ini bertujuan untuk menerapkan kepentingan menghargai dan melindungi alam sekitar di dalam budaya kerja dan hidup seharian di kalangan pihak pentadbir dan komuniti setempat. Diharapkan pendekatan baru ini

I am pleased to present herewith the Department of Environment's Annual Report 2003 which summarises the major activities and achievement of the Department for the year under review.

Realising that environmental protection requires commitment from various parties, DOE has taken steps to enhance its environmental awareness and promotion programmes to encompass more target groups. The organising of Environment: The Role of Women Conference, for instance, highlighted the important role of women in protecting the environment. The year 2003 also witnessed the launch of two new programmes, the Bandar Lestari - Environment Award and the Sustainable School Award. Both programmes are aimed at integrating the importance of appreciating and protecting the environment as a way of life among the local community and the administrators. It is hoped that this new approach will succeed in creating greater environmental awareness for a more integrated,

dapat memupuk kesedaran alam sekitar yang tinggi dan seterusnya menggerakkan tindakan-tindakan yang lebih bersepadu, sistematik dan berterusan bagi mengurus alam sekitar kita.

Menyemai rasa tanggungjawab terhadap kesejahteraan awam sebagai kewajipan dan tuntutan penting di dalam budaya kerja setiap individu akan melahirkan masyarakat yang prihatin kepada alam sekitar. Setiap individu memainkan peranan penting untuk melindungi alam sekitar kita. Keprihatinan kepada alam sekitar wajar digambarkan di dalam kehidupan seharian kita; bukan sekadar membantu melaporkan kejadian pencemaran kepada JAS, tetapi juga dengan melalui penerapan amalan mesra alam di dalam tindakan kita setiap masa.

Dari aspek penguatkuasaan, yang merupakan tugas utama JAS, dua perundangan subsidiari baru untuk memperketatkan kawalan pencemaran udara telah diperkenalkan. Perintah Kualiti Alam Sekeliling (Aktiviti Yang Diisytiharkan) (Pembakaran Terbuka) 2003 dan Peraturan-Peraturan Kualiti Alam Sekeliling (Kawalan Pelepasan Asap daripada Motorsikal) 2003, telah diwartakan masing-masingnya pada 18 Disember 2003 dan 21 Disember 2003. Penguatkuasaan Perintah dan Peraturan-Peraturan ini akan bermula pada 1 Januari 2004.

Saya ingin mengambil kesempatan ini untuk merakamkan penghargaan kepada semua pihak yang telah memberi sokongan dan komitmen mereka kepada Jabatan Alam Sekitar dalam melaksanakan tugas murni melindungi kualiti alam sekitar kita untuk alam sekitar yang lestari dan sihat, demi meningkatkan kualiti hidup kita.

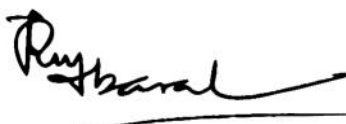
systematic and sustainable actions in managing our environment.

Instilling a sense of responsibility and obligation for social well being as a paramount concern in one's work culture, will lead to a more environmental conscientious nation. Members of the public play an important role in the protection of our environment. Let the concern for the environment be portrayed in our daily life; not only by being the ears and the eyes for the Department, but also by observing environmentally friendly practices.

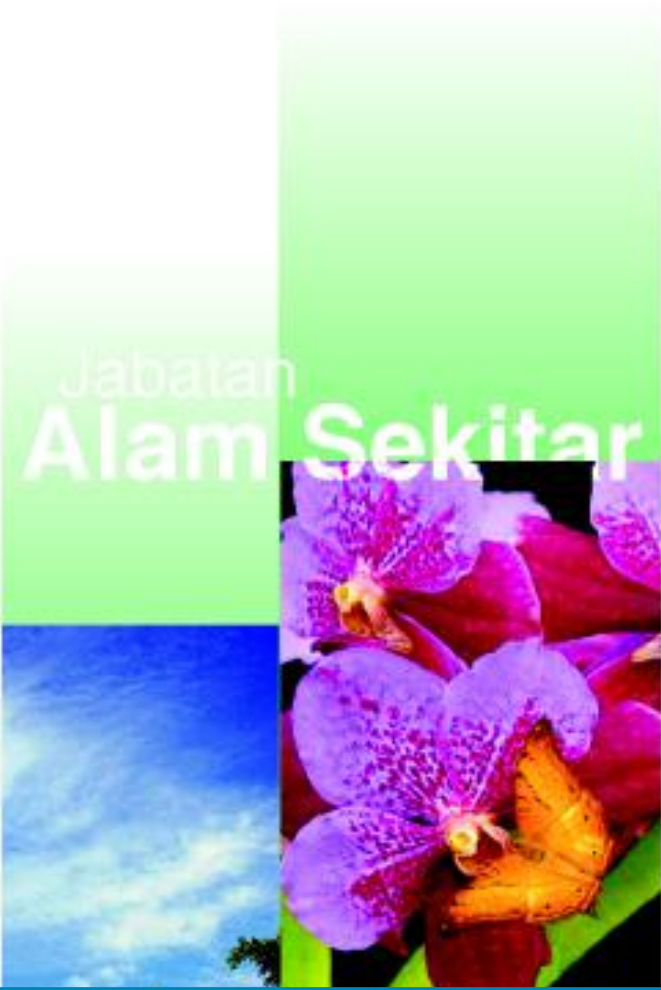
On the aspect of enforcement, a core business of DOE, two new pieces of subsidiary legislations to further strengthen the control of air pollution were introduced. The Environmental Quality (Declared Activities) (Open Burning) Order 2003 and the Environmental Quality (Control of Smoke Emission from Motorcycles) Regulations 2003 were gazetted on 18 December 2003 and 21 December 2003 respectively. The enforcement of these Order and Regulations came into effect on 1 January 2004.

I would like to take this opportunity to record my appreciations to everyone who have given invaluable support and commitment to the Department of Environment in carrying out its duties for a sustainable, healthy environment, and an enhanced quality of life.

Salam Sejahtera | With Best Wishes



Hajah Rosnani Ibarahim
Ketua Pengarah Kualiti Alam Sekeliling Malaysia
Director-General of Environmental Quality Malaysia
September 2004



Jabatan Alam Sekitar

Visi

Memastikan keunikan, kepelbagaian dan kualiti alam sekitar dikekalkan bagi menjamin kesihatan, kesejahteraan, keselamatan dan keselesaan hidup rakyat masa kini dan masa akan datang

Vision

That the uniqueness, diversity and quality of the environment are conserved towards maintaining health, prosperity, security and well-being for the present and the future

Misi

Menggalakan, meningkatkan dan mengekalkan pengurusan alam sekitar yang baik dalam proses pembangunan negara

Mision

To promote, ensure and sustain sound environmental management in the process of nation building

Strategi

- Pembangunan Lestari melalui Pemuliharaan Sumber Semulajadi
- Integrasi Faktor Alam Sekitar dalam Perancangan Pembangunan
- Kawalan dan Pencegahan Pencemaran
- Promosi Pendidikan dan Kesedaran Alam Sekitar
- Kerjasama antara agensi dan Persekutuan Negeri
- Penyertaan awam dalam pengurusan alam sekitar
- Kerjasama dan hubungan Dua Hala, Serantau dan Antarabangsa

Strategies

- Sustainable Development through Conservation of Resources
- Integration of Environmental Factors in Development Planning
- Pollution Prevention and Control
- Promotion of Environmental Education and Awareness
- Inter-agency and Federal-State Cooperation
- Public participation in environmental management
- Bilateral, Regional and International Cooperation



Jabatan
Alam Sekitar



BAB / CHAPTER 1



Department of
Environment



MESYUARAT ANTARA MENTERI SAINS, TEKNOLOGI DAN ALAM SEKITAR DENGAN MENTERI-MENTERI DAN AHLI-AHLI MESYUARAT KERAJAAN NEGERI YANG BERTANGGUNGJAWAB KE ATAS HAL EHWAL ALAM SEKITAR (MEXCOE)

Mesyuarat ke 23 antara Menteri Sains, Teknologi dan Alam Sekitar dengan Menteri-Menteri dan Ahli-Ahli Mesyuarat Kerajaan Negeri Yang Bertanggungjawab Ke atas Hal Ehwat Alam Sekitar (MEXCOE) telah diadakan pada 21 Oktober, 2003 di Kluang, Johor bersempena dengan sambutan Minggu Alam Sekitar Malaysia yang telah dilancarkan di Kluang, Johor.

Mesyuarat telah mempertimbangkan dan memaklumkan mengenai perkara-perkara berikut:

- keperluan mengenakan syarat EIA bagi semua aktiviti pembalakan sebelum diluluskan oleh Kerajaan Negeri.
- pewartaan zon larangan pembakaran terbuka di sekitar Lapangan Terbang Antarabangsa Kuala Lumpur (KLIA).

MEXCOE juga bersetuju mulai 2004, sambutan Minggu Alam Sekitar Malaysia (MASM) akan dilaksanakan di peringkat negeri untuk meningkatkan penglibatan pelbagai peringkat.

Ahli-ahli MEXCOE bagi tahun 2003 adalah seperti berikut:

- **Y.B. Dato' Seri Law Hieng Ding**
Menteri Sains, Teknologi dan Alam Sekitar
- Pengerusi
- **Y.B. Dato' Hj. Zainal bin Dahalan**
Timbalan Menteri Sains, Teknologi dan Alam Sekitar

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

The 23rd Meeting between the Minister of Science, Technology and the Environment with State Ministers and State Executive Councillors responsible for Environmental Matters (MEXCOE) was held on 21 October 2003 at Kluang, Johor in conjunction with Malaysia Environment Week 2003 which was launched in Kluang, Johor.

The meeting deliberated and took note of the following:

- the need to ensure compliance with EIA conditions for logging activities prior to State Government approval.
- gazettment of the no open burning zone around the Kuala Lumpur International Airport;

MEXCOE also agreed that beginning 2004, Malaysia Environment Week (MASM) celebrations would be at the State level to enhance participation at all levels.

MEXCOE members for 2003 were as follows:

- **Y.B. Dato' Seri Law Hieng Ding**
Minister of Science, Technology and the Environment
- Chairman
- **Y.B. Dato' Hj. Zainal bin Dahalan**
Deputy Minister of Science, Technology and the Environment

- **Y.B. Datuk Chong Kah Kiat**
Menteri Pembangunan Pelancongan, Alam Sekitar, Sains dan Teknologi Negeri Sabah
- **Y.B. Datuk William Mawan Ikom**
Menteri Alam Sekitar dan Kesihatan Awam Negeri Sarawak
- **Y.B. Dato' Ho Cheng Wang**
Pengerusi, Jawatankuasa Kesihatan, Sains, Teknologi dan Alam Sekitar Negeri Perak
- **Y.B. Datuk Dr. Teng Hock Nan**
Pengerusi, Jawatankuasa Kerajaan Tempatan, Alam Sekitar dan Pengurusan Lalulintas Negeri Pulau Pinang
- **Y.B. Dato' Dr. Chua Soi Lek**
Pengerusi, Jawatankuasa Pelancongan dan Alam Sekitar Negeri Johor
- **Y.B. Dato' Beh Heng Seong**
Pengerusi, Jawatankuasa Pengangkutan, Tenaga dan Komunikasi, Sains, Teknologi dan Alam Sekitar Negeri Kedah
- **Y.B. Tuan Haji Md. Isa bin Sabu**
Pengerusi, Jawatankuasa Pelancongan, Kebudayaan, Kesenian dan Alam Sekitar Negeri Perlis
- **Y.B. Datuk Wira Poh Ah Tiam**
Pengerusi, Jawatankuasa Perumahan, Kerajaan Tempatan dan Alam Sekitar Negeri Melaka
- **Y.B. Dato' Peter Lai Yit Fee**
Pengerusi, Jawatankuasa Bertindak Sains, Alam Sekitar dan Sumber Manusia Negeri Sembilan
- **Y.B. Dato' Haji Mohd. Mokhtar bin Haji Ahmad Dahlan**
Pengerusi, Jawatankuasa Tetap Kerajaan Tempatan, Setinggan dan Alam Sekitar Negeri Selangor
- **Y.B. Datuk Chong Kah Kiat**
Minister of Tourism Development, Environment, Science and Technology, Sabah
- **Y.B. Datuk William Mawan Ikom**
Minister of Environment and Public Health, Sarawak
- **Y.B. Dato' Ho Cheng Wang**
Chairman of Health, Science, Technology and Environment Committee, Perak
- **Y.B. Datuk Dr. Teng Hock Nan**
Chairman of Local Authority, Environment and Road Traffic Management Committee, Penang
- **Y.B. Dato' Dr. Chua Soi Lek**
Chairman of Tourism and Environment Committee, Johor
- **Y.B. Dato' Beh Heng Seong**
Chairman of Transport, Energy and Communication, Science, Technology and Environment Committee, Kedah
- **Y.B. Tuan Haji Md. Isa bin Sabu**
Chairman of Tourism, Culture, Arts and Environment Committee, Perlis
- **Y.B. Datuk Wira Poh Ah Tiam**
Chairman of Housing, Local Authority and Environment Committee, Melaka
- **Y.B. Dato' Peter Lai Yit Fee**
Chairman of Science, Environment and Human Resource Action Committee, Negeri Sembilan
- **Y.B. Dato' Haji Mohd. Mokhtar bin Haji Ahmad Dahlan**
Chairman of Local Government, Squatters and Environment Committee, Selangor

- **Y.B. Dato' Kan Tong Leong**
Pengerusi, Jawatankuasa Kerajaan Tempatan,
Alam Sekitar Dan Pembangunan Perbandaran
Negeri Pahang
- **Y. Bhg. Kol. Datuk Mohamad Shaid Bin Mohamad Taufek**
Datuk Bandar, Dewan Bandaraya Kuala Lumpur
- **Y.Bhg. Dato' Ramli bin Abdul Rahman**
Pengarah, Jabatan Pembangunan Persekutuan
Negeri Kelantan
- **Y.Bhg. Encik Mukhtar Bin Abdullah**
Pengarah, Jabatan Pembangunan Persekutuan
Negeri Terengganu
- **Y.B. Dato' Kan Tong Leong**
Chairman of Local Authority, Environment and Urban
Development Committee, Pahang
- **Y. Bhg. Kol. Datuk Mohamad Shaid Bin Mohamad Taufek**
Mayor, Dewan Bandaraya Kuala Lumpur
- **Y.Bhg. Dato' Ramli bin Abdul Rahman**
Director, Department of Federal Development,
Kelantan
- **Y.Bhg. Encik Mukhtar Bin Abdullah**
Director, Department of Federal Development,
Terengganu

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Jabatan
Alam Sekitar



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MAJLIS KUALITI ALAM SEKELILING

1. Dalam tahun 2003, Majlis Kualiti Alam Sekeliling telah bermesyuarat sebanyak empat (4) kali dan dipengerusikan oleh Y. Bhg. Dato' Kok Wee Kiat.
 - Mesyuarat Bilangan Ke-84 telah diadakan pada 18 Februari 2003 di Sutera Harbour & SPA, Kota Kinabalu, Sabah.
 - Mesyuarat Bilangan Ke-85, 86 dan 87 telah diadakan di Bilik Cempaka, Aras 6, Pejabat Jabatan Alam Sekitar, Putrajaya pada 20 Mei, 18 Ogos dan 18 November 2003.
2. Beberapa perubahan ahli telah berlaku dalam tahun 2003. Encik Lim Sum Teck telah menggantikan Tuan Haji Aliasak bin Haji Ambia yang mewakili industri getah, Dr. Ibrahim Abu Ahmad telah menggantikan En. Zainal Azman bin Seman mewakili Ketua Setiausaha Kementerian Perdagangan Antarabangsa dan Industri, Tuan Haji Zakaria bin Bahari telah menggantikan Cik Lim Yuk Hua dari Kementerian Pengangkutan. Prof. Madya Dr. Mohd. Nasir Bin Hassan telah dilantik sebagai ahli gantian baru menggantikan Prof. Nordin Hassan yang telah menarik diri. EQC merakamkan penghargaan kepada semua atas sumbangan mereka.
4. Antara perkara-perkara yang dibentangkan dalam tahun 2003 adalah seperti berikut:

ENVIRONMENTAL QUALITY COUNCIL (EQC)

1. The Environmental Quality Council (EQC) held four (4) meetings in 2003 chaired by Y. Bhg. Dato' Kok Wee Kiat.
 - The 84th Meeting was held on 18 February 2003 at the Sutera Harbour Resort, Kota Kinabalu, Sabah.
 - The 85th, 86th and 87th Meetings were held at the Department of Environment, Putrajaya on 20 May, 18 August and 18 November 2003 respectively.
2. There were some changes of EQC membership in 2003. Mr. Lim Sum Teck replaced Tuan Haji Aliasak bin Haji Ambia as the representative of the Rubber-Industry; Dr. Ibrahim Abu Ahmad replaced En. Zainal Azman bin Abu Seman as the representative of the Secretary-General of the Ministry of International Trade and Industries; Tuan Haji Zakaria bin Bahari replaced Miss Lim Yuk Hua as the representative of the Ministry of Transport. Asso. Prof Dr. Mohd. Nasir bin Hassan was elected as the new alternative member replacing Prof. Nordin Hassan who had voluntarily resigned. EQC recorded its appreciations to past members for their contributions and welcomed the new representatives.
4. Among the matters brought to the EQC in 2003 were as follows:

Kertas EQC Bil.1/87/2003

Kertas oleh Kementerian Kesihatan Malaysia

- Kesihatan Alam Sekitar

EQC Paper No. 1/87/2003 by Ministry of Health

- Environmental Health

Kertas EQC Bil.2/87/2003

Kertas oleh Ahli EQC, Ir. Gurmit Singh K.S.

- Kecekapan Penggunaan Tenaga Di Malaysia

EQC Paper No. 2/87/2003 by EQC Member Ir. Gurmit Singh K.S.

- Energy Usage Efficiency In Malaysia

Kertas EQC Bil.1/86/2003

Kertas oleh Jabatan Alam Sekitar

- Cadangan Pindaan Peraturan-peraturan Kualiti Alam Sekeliling (Pengurusan Refigeran) 1999

EQC Paper No. 1/86/2003 by Department of Environment

- Proposal for amendments to the Environmental Quality (Refrigerant Management) Regulations 1999

Kertas EQC Bil.1/85/2003

Kertas oleh Jabatan Alam Sekitar

- Cadangan Peraturan Baru: Peraturan-peraturan Kualiti Alam Sekeliling (Buangan Terjadual) 2003

EQC Paper No. 1/85/2003 by Department of Environment

- Proposal for amendments to Environmental Quality (Scheduled Waste) Regulations

Kertas Makluman EQC Bil.2/85/2003

Kertas oleh Jabatan Alam Sekitar

- Cadangan Penganugerahan Bandar Lestari

EQC Paper No. 2/85/2003 by Department of Environment

- Proposal for Sustainable City - Environment Award

Kertas EQC Bil.3/85/2003

Kertas oleh Jabatan Pengairan dan Saliran

- Taklimat oleh Jabatan Pengairan dan Saliran

EQC Paper No. 3/85/2003

- Briefing by Department of Drainage and Irrigation

Kertas EQC Bil.4/85/2003

Kertas oleh Jabatan Perikanan

- Taklimat oleh Jabatan Perikanan

EQC Paper No. 4/85/2003

- Briefing by Fisheries Department

Kertas EQC Bil.5/85/2003

Kertas oleh MARDI

- Taklimat oleh MARDI

EQC Paper No. 5/85/2003

- Briefing by MARDI

Kertas Makluman EQC Bil.1/84/2003

Kertas oleh Jabatan Alam Sekitar

- Kertas Makluman Mengenai Cadangan Peningkatan Kualiti Minyak Kenderaan

EQC Paper No. 1/84/2003 by Department of Environment

- Information Paper on Proposal to Upgrade Fuel Quality

Kertas EQC Bil.2/84/2003

Kertas oleh Jabatan Alam Sekitar

- Cadangan Mengkaji Semula Kriteria-kriteria Pemilihan Bagi Anugerah Langkawi

EQC Paper No. 2/84/2003 by Department of Environment

- Proposal To Review the Selection Criteria For Langkawi Award

Kertas EQC Bil.3/84/2003

Kertas oleh Jabatan Alam Sekitar

- Laporan Kajian Kesan Kepada Alam Sekitar (EIA) Akibat Penambakan Laut oleh Negara Singapura

EQC Paper No. 3/84/2003 by Department of Environment

- EIA Report on Sea Reclamation by Singapore

Kertas EQC Bil.4/84/2003

Kertas oleh Jabatan Alam Sekitar

- Cadangan Projek Pembinaan Loji Rawatan "Thermal" Sisa Pepejal Di Broga, Selangor Oleh Kementerian Perumahan Dan Kerajaan Tempatan

EQC Paper No. 4/84/2003 by Department of Environment

- Proposed Project on Construction of the Thermal Treatment System at Broga, Selangor by the Ministry of Housing and Local Government

Kertas EQC Bil.5/84/2003

Kertas oleh Bahagian Hal Ehwal Pengguna, Kementerian Perdagangan Dalam Negeri dan Hal Ehwal Pengguna

- Ke Arah Pengguna Lestari

EQC Paper No. 5/84/2003 by Consumer Affairs Division, Ministry of Domestic Trade And Consumer Affairs

- Towards Sustainable Consumerism

Kertas EQC Bil.6/84/2003

Kertas oleh Jabatan Konservasi Alam Sekitar, Sabah

- *"Policy And Strategies For Environmental Protection In Sabah"*

EQC Paper No. 6/84/2003 by Environmental Conservation Department, Sabah

- Policy And Strategies For Environmental Protection in Sabah

Perwakilan Representative	Nama Name
Pengerusi EQC EQC Chairman	Dato' Kok Wee Kiat
Ketua Setiausaha Kementerian Sains, Teknologi dan Alam Sekitar Secretary General, Ministry of Science, Technology and the Environment	Dato' Leong Ah Hin
Ketua Setiausaha Kementerian Perdagangan Antarabangsa dan Industri atau wakilnya yang di beri kuasa Secretary-General, Ministry of Trade & Industry or his authorized representative	Dr. Ibrahim Abu bin Ahmad
Ketua Setiausaha Kementerian Perdagangan Dalam Negeri dan Hal Ehwal Pengguna atau wakilnya yang di beri kuasa Secretary-General, Ministry of Domestic Trade & Consumer Affairs or his authorized representative	Puan Normah Sheikh Abdullah
Ketua Setiausaha Kementerian Pertanian atau wakilnya yang di beri kuasa Secretary-General, Ministry of Agriculture or his authorized representative	Encik Lim Eng Siang
Ketua Setiausaha Kementerian Sumber Manusia Secretary-General Ministry of Human Resources or his authorized representative	Encik Omar bin Mat Piah
Ketua Setiausaha Kementerian Pengangkutan atau wakilnya yang di beri kuasa Secretary-General, Ministry of Transport or his authorized representative	Tuan Haji Zakaria bin Bahari
Ketua Pengarah Kementerian Kesihatan Malaysia atau wakilnya yang di beri kuasa Director General, Ministry of Health or his authorized representative	Datuk Ir. Dr. Mukundan Sugunan Pillay
Wakil Kerajaan Negeri Sabah Representative from the Sabah Government	Datuk Monica Chia Mui Foong
Wakil Kerajaan Negeri Sarawak Representative from the Sarawak Government	Datu Haji Hamzah bin Haji Drahman
Wakil Industri Petroleum Representative from the Petroleum Industry	Encik Iqbal bin Abdullah
Wakil Industri Kelapa Sawit Representative from the Oil Palm Industry	Encik Teo Leng
Wakil Persekutuan Pekilang-Pekilang Malaysia Representative from the Federation of Malaysian Manufacturers	Tan Sri Datuk Clifford Francis Herbert
Wakil Industri Getah Representative from the Rubber Industry	Encik Lim Sum Teck
Wakil Kakitangan Akademik Representative from the Academic Staff of Universities or Colleges in Malaysia	Prof. Dr.Muhamad bin Awang
Wakil Pertubuhan Yang Berpengalaman Mengenai Alam Sekitar Representative from registered Societies knowledgeable and having interests in matters pertaining to the environment	Dato' Dr. Salleh bin Mohd. Nor
Wakil Pertubuhan Yang Berpengalaman Berhubung Alam Sekitar Representative from registered Societies knowledgeable and having interests in matters pertaining to the environment	Ir. Gurmit Singh K.S.



Mesyuarat EQC ke-84 di Kota Kinabalu, Sabah, 18 Februari 2003
84th EQC Meeting in Kota Kinabalu, Sabah, 18 February 2003



Ahli EQC diberi taklimat mengenai pengurusan di Taman Laut Gayana, Sabah
Briefing to EQC members regarding management of Gayana Marine Park, Sabah

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PENGURUSAN SUMBER MANUSIA DAN KEWANGAN

Perjawatan

Sehingga 31 Disember 2003, jumlah anggota yang ada ialah seramai 973 orang terdiri daripada dua pegawai dalam kumpulan Pengurusan Tertinggi (JUSA), 172 Pegawai dalam kumpulan Pengurusan dan Profesional serta 801 orang kakitangan dalam kumpulan Sokongan. Ini juga termasuk 62% dari jumlah keseluruhan persetujuan peribadi di bawah pelaksanaan penstrukturan tahun 2002.

Peruntukan Kewangan dan Perbelanjaan

Jumlah peruntukan yang diterima bagi tahun 2003 adalah sebanyak RM102,799,495.00 iaitu penambahan sebanyak RM3,307,285.00 (3.32%) berbanding tahun sebelumnya. Daripada jumlah tersebut RM79,607,895.00 (77.44%) adalah peruntukan untuk perbelanjaan mengurus sementara baki RM23,191,600.00 (22.56%) merupakan peruntukan perbelanjaan pembangunan (Rajah 3.1 dan Rajah 3.2).

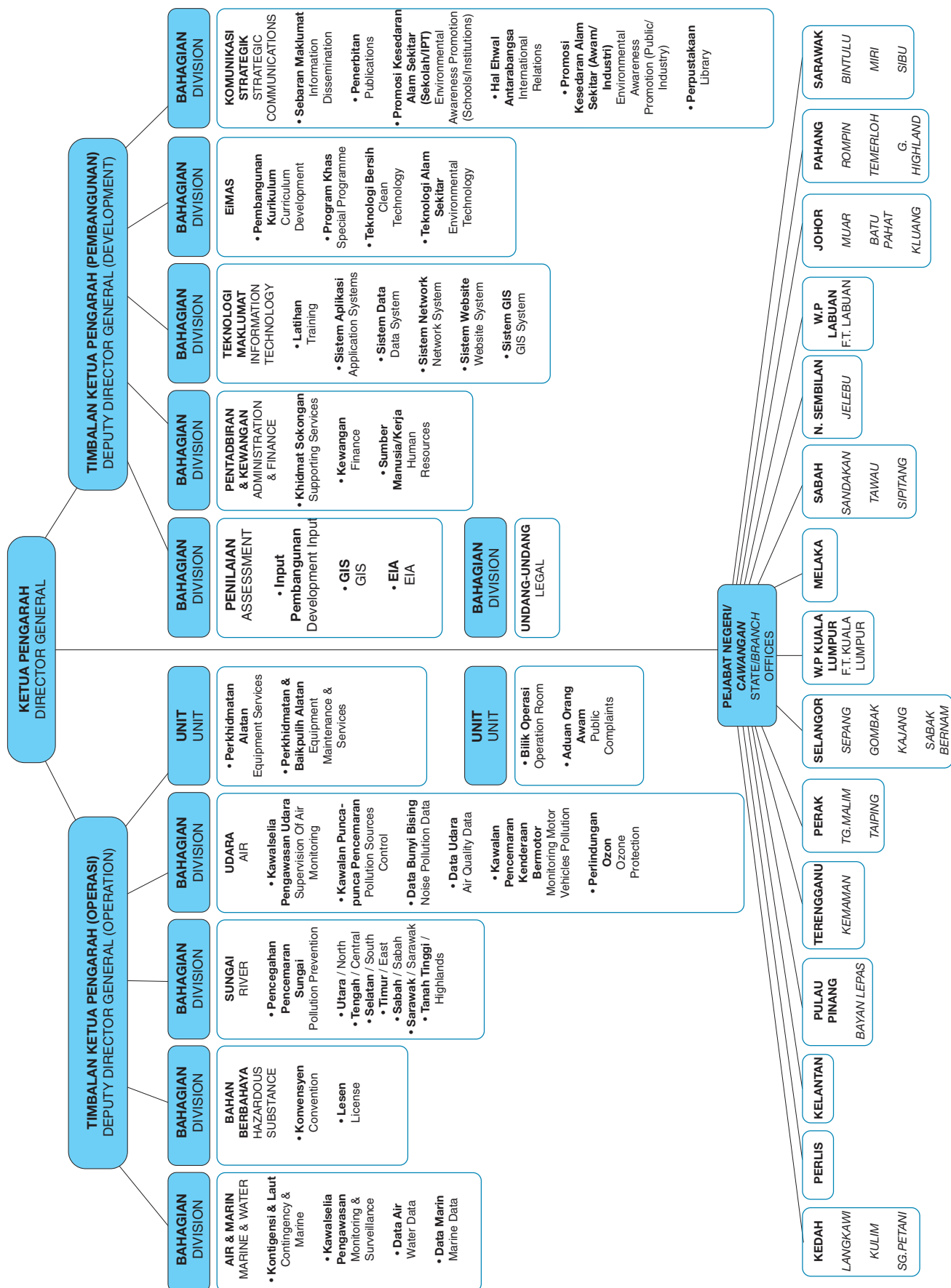
HUMAN RESOURCE AND FINANCIAL MANAGEMENT

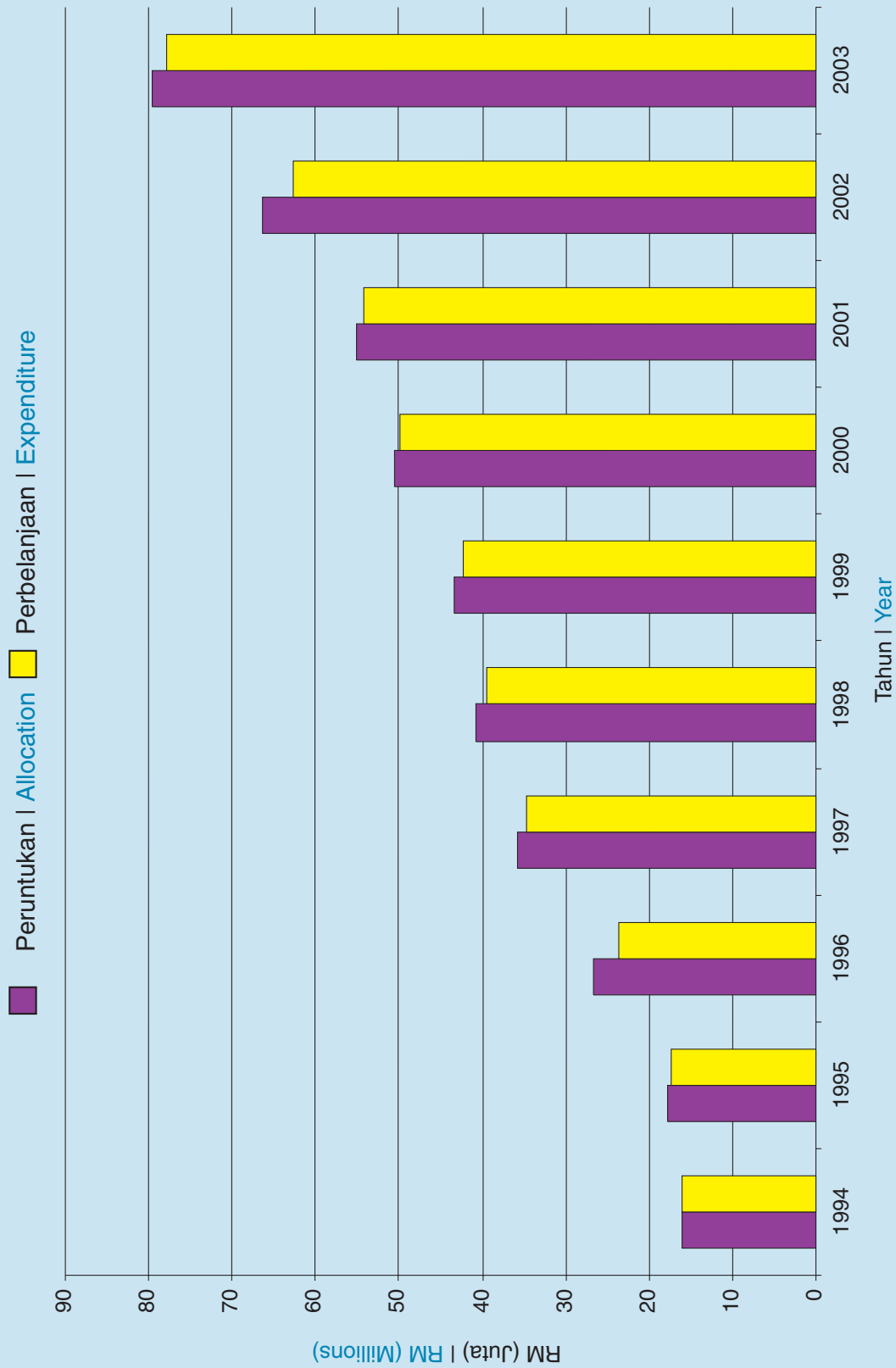
Recruitments

As at 31 December 2003, the total number of personnel at the Department of Environment was 973 comprising of two officers in the Upper Management Group, 172 officers in the Management and Professional Group and 801 in the Supporting Group. This constituted 62% of the total number of personnel approved under the restructuring exercise in 2002

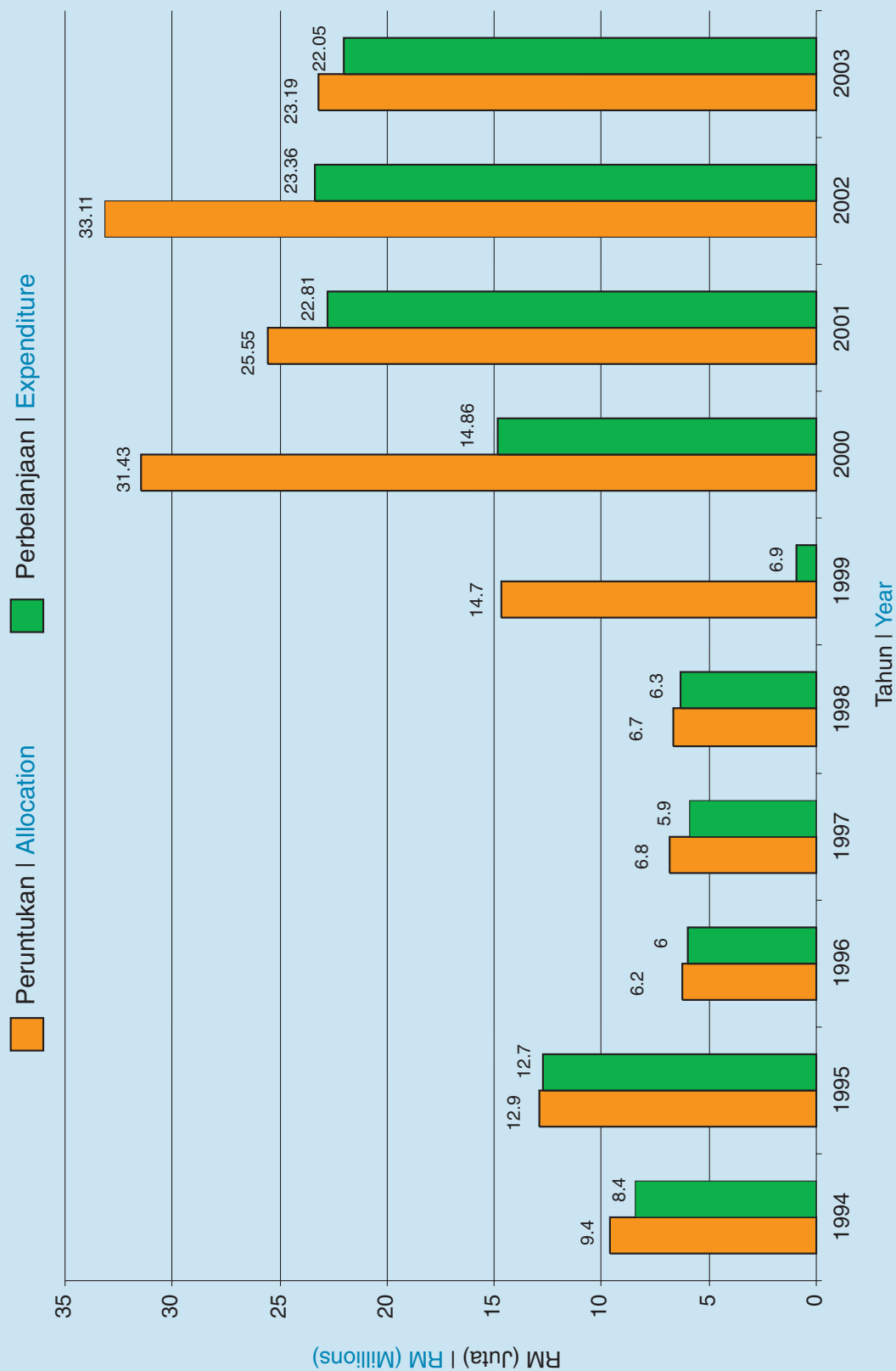
Allocation and Expenditure

The total budget allocation received by DOE for 2003 was RM102,799,495.00, an increase of RM3,307,285.00 (3.32%) over the previous year. From this amount, a sum of RM79,607,895.00 (77.44%) was allocated for operational expenditure, while RM23,191,600.00 (22.56%) was for development projects (Figures 3.1 and 3.2).





Rajah 3.1 Jabatan Alam Sekitar: Peruntukan dan Perbelanjaan (Mengurus), 1994-2003
 Figure 3.1 Department of Environment: Allocation and Expenditure (Operational), 1994-2003



Rajah 3.2 Jabatan Alam Sekitar: Peruntukan dan Perbelanjaan (Pembangunan), 1994-2003
Figure 3.2 Department of Environment: Allocation and Expenditure (Development), 1994-2003

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PENILAIAN KESAN KEPADA ALAM SEKELILING DAN INPUT KEPADA PERANCANGAN PEMBANGUNAN

Penilaian Kesan Kepada Alam Sekeliling (*Environmental Impact Assessment-EIA*) merupakan satu alat perancangan untuk mengelakkan dan mengurangkan masalah-masalah akibat tindakan pembangunan. Ianya juga dapat mengelakkan kesilapan besar semasa projek dilaksanakan serta dapat meminimumkan kos projek.

Di Malaysia, EIA digunakan sebagai alat untuk menggabungkan pertimbangan alam sekitar di dalam perancangan yang mana apabila disepadukan dalam perancangan sedia ada dan dalam proses membuat keputusan akan memberi maklumat tambahan dalam membuat keputusan yang lebih baik.

ENVIRONMENTAL IMPACT ASSESSMENT AND INPUT FOR DEVELOPMENT

Environmental Impact Assessment (EIA) is essentially a planning tool for preventing environmental problems due to a development action. It also seeks to avoid costly mistakes in project implementation as well as minimizing project cost.

In Malaysia, EIA is used as a tool to incorporate environmental considerations into project planning which when integrated into existing planning and decision-making processes provides additional information for better decision-making.



Gambarfoto 4.1 : Pembangunan Lereng Bukit Yang Tidak Terkawal
Photo 4.1 : Uncontrolled Hill Slope Development



Gambarfoto 4.2 : Sistem Perangkap Mendap Yang Cekap
Photo 4.2 : Efficient Silt Trap System

Laporan EIA 2003

Sebanyak 98 laporan telah diterima pada tahun 2003. Daripada bilangan ini, 83 laporan EIA telah diproses mengikut prosedur penilaian awal EIA dan 15 laporan EIA lagi melalui prosedur terperinci (Rajah 4.1). Negeri Johor menerima bilangan laporan EIA tertinggi pada tahun 2003 diikuti dengan Negeri Selangor (Rajah 4.2).

Lawatan Penguatkuasaan Projek EIA

Sejumlah 865 lawatan penguatkuasaan telah dijalankan pada tahun 2003 untuk mengenalpasti status pembangunan dan pematuhan projek-projek EIA berbanding dengan 584 lawatan penguatkuasaan pada tahun 2002. Daripada lawatan-lawatan tersebut (tahun 2003), sebanyak 278 notis atau surat arahan dan sebanyak 38 kompaun telah dikeluarkan manakala tiga (3) kes telah didakwa di mahkamah kerana tidak mematuhi syarat-syarat kelulusan.

Input Alam Sekitar Kepada Perancangan Pembangunan

Pada tahun 2003, sejumlah 61 input alam sekitar telah diberikan. Kebanyakan input-input yang diberi adalah input-input berkaitan Penyelarasan Perancangan Pembangunan, Kajian Pelan Spatial Kebangsaan, Polisi Zon Persisiran Pantai Kebangsaan, Pelan Tempatan dan kajian-kajian lain seperti langkah-langkah kawalan banjir, air bawah tanah, permonitoran pulau-pulau dan aktiviti-aktiviti tanah tinggi.

Pendaftaran Jururunding EIA

Pada tahun 2003, sebanyak 22 permohonan individu dan tiga (3) permohonan firma jururunding diterima untuk pendaftaran sebagai jururunding EIA. Daripada permohonan tersebut, 13 individu dan dua (2) firma telah diluluskan untuk pendaftaran. Semenjak skim

EIA Reports 2003

A total of 98 reports were received in 2003. Of these 83 were preliminary EIA reports and 15 detailed reports (Figure 4.1). Johor received the highest number of EIA reports in 2003, followed by Selangor (Figure 4.2).

EIA Enforcement Visits

A total of 865 enforcement visits were conducted in 2003 to check on the progress of projects and compliance of EIA approval conditions compared to 584 enforcement visits in 2002. Consequently, 278 notices or written directives and 38 compounds were served and three (3) cases were charged in court for non-compliance.

Environmental Input For Development Planning

In 2003, a total of 61 environmental inputs were provided to other agencies in connection with Development Planning Coordination, National Spatial Plan Study, National Coastal Zone Policy, Local Plans and other studies regarding flood-mitigating measures, ground water, island monitoring and highland development activities.

Registration Of EIA Consultants

In 2003, 22 new applications from individual and three (3) applications from consultancy firms were received for registration as EIA consultants. Out of these, 13 individuals and two (2) consultancy firms were approved for registration. Since the registration

pendaftaran ini diperkenalkan pada tahun 1991 hingga 2003, sebanyak 313 juruperunding individu dan 80 firma perunding EIA telah diluluskan pendaftarannya.

Penilaian Awal Tapak Projek

Bagi projek-projek pembangunan yang tidak termaktub di bawah Perintah-Perintah Kualiti Alam Sekeliling (Aktiviti Yang Ditetapkan)(Penilaian Kesan Kepada Alam Sekeliling), 1987, pemaju perlu mengemukakan permohonan kepada JAS bagi Penilaian Awal Tapak (PAT) untuk menentukan kesesuaian tapak projek yang dicadangkan. PAT dapat membantu mengenalpasti isu-isu yang akan timbul dan pemantauan dapat dilaksanakan ke atas sesuatu projek.

Pada tahun 2003, sejumlah 3,374 permohonan telah diterima di mana Negeri Johor mencatat permohonan PAT (1,144) paling tinggi, diikuti oleh Negeri Selangor (780), Negeri Pulau Pinang (353) dan lain-lain negeri seperti yang ditunjukkan dalam Rajah 4.4. Permohonan-permohonan ini dirujukkan kepada Jabatan Alam Sekitar oleh pihak berkuasa seperti Pihak Berkuasa Tempatan dan Pejabat Tanah. Input teknikal telah diberikan kepada pihak berkuasa ini bagi memastikan aspek alam sekitar diberikan pertimbangan yang sewajarnya di dalam membuat keputusan.

Kebenaran Dan Kelulusan Bertulis

Peraturan-peraturan Kualiti Alam Sekeliling (Kumbahan dan Effluen-effluen Perindustrian), 1979 dan Peraturan-peraturan Kualiti Alam Sekeliling (Udara Bersih), 1978 menghendaki supaya kebenaran dan kelulusan bertulis diperolehi terlebih dahulu daripada Ketua Pengarah Alam Sekitar (KPAS) sebelum apa-apa loji rawatan sisa kumbahan dan alat kawalan pencemaran udara dibina. Pada tahun 2003, Jabatan Alam Sekitar telah menerima 293

scheme was introduced in 1991, by the end of 2003, 313 consultants and 80 consultancy firms had been registered.

Project Pre-siting Evaluation

Where development projects were not subjected to the Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order 1987, pre-siting evaluation of proposed site suitability were carried out. This would help to identify issues that could potentially arise in the future besides complementing project monitoring.

In 2003, a total of 3,374 such applications were received. Johor recorded the highest number (1,144), followed by Selangor (780), Pulau Pinang (353) and other States as shown in Figure 4.4. These applications were mainly referred to the Department of Environment by Local Authorities and Land Offices. Technical environmental inputs were provided to ensure environmental aspects were given due consideration in decision-making.

Written Permission And Approval

The Environmental Quality (Sewage and Industrial Effluents) Regulations 1979 and the Environmental Quality (Clean Air) Regulations 1978 require written permissions and approvals to be obtained from the Director-General of Environment before construction of wastewater treatment plants and installation of air pollution control systems are installed. In 2003, 293 such applications were received for construction of effluent treatment plants (Figure 4.5) and 671

permohonan bagi pembinaan loji rawatan sisa kumbahan (Rajah 4.5) dan 671 permohonan bagi pemasangan alat kawalan pencemaran udara (Rajah 4.6). Selain daripada peralatan kawalan pencemaran, Jabatan Alam Sekitar juga telah menerima 1,182 permohonan bagi kelulusan bertulis untuk pemasangan alat pembakaran bahan api seperti dandang dan alat janakuasa (Rajah 4.7).

Sistem Maklumat Geografik

Di bawah Rancangan Malaysia Kelapan (RMK8) Seksyen GIS (dahulunya Unit GIS) telah dipertanggungjawabkan untuk memastikan bahawa teknologi GIS dapat dimanfaatkan sepenuhnya di Jabatan Alam Sekitar (JAS) dalam menguruskan alam sekitar di Malaysia.

Pada tahun 2003, pelaksanaan GIS di peringkat JAS Negeri/Cawangan telah digerakkan. Kesemua 14 JAS Negeri dan enam (6) JAS Cawangan telah dibekalkan dengan perkakasan dan perisian GIS pada awal tahun. Selain itu, latihan asas kepada pegawai-pegawai JAS Negeri/Cawangan telah dijalankan. Kursus Pengenalan GIS kepada 14 wakil JAS Negeri & enam (6) JAS Cawangan telah diadakan pada 6-8 Mei 2003 di EiMAS. Program taklimat GIS dan latihan *hands-on* telah dijalankan ke enam (6) JAS Negeri iaitu JAS Selangor, JAS Kuala Lumpur, JAS Pulau Pinang, JAS Terengganu, JAS Sarawak dan JAS Sabah pada September dan Oktober.

Pada tahun 2003 juga, pembangunan Sistem Aplikasi Pengurusan *Geodatabase* dan '*Mobile GIS*' telah dijalankan bertujuan memudahkan perkongsian, pertukaran dan pengemaskinian data spatial yang berkaitan dengan pengurusan alam sekitar pada satu

applications for installation of air pollution control equipment (Figure 4.6). In addition, 1,182 applications for written approvals for installation of fuel burning equipment such as boilers and generator sets were processed (Figure 4.7).

Geographical Information System (GIS)

Under the 8th Malaysia Plan, the GIS Section (formerly known as GIS Unit) has been given the task to ensure that GIS technology is fully utilized by the Department of Environment (DOE) in environmental management in Malaysia.

In 2003, the implementation of GIS at State and Branch levels were initiated. All 14 State offices and 6 Branch Offices were equipped with GIS hardware and software early in the year. Apart from that, a basic training course was conducted on 6-8 May 2003 in EiMAS to 20 participants from State and Branch Offices. Hands-on training was also provided to officers from Selangor, Kuala Lumpur, Pulau Pinang, Terengganu, Sarawak and Sabah State Offices in September and October 2003.

In 2003, the Geodatabase Management Application System and '*Mobile GIS*' were developed to facilitate sharing, interchanging and updating of spatial data. The mobile GIS system allows spatial data to be captured on-site with the use of GPS and pocket

platform yang sama. 'Mobile GIS' pula merupakan sistem yang membolehkan data spatial dicerap di lapangan dengan penggunaan GPS berserta komputer poket dan perisian yang bersesuaian. Data yang telah dicerap di lapangan akan dimuat naik (*upload*) ke dalam sistem *geodatabase* bagi tujuan pengemaskinian.

Selain itu, Seksyen GIS juga bertanggungjawab membekalkan maklumat lokasi titik panas (*hotspot*) setiap hari bagi tujuan pemantauan pembakaran terbuka. Input yang berkaitan dengan maklumat spatial yang diperlukan oleh Bahagian-bahagian di Ibu Pejabat, JAS Negeri/Cawangan atau agensi luar telah juga diberikan.

Pusat Khidmat Nasihat Jas Di MIDA

Pusat Khidmat Nasihat JAS di MIDA memberi penerangan dan maklumat serta nasihat kepada bakal pelabur dari dalam dan luar negara mengenai keperluan alam sekitar di dalam pembangunan projek industri. Sehubungan dengan itu, sebanyak 90 ulasan bertulis, 50 pertanyaan melalui telefon dan 16 bilangan temujanji telah diterima dalam tahun 2003. Pertanyaan yang diterima adalah berhubung-kait dengan kesesuaian lokasi kedudukan tapak premis, zon penampan, kepakaran juruperunding alam sekitar, polisi kerajaan mengenai sisa buangan dan lain-lain.

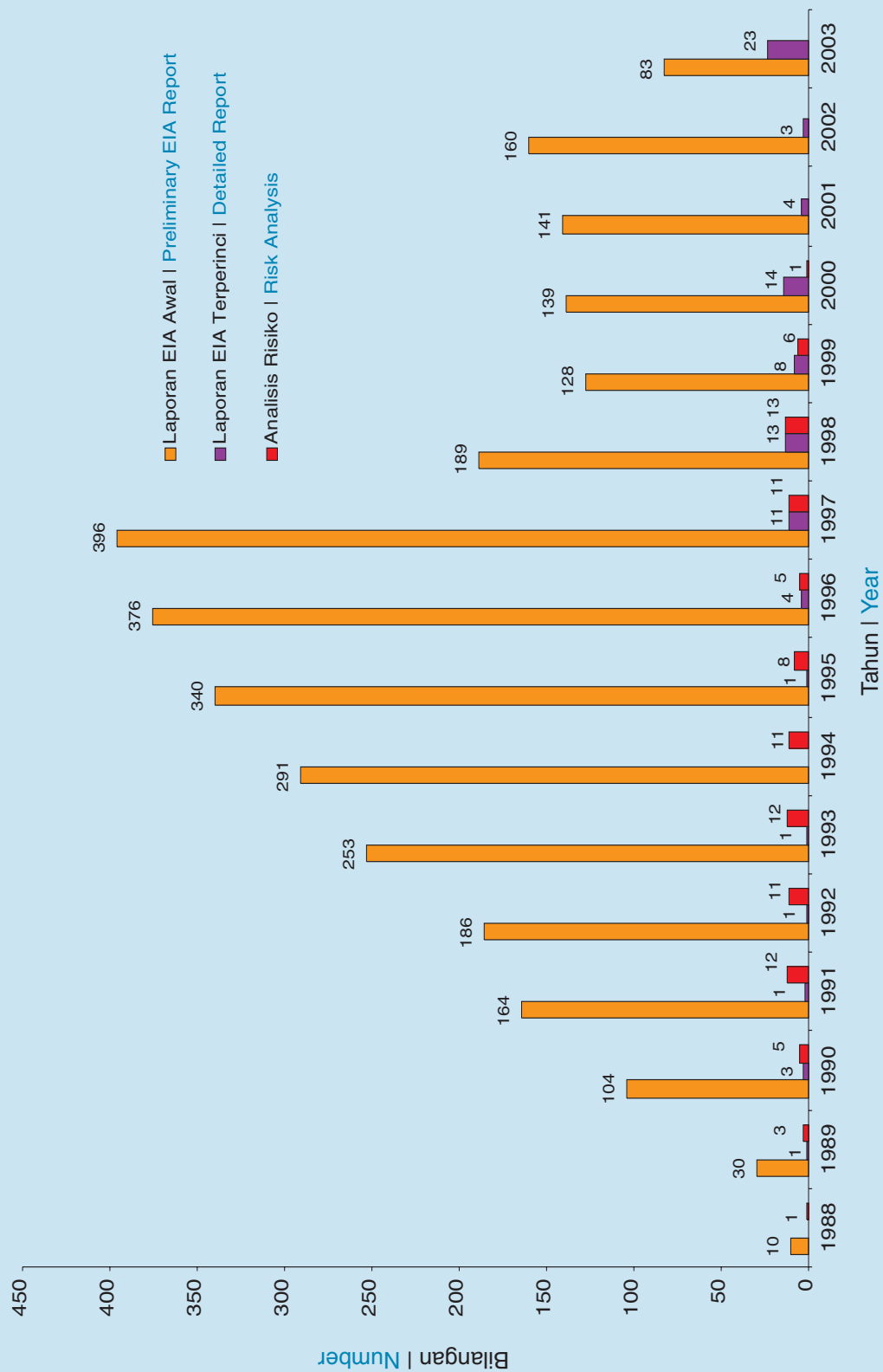
computer with suitable software. The data can be uploaded into the geodatabase system for updating.

The GIS Section is also responsible to supply hotspots information daily for the purpose of monitoring open burning. Input related to spatial information required by the various divisions at the Head Office, State Offices/Branches or external agencies were also provided.

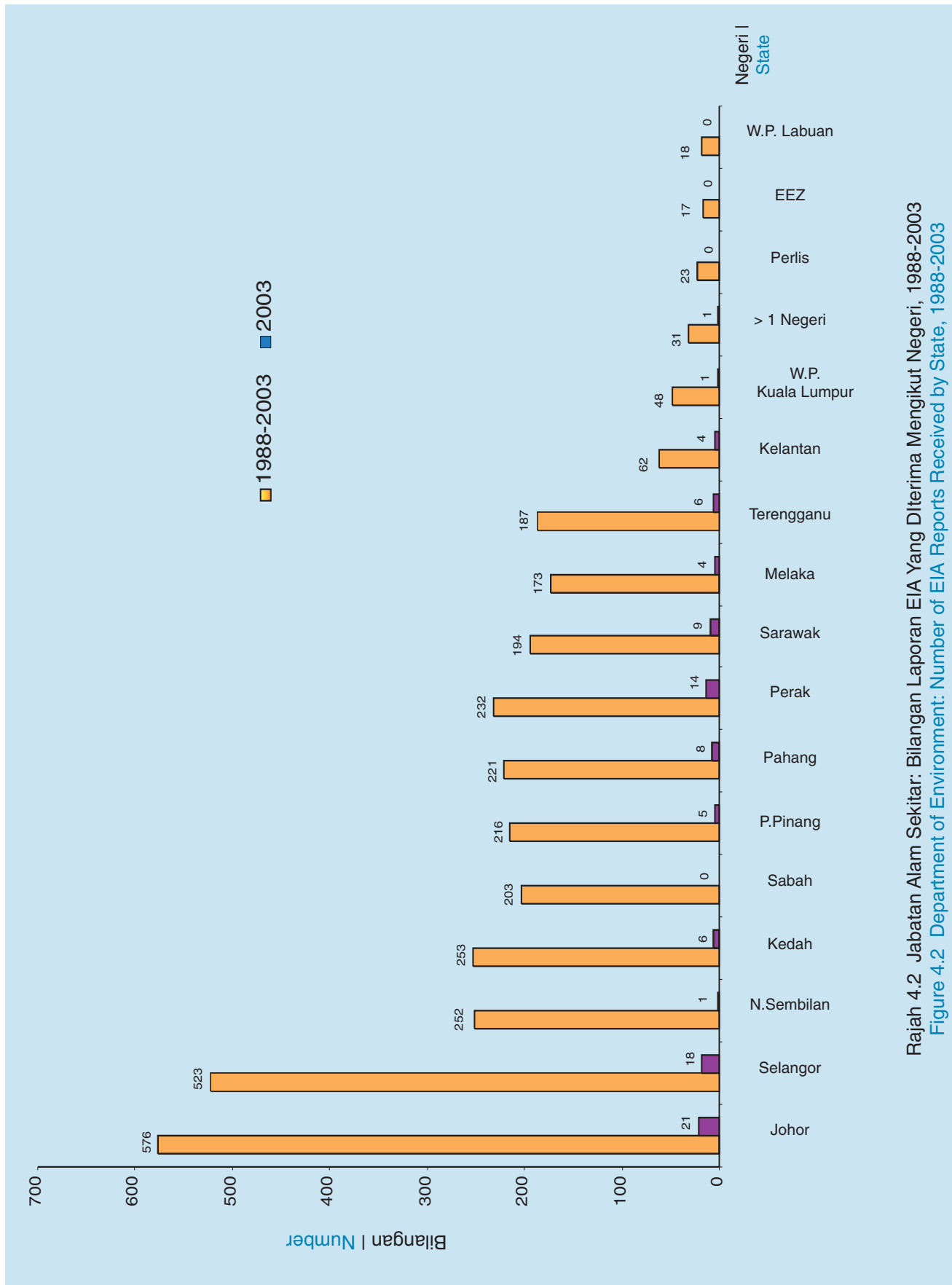
DOE Advisory Services Desk at MIDA

The DOE Advisory Services Desk at the Head Office of the Malaysian Industrial Development Authority (MIDA) serves to provide environmental information and advice to prospective local and foreign investors.

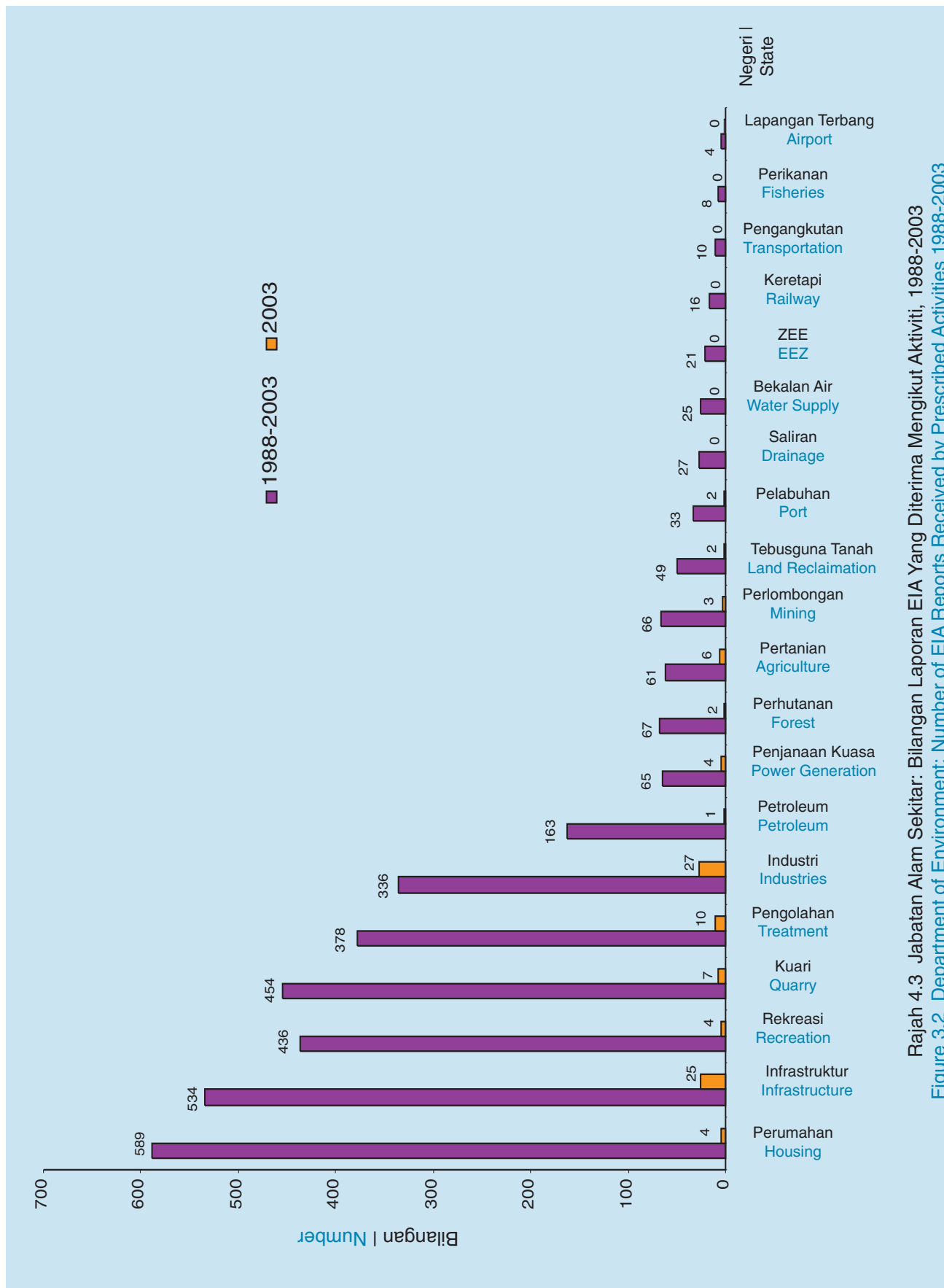
In 2003, 90 written comments were submitted to MIDA, 50 telephone enquires were attended to and 16 meetings with investors were held. Most of the enquiries received pertained to project site suitability, buffer zones, environmental consultancy expertise and government policy on waste management.



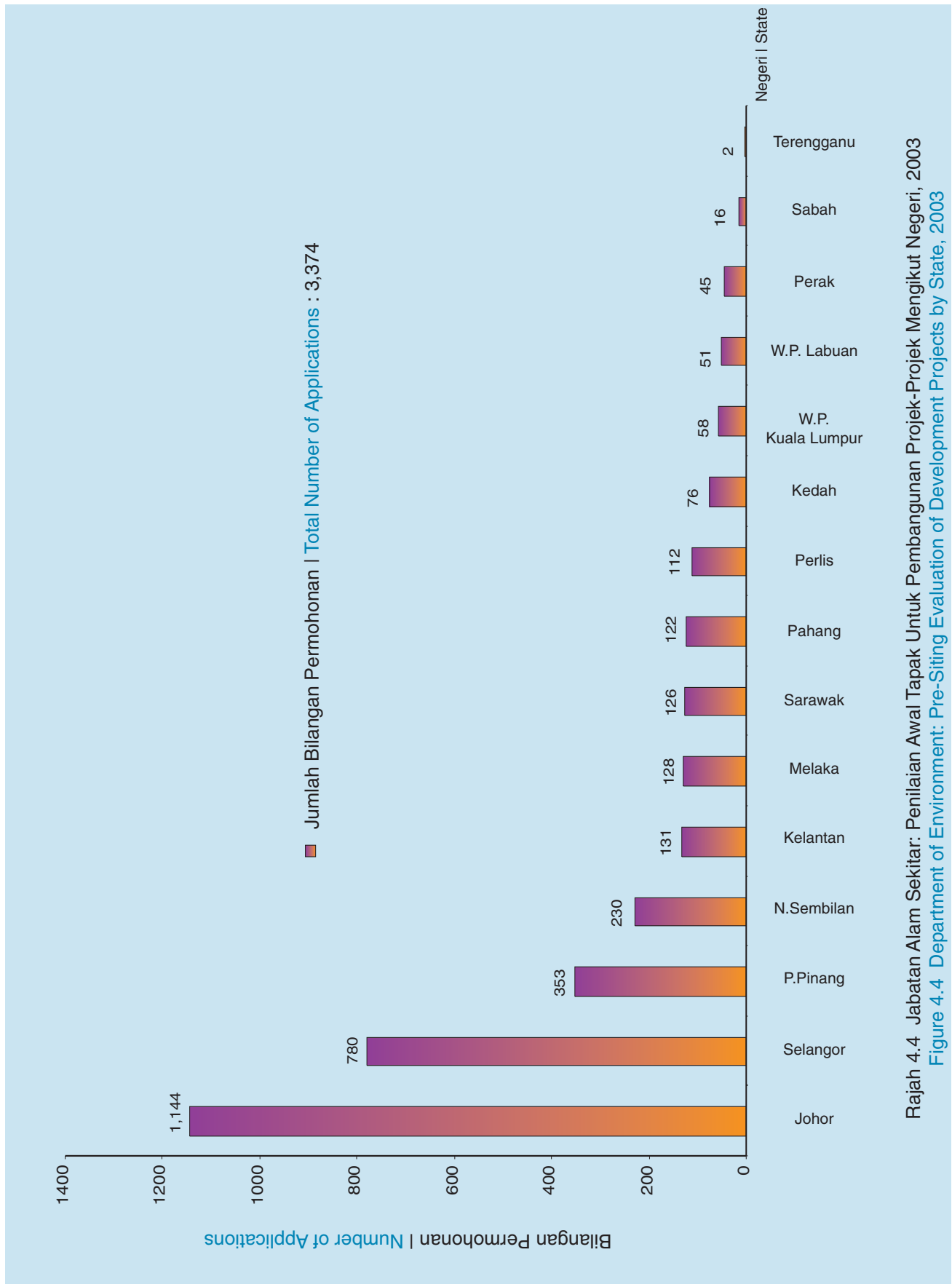
Rajah 4.1 Jabatan Alam Sekitar: Bilangan Laporan EIA dan Jenis Laporan Diterima, 1988-2003
Figure 4.1 Department of Environment: Number and Type of EIA Reports Received, 1988-2003



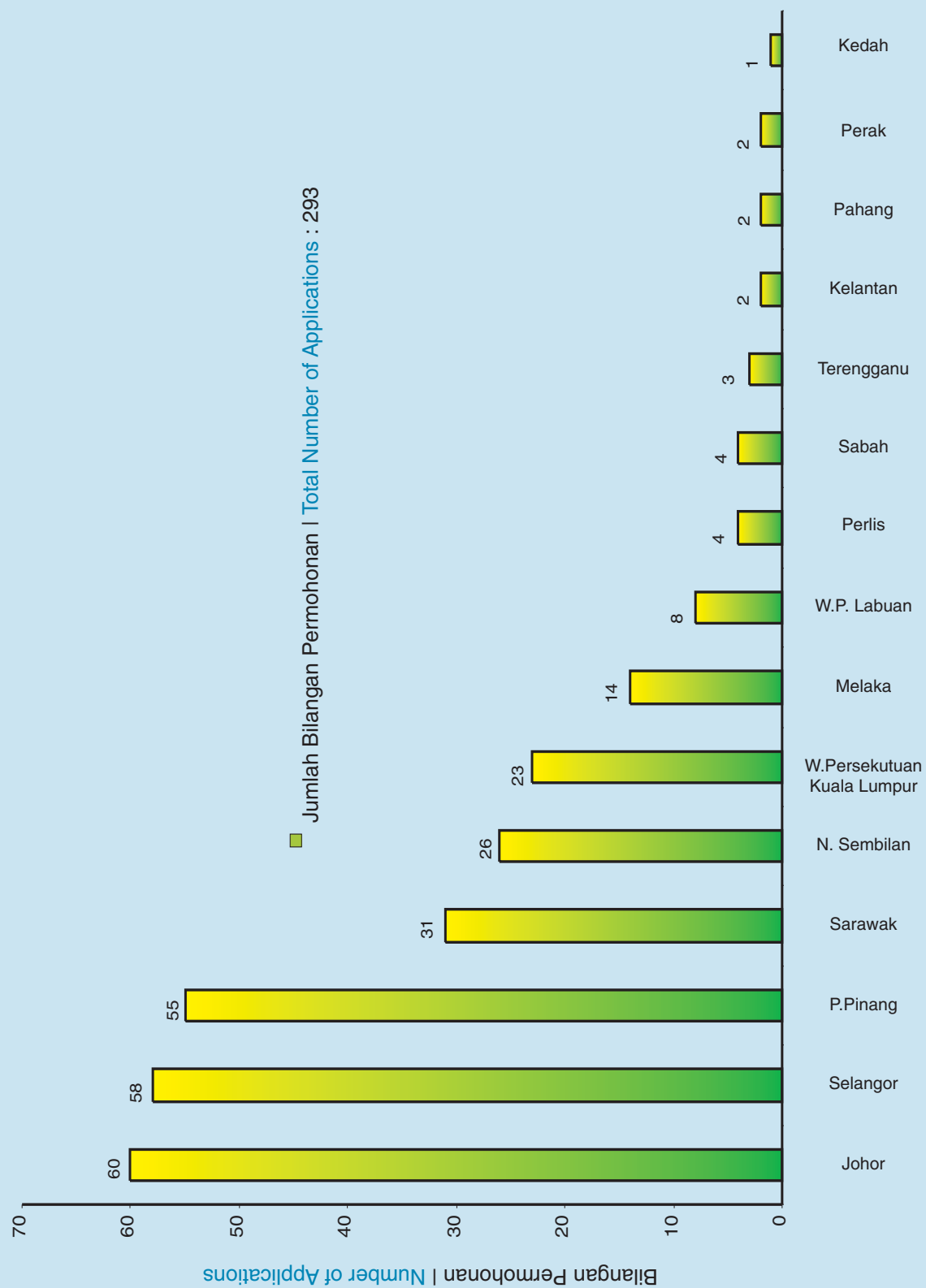
Rajah 4.2 Jabatan Alam Sekitar: Bilangan Laporan EIA Yang Diterima Mengikut Negeri, 1988-2003
 Figure 4.2 Department of Environment: Number of EIA Reports Received by State, 1988-2003



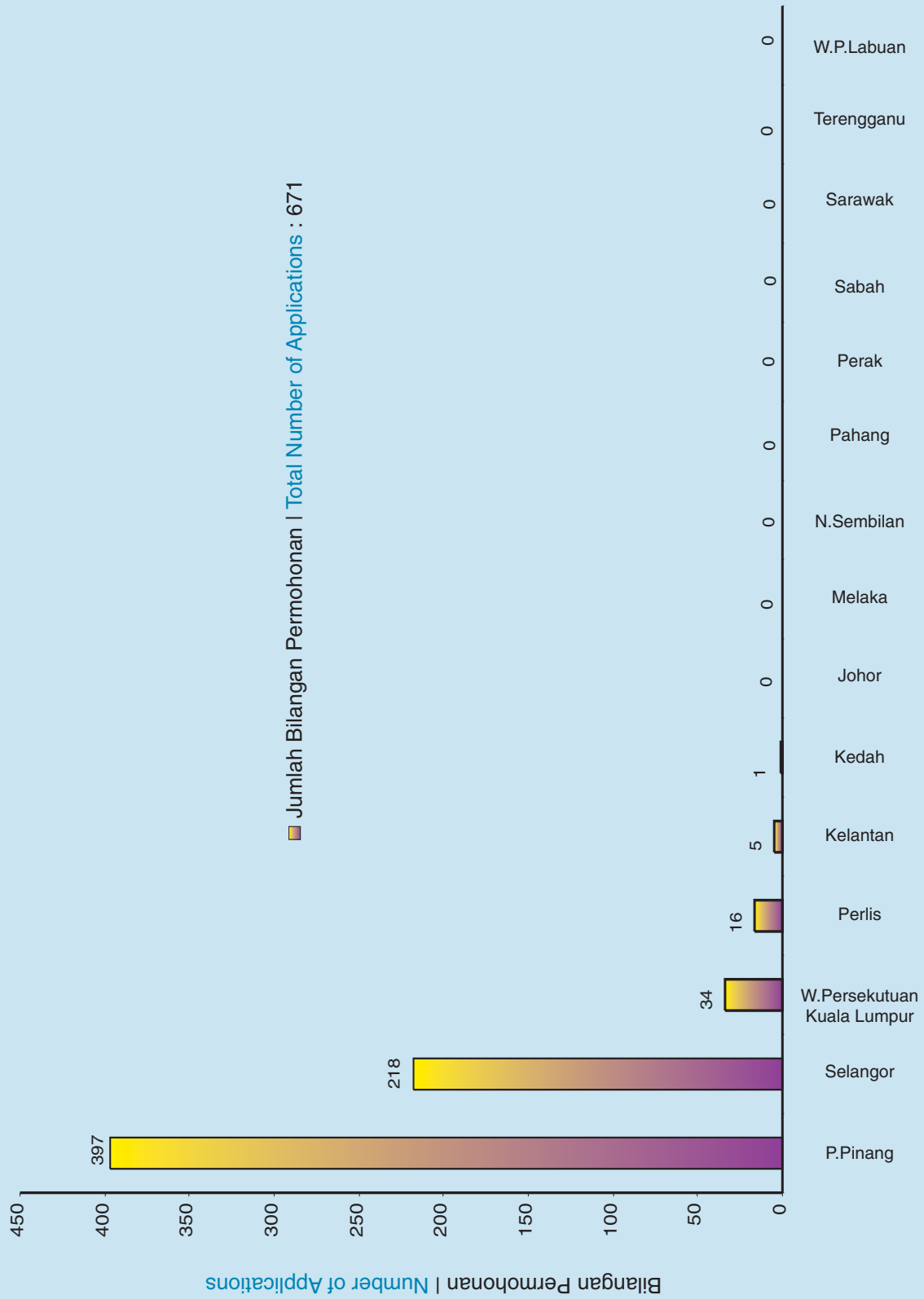
Rajah 4.3 Jabatan Alam Sekitar: Bilangan Laporan EIA Yang Diterima Mengikut Aktiviti, 1988-2003
Figure 3.2 Department of Environment: Number of EIA Reports Received by Prescribed Activities 1988-2003



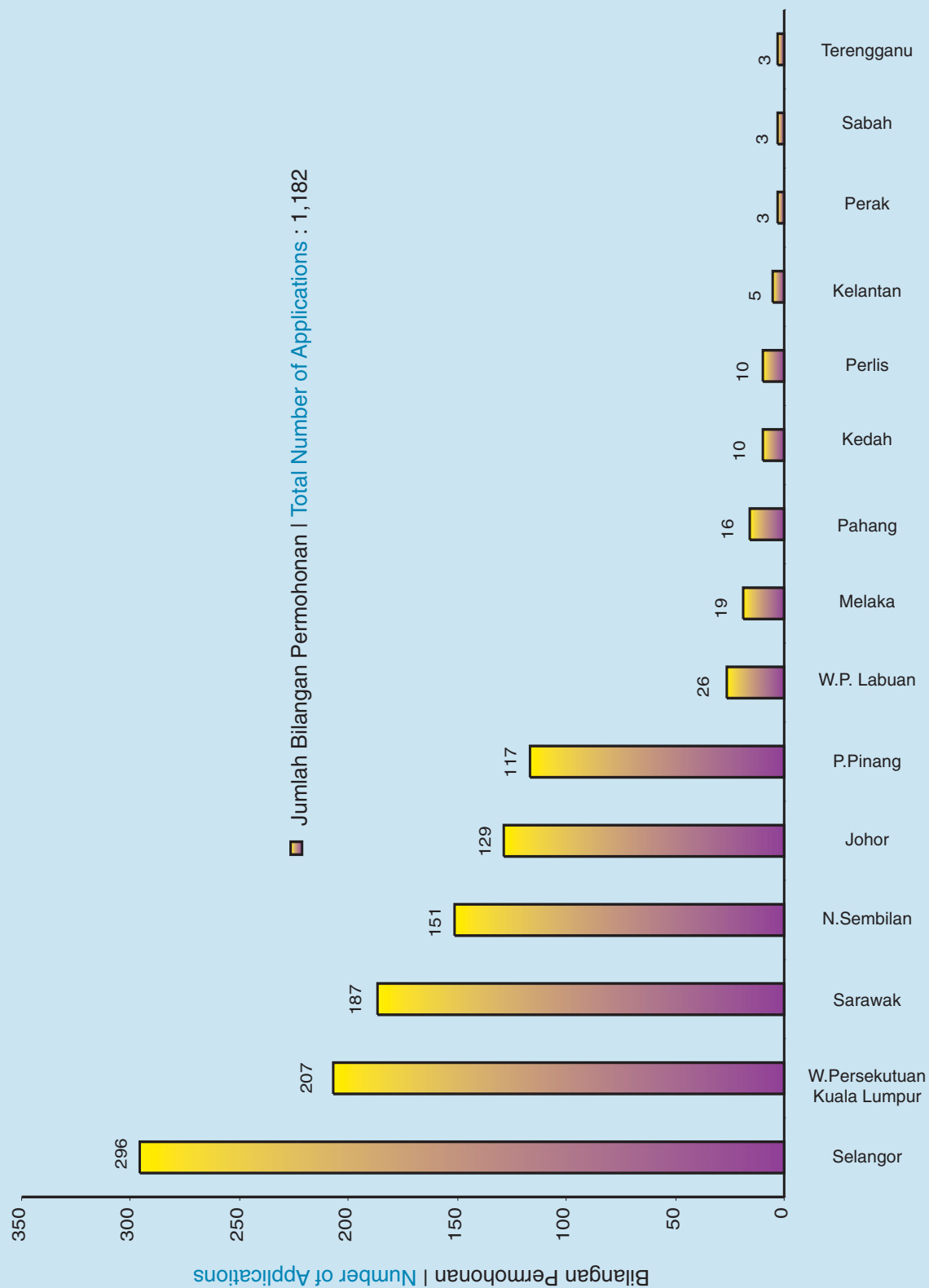
Rajah 4.4 Jabatan Alam Sekitar: Penilaian Awal Tapak Untuk Pembangunan Projek-Projek Mengikut Negeri, 2003
Figure 4.4 Department of Environment: Pre-Siting Evaluation of Development Projects by State, 2003



Rajah 4.5 Jabatan Alam Sekitar: Permohonan Bagi Kebenaran Bertulis Untuk Pembinaan Kemudahan Pengolahan Effluen Mengikut Negeri, 2003
Figure 4.5 Department of Environment: Applications for Construction of Wastewater Treatment Facilities by State, 2003



Rajah 4.6 Jabatan Alam Sekitar: Permohonan Bagi Pemasangan Alat Kawalan Pencemaran Udara Mengikut Negeri, 2003
Figure 4.6 Department of Environment: Applications for Installation of Air Pollution Control Equipment By State, 2003



Rajah 4.7 Jabatan Alam Sekitar: Permohonan Bagi Pemasangan Alat Pembakaran Bahan Api Mengikut Negeri, 2003
Figure 4.7 Department of Environment: Applications for Installation of Fuel Burning Equipment By State, 2003

Jabatan
Alam Sekitar



BAB / CHAPTER 5



Department of
Environment



PENGAWASAN KUALITI UDARA

Status Kualiti Udara

Pada tahun 2003, Jabatan Alam Sekitar (JAS) terus mengawasi status kualiti udara di dalam negara melalui rangkaian pengawasan kualiti udara kebangsaan yang terdiri dari 51 stesen automatik dan 25 stesen manual (Peta 5.1, Peta 5.2). Sulfur Dioksida (SO₂), Karbon Monoksida (CO), Nitrogen Dioksida (NO₂), Ozon (O₃) and Partikulat Terampai (PM₁₀) diawasi secara berterusan sementara logam berat termasuk plumbum (Pb) diukur sekali pada setiap enam hari. (Jadual 5.1).

Secara keseluruhan, kualiti udara di seluruh negara pada tahun 2003 meningkat sedikit berbanding tahun sebelumnya terutama bagi parameter Partikulat Terampai (PM₁₀) disebabkan oleh keadaan cuaca dalam tahun 2003.

AIR QUALITY MONITORING

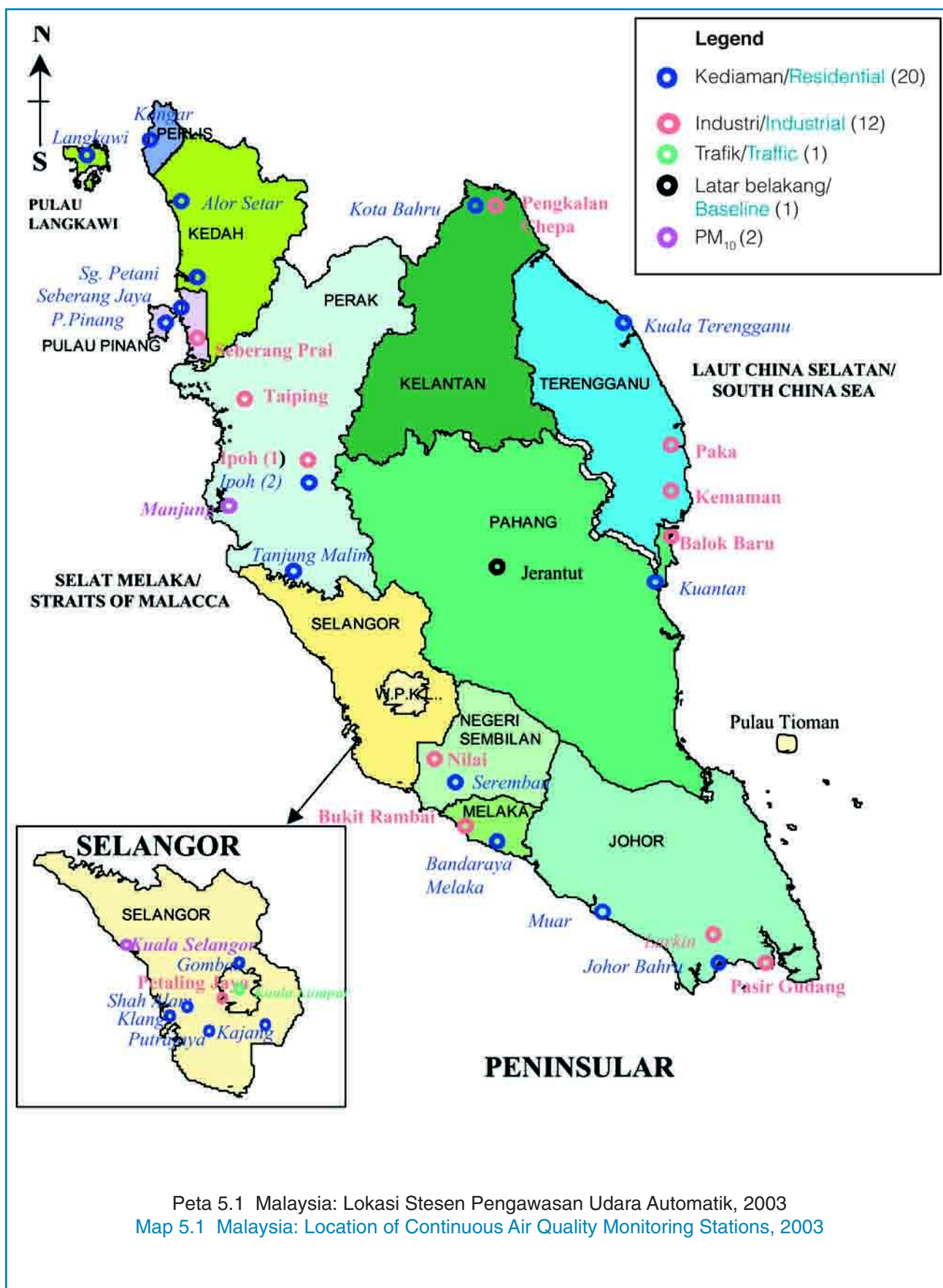
Air Quality Status

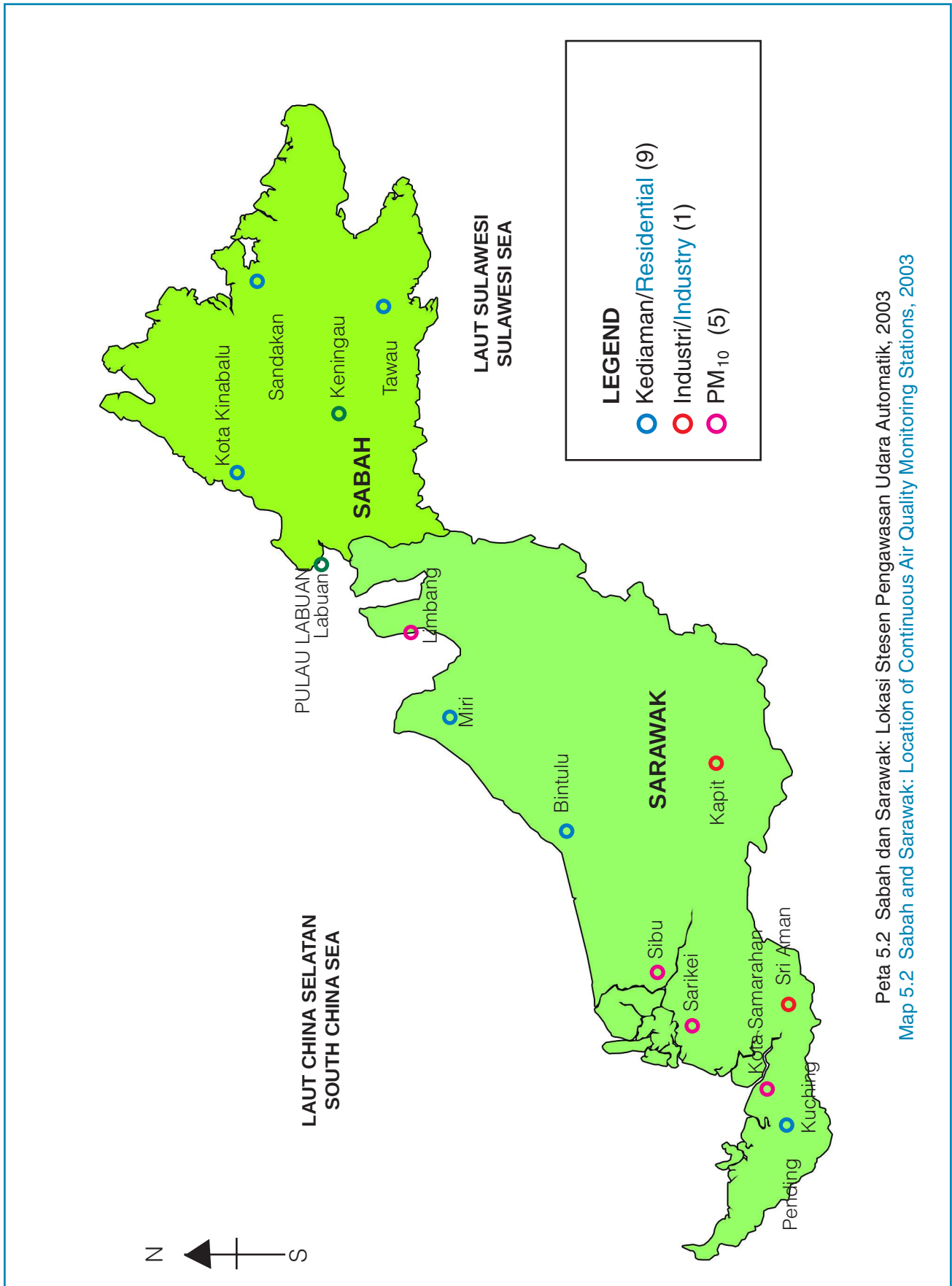
In 2003, the Department of Environment (DOE) monitored air quality under the national monitoring network consisting of 51 automatic and 25 manual stations (Map 5.1, Map 5.2). Sulphur Dioxide (SO₂), Carbon Monoxide (CO), Nitrogen Dioxide (NO₂), Ozone (O₃) and Particulate Matter (PM₁₀) were continuously monitored, while several heavy metals including lead (Pb) were measured once in every six days (Table 5.1).

The overall air quality for Malaysia throughout the 2003 improved slightly compared to 2002, such as for PM₁₀, mainly due to more wet weather conditions in 2003.

Jadual 5.1 Jabatan Alam Sekitar: Bilangan Stesen Pengawasan dan Parameter Yang Diawasi, 1997-2003
Table 5.1 Department of Environment: Number of Stations and Parameters Monitored, 1997-2003

Pencemar Pollutant	1997	1998	1999	2000	2001	2002	2003
Karbon Monoksida Carbon Monoxide, (CO)	21	27	34	39	39	39	40
Nitrogen Dioksida Nitrogen Dioxide, (NO ₂)	27	33	40	45	45	45	46
Partikulat Terampai Particulate Matter, (PM ₁₀)	27	37	44	40	50	50	51
Sulfur Dioksida Sulphur Dioxide, (SO ₂)	27	33	40	45	50	50	51
Ozon Ozone, (O ₃)	21	27	34	39	39	39	40
Plumbum Lead	11	16	19	23	3	3	3





Peta 5.2 Sabah dan Sarawak: Lokasi Stesen Pengawasan Udara Automatik, 2003
Map 5.2 Sabah and Sarawak: Location of Continuous Air Quality Monitoring Stations, 2003

PUNCA-PUNCA PENCEMARAN UDARA (PUNCA TETAP DAN PUNCA TIDAK TETAP)

Kajian Pembentukan Faktor-faktor Pelepasan Untuk Bahan Pencemar Industri

Terdapat empat objektif utama kajian ini iaitu:-

- Untuk mengkaji dan mengenalpasti proses-proses yang dijalankan di industri-industri berkenaan, sumber pencemaran dan jenis peralatan kawalan yang digunakan bagi setiap industri yang terbabit;
- Untuk mengukur pelepasan pencemar yang dilepaskan ke udara dari setiap punca;
- Untuk membentuk faktor pelepasan bagi pengiraan beban pencemaran yang dilepaskan hasil dari aktiviti perindustrian tersebut;
- Untuk membangunkan pangkalan data dalam bentuk perisian yang mesra pengguna bagi tujuan pengiraan beban pencemaran udara.

Kajian ini telah selesai dijalankan pada bulan Oktober 2003 dan pihak perunding kajian telah mencadangkan nilai-nilai faktor pelepasan bagi setiap industri yang terbabit untuk digunapakai dalam menganggarkan beban pencemaran udara bagi sektor-sektor tersebut seperti kilang minyak kelapa sawit mentah, getah, simen, kuari, stesen jana kuasa, insinerator, industri logam, petrokimia dan kenderaan bermotor.

Kajian Pengukuran dan Penentuan Standard Bau

Di bawah rancangan Malaysia Ke Lapan, JAS dengan kerjasama Lembaga Getah Malaysia (LGM) telah menjalankan “Kajian Pengukuran dan Penentuan Standard Bau” bertujuan untuk menentupasti nilai atau tahap bau yang tertentu untuk dijadikan sebagai standard pelepasan bau yang boleh diterima bagi

AIR POLLUTION SOURCES (STATIONARY AND AREA SOURCES)

Study on Formulation of Emission Factors for Industrial Pollutants

The primary objectives of the study were:

- To study and identify the processes in selected industries, as well as to identify sources of pollution and various control equipment employed for each industries;
- To measure the actual pollutant emissions from each source;
- To formulate the emission factor for emission load calculations based on pollutants emitted from selected industrial activities;
- To develop a user friendly computer database for pollution load calculation.

This study was completed in October 2003 and recommended values of emission factors for selected pollution sources to provide better estimate of emission load calculations such as for crude palm oil mills, rubber factories, cement plants, quarries, power generation stations, incinerator, metal industries, petrochemical plants and mobile sources.

Study on Odour Measurements and Standards

Under the Eighth Malaysian Plan, DOE with cooperation from the Malaysian Rubber Board (LGM) conducted a Study on Odour Measurement and Standards with the objective of determining odour thresholds and odorant concentrations of the gas samples collected for air pollution (odour) control. The

tujuan mengawal masalah pencemaran bau. Kajian ini telah dimulakan pada tahun 2002 dan dijangka akan diselesaikan pada penghujung tahun 2004.

Hasil dan cadangan-cadangan dari kajian ini akan digunakan oleh JAS sebagai asas dalam menggubal peraturan dan standard bau di Malaysia.

PROGRAM PEMANTAUAN KUALITI AIR SUNGAI

Jabatan Alam Sekitar telah menjalankan Program Pengawasan Kualiti Air di seluruh negara sejak tahun 1978. Program tersebut kini dilaksanakan oleh Alam Sekitar Malaysia Sdn. Bhd. (ASMA) mulai tahun 1995 melalui program penswastaan. Pada 2003, terdapat stesen pengawasan yang melibatkan 120 buah lembangan sungai di Malaysia (Jadual 5.2).

Sampel air yang diambil dari 926 buah stesen dianalisa bagi enam (6) parameter berikut untuk mengira Indeks Kualiti Air (IKA):

- Keperluan Oksigen Biokimia (BOD)
- Keperluan Oksigen Kimia (COD)
- Ammoniakal Nitrogen (NH_3N)
- pH
- Oksigen Terlarut (DO)
- Pepejal Terampai (SS)

Berdasarkan keperluan di tapak, parameter lain seperti logam berat dan pencemaran bakteria juga turut dianalisis. Sepuluh (10) buah stesen pemantauan kualiti air sungai secara automatik untuk mengesan perubahan secara terus menerus kepada kualiti air Sungai Perai (Pulau Pinang), Sungai Perak (Perak), Sungai Selangor (Selangor), Sungai Kelang (WPKL), Sungai Linggi (Negeri Sembilan), Sungai Melaka (Melaka), Sungai Skudai (Johor), Sungai Keratong (Pahang), Sungai Terengganu (Terengganu) dan Sungai Sarawak (Sarawak) juga telah ditubuhkan (Jadual 5.3). Di bawah Program Pencegahan Pencemaran dan Peningkatan Kualiti Air Sungai, lima (5) stesen automatik tambahan telah ditubuhkan di

study started in 2002 and would be completed by the end of 2004.

The findings and recommendations from this study will be used by DOE as a basis to formulate regulations on odour emission standards.

RIVER WATER QUALITY MONITORING

The Department of Environment (DOE) National River Water Monitoring Programme started in 1978 but since 1995, it was contracted out to Alam Sekitar Malaysia Sdn Bhd (ASMA) under a privatisation arrangement. In 2003, 926 stations located within 120 river basins in Malaysia were monitored (Table 5.2).

Water samples taken from the 926 stations were analysed to compute the Water Quality Index (WQI) based on the following parameters :

- Biochemical Oxygen Demand (BOD)
- Chemical Oxygen Demand (COD)
- Ammoniacal Nitrogen (NH_3N)
- pH
- Dissolved Oxygen (DO)
- Suspended Solids (SS)

Depending on site requirement, other parameters such as heavy metals and bacterial contamination were measured. In addition, ten (10) automatic water quality monitoring stations monitored river quality changes on a continuous basis at Sungai Perai (Pulau Pinang), Sungai Perak (Perak), Sungai Selangor (Selangor), Sungai Kelang (WPKL), Sungai Linggi (Negeri Sembilan), Sungai Melaka (Melaka), Sungai Skudai (Johor), Sungai Keratong (Pahang), Sungai Terengganu (Terengganu) and Sungai Sarawak (Sarawak) [Table 5.3]. Under the Pollution Prevention and Water Quality Improvement Programme, five (5) additional automatic stations were installed at Sungai Langat (Selangor), Sungai Batang Benar (Negeri

Sungai Langat (Selangor), Sungai Labu (N. Sembilan), Sungai Batang Benar (N. Sembilan), Sungai Putat (Melaka) dan Sungai Rajang (Sarawak).

Program Kerjasama Dalam Penambahbaikan Kualiti Air Sungai

Bengkel bagi program ini telah diadakan pada 12-15 Ogos 2003 di Tanjung Bidara Resort, Melaka. Program PREP ini adalah lanjutan dari Program Jaminan Mutu (QA/QC) yang diadakan pada tahun-tahun sebelumnya. Bengkel tersebut diuruskan dan ditaja oleh Alam Sekitar Malaysia Sdn. Bhd. (ASMA) dengan kerjasama Jabatan Alam Sekitar, Universiti Teknologi Malaysia (UTM) dan EiMAS. Peserta-peserta yang terlibat adalah dari setiap Pejabat JAS Negeri dan pihak ASMA. Objektif utama program ini adalah untuk menyediakan Pelan Tindakan bagi meningkatkan dan sekurang-kurangnya mengekalkan tahap kualiti air sungai-sungai yang telah dipilih di setiap negeri dengan mengambilkira beban pencemaran dan konsep Pengurusan Bersepadu Lembangan Sungai. Di bawah program ini, 14 sungai telah dipilih iaitu: Sungai Ngulang (Perlis); Sungai Padang Terap (Kedah); Sungai Kilang Ubi (Pulau Pinang); Sungai Kinta (Perak); Sungai Sembah (Selangor); Sungai Keroh (WPKL); Sungai Simin (Negeri Sembilan); Sungai Merlimau (Melaka); Sungai Perembi (Johor); Sungai Bentong (Pahang); Sungai Landas (Terengganu); Sungai Galas (Kelantan); Sungai Kuap (Sarawak) dan Sungai Sembulan (Sabah). Program ini juga bertujuan untuk mendapatkan kerjasama dari pelbagai pihak dalam meningkatkan kualiti air sungai.

Sembilan) Sungai Labu (Negeri Sembilan), Sungai Putat (Melaka) and Sungai Rajang (Sarawak).

Partnership in River Enhancement Programme (PREP)

A PREP Workshop was organized from 12-15 August 2003 at Tanjung Bidara Resort, Melaka. The PREP programme was an extension of the Quality Assurance Programme which was conducted the previous year. The Workshop was managed by Alam Sekitar Malaysia Sdn. Bhd. (ASMA) in collaboration with the Department of Environment, Universiti Teknologi Malaysia (UTM) and EiMAS. Participants were from DOE State Offices and ASMA. The primary objective was to prepare an Action Plan for the enhancement and maintenance of the water quality of selected rivers in each State taking into account pollution load and the integrated river basin management concept. The 14 selected rivers under the programme were: Sungai Ngulang (Perlis); Sungai Padang Terap (Kedah); Sungai Kilang Ubi (Pulau Pinang); Sungai Kinta (Perak); Sungai Sembah (Selangor); Sungai Keroh (WPKL); Sungai Simin (N. Sembilan); Sungai Merlimau (Melaka); Sungai Perembi (Johor); Sungai Bentong (Pahang); Sungai Landas (Terengganu), Sungai Galas (Kelantan); Sungai Kuap (Sarawak) and Sungai Sembulan (Sabah). This programme was also aimed at seeking the cooperation of other stakeholders for river quality enhancement.

Pemantauan Kualiti Air Sungai di Kawasan Wabak Japanese Encephalitis (JE)

Aktiviti khusus ini yang mula dilaksanakan pada bulan April 1999, diteruskan dalam tahun 2003 bagi mengesan perubahan kepada kualiti air sungai dari pelupusan bangkai babi di kawasan wabak JE di Negeri Sembilan (4 stesen), Melaka (4 stesen) dan Perak (2 stesen).

River Monitoring in the Vicinity of Areas Previously Affected by the Japanese Encephalitis (J.E) Outbreak

This specific activity which started in April 1999 was continued in 2003, to detect, if any, river water quality changes in JE affected areas in Negeri Sembilan (4 stations), Melaka (4 stations) and Perak (2 stations).

Jadual 5.2 Jabatan Alam Sekitar: Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2003
Table 5.2 Department of Environment: List of River Basins and Rivers Monitored, 2003

NEGERI STATE	KOD WKA CODE WQR	LEMBANGAN SUNGAI RIVER BASIN	BIL. STESEN NO. OF STATIONS	SUNGAI DIAWASI RIVERS MONITORED	BIL. STESEN NO. OF STATIONS
PERLIS	01	PERLIS	10	ARAU JARUM JERNIH KOK MAK NGULANG PERALIT PERLIS SERAI TASOH	1 1 2 1 1 1 1 1 1
KEDAH	01PL	MELAKA	3	KISAP MELAKA PETANG	1 1 1
	03	KEDAH	6	KEDAH PADANG TERAP PEDU TEKAI	1 3 1 1
	4	MERBOK	10	BAKAR ARANG BATU BONGKOK BUKIT MERAH KOROK MERBOK PETANI TOK PAWANG TUPAH	1 1 1 1 1 1 1 2 1
KEDAH / PULAU PINANG	05	MUDA	9	JERUNG KETIL MUDA MUDA (P.PINANG) TAWAR	2 1 3 1 2
PULAU PINANG	06J	JURU	8	ARA JURU KILANG UBI PASIR	1 1 2 1

Jadual 5.2 Jabatan Alam Sekitar: Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2003
Table 5.2 Department of Environment: List of River Basins and Rivers Monitored, 2003 (continued)

NEGERI STATE	KOD WKA CODE WQR	LEMBANGAN SUNGAI RIVER BASIN	BIL. STESEN NO. OF STATIONS	SUNGAI DIAWASI RIVERS MONITORED	BIL. STESEN NO. OF STATIONS
PULAU PINANG / KEDAH	06P	PERAI	22	RAMBAI	3
				AIR MELINTAS	1
				JARAK (KEDAH)	2
				JARAK	4
				KELADI	1
				KEREH	4
				KUBANG SEMANG	2
				KULIM	3
				PERAI	2
				SELUANG (KEDAH)	1
PULAU PINANG	06PP	PINANG/KLUANG	12	SELUANG BAWAH (KEDAH)	2
				AIR ITAM	5
				AIR TERJUN	1
				DONDANG	3
				JELUTONG	1
	07	JEJAWI	5	KLUANG	1
				PINANG	1
				CEMPEDAK	1
				JAWI	3
				JUNJONG	1
PULAU PINANG / PERAK	08	KERIAN	10	KECHIL	3
				KERIAN	4
				SELAMA (PERAK)	2
				SERDANG	1
PERAK	09	KURAU	5	ARA	1
	10	SEPETANG	10	KURAU	4
				BATU TEGUH	2
				JANA	1
				LARUT	1
	10	SEPETANG		LIDIN	1
				MALAI	1
				SEPETANG	3
	10T	TEMERLOH	2	TUPAI	1
				TEMERLOH	2
	11	BERUAS	4	BRUAS	2
				ROTAN	2
	12	RAJA HITAM/ MANJONG	6	DERHAKA	2
				MANJONG	2
				RAJA HITAM	2
	12W	WANGI/DERALIK	4	DERALIK	2
				WANGI	2
				BATANG PADANG	3
				BIDOR	3
				CHENDERANG	2
				CUAR	2
				KAMPAR	2
				KANGSAR	2
				KEPAYANG	2

Jadual 5.2 Jabatan Alam Sekitar: Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2003
Table 5.2 Department of Environment: List of River Basins and Rivers Monitored, 2003 (continued)

NEGERI STATE	KOD WKA CODE WQR	LEMBANGAN SUNGAI RIVER BASIN	BIL. STESEN NO. OF STATIONS	SUNGAI DIAWASI RIVERS MONITORED	BIL. STESEN NO. OF STATIONS
PERAK	13	PERAK	53	KERDAH	2
				KINTA	6
				KLAH	2
				KLIAN BARU	2
				KUANG	1
				PARI	2
				PELUS	2
				PERAK	8
				PINJI	2
				RAIA	2
				SELUANG	1
				SEROKAI	2
				SUNGKAI	2
				SUNGKAI MATI	2
				TUMBOH	1
PERAK / SELANGOR	14	BERNAM	10	BERNAM	4
				BERNAM (SELANGOR)	2
				SLIM	2
				TEROLAK	2
SELANGOR	15	TENGI	2	TENGI	2
	16	SELANGOR	9	BATANG KALI	1
				KANCING	1
				KERLING	1
				SELANGOR	4
				SEMPAH	1
				SERENDAH	1
	17	BULOH	5	BULOH	5
SELANGOR/ WPKL	18	KLANG	24	AMPANG	1
				BATU	1
				BATU (WPKL)	1
				DAMANSARA	3
				GOMBAK	2
				GOMBAK (WPKL)	1
				JINJANG (WPKL)	1
				KERAYONG (WPKL)	1
				KEROH (WPKL)	1
				KLANG	6
				KLANG (WPKL)	4
				KUYOH (WPKL)	1
				PENCALA	1
SELANGOR/ N. SEMBILAN	19	LANGAT	28	ANAK CHUAU	1
				BALAK	1
				BATANG BENAR (N.S)	2
				BATANG LABU	1
				BATANG LABU (N.S)	1
				BATANG NILAI (N.S)	2
				BERANANG	1
				BUAN	1
				CHUAU	2

Jadual 5.2 Jabatan Alam Sekitar: Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2003
Table 5.2 Department of Environment: List of River Basins and Rivers Monitored, 2003 (continued)

NEGERI STATE	KOD WKA CODE WQR	LEMBANGAN SUNGAI RIVER BASIN	BIL. STESEN NO. OF STATIONS	SUNGAI DIAWASI RIVERS MONITORED	BIL. STESEN NO. OF STATIONS
SELANGOR/ N. SEMBILAN	19	LANGAT		JIJAN	1
				LANGAT	8
				LIMAU MANIS	1
				LUI	1
				PAJAM	1
				RINCHING	1
				SEMENYIH	3
SELANGOR	20	SEPANG	3	SEPANG	3
	20J	LUKUT	1	LUKUT	1
NEGERI SEMBILAN	21	LINGGI	15	BATANG BENAR	1
				CHEMBONG	1
				KEPAYONG	1
				KUNDUR BESAR	1
				LINGGI	6
				PEDAS	1
				REMBAU	2
				SIMIN	1
				TEMIANG	1
MELAKA	22	MELAKA	17	BTG.MELAKA	2
				DURIAN TUNGGAL	1
				MELAKA	9
				PUTAT	2
				REMBIA	2
				TAMPIN	1
	23	DUYONG	3	DUYONG	3
	24	KESANG/MERLIMAU	8	CHOHONG	2
				KESANG	3
				MERLIMAU	3
	25	MUAR	43	GEMENCHEH (N.S)	3
				JUASSEH	2
				KELAMAH (N.S)	2
JOHOR/NEGERI SEMBILAN				LABIS	4
				MERBUDU	1
				MERLIMAU	1
				MUAR	11
				MUAR (N.S)	5
				P. MENGKUANG	1
				PALONG	2
				PALONG (N.S)	2
				SEGAMAT	1
				SENARUT	2
				SEROM	1
				SPG. LOI	2
				TEMARONG (N.S)	1
				TENANG	2
JOHOR	26	BATU PAHAT	23	AMRAN	2
				BATU PAHAT	1
				BEKOK	4
				BERLIAN	2

Jadual 5.2 Jabatan Alam Sekitar: Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2003
Table 5.2 Department of Environment: List of River Basins and Rivers Monitored, 2003 (continued)

NEGERI STATE	KOD WKA CODE WQR	LEMBANGAN SUNGAI RIVER BASIN	BIL. STESEN NO. OF STATIONS	SUNGAI DIAWASI RIVERS MONITORED	BIL. STESEN NO. OF STATIONS
JOHOR				CHAAH LENIK MEREK MERPO SEMBERONG SIMPANG KANAN SIMPANG KIRI	2 1 2 2 2 2 3
	27A	AIR BALOI	3	AIR BALOI	3
	27B	BENUT	7	BENUT PT. HAJI YASSIN ULU BENUT	4 2 1
	28	SEGGET	5	SEGGET	5
	28A	PONTIAN BESAR	5	AIR HITAM AYER MERAH PONTIAN BESAR	1 1 3
	28B 28C	PONTIAN KECIL SKUDAI	2 11	PONTIAN KECIL MELANA SKUDAI	2 2 9
	28D	TEBRAU	5	PLENTONG TEBRAU	1 4
	28E	KEMPAS	2	KEMPAS	2
	28F	DANGA	2	DANGA	2
	28G	RAMBAH	2	RAMBAH	2
	29	JOHOR	44	ANAK SG. SAYONG BERANGAN BKT. BESAR CHEMANGAR JOHOR LAYANG LAYAU KIRI LEBAM LINGGIU PENGGEI REMIS SANTI SAYONG SEBOL SEMANGER SEMENCHU SENING SERAI TELOR TEMON TIRAM	3 2 2 1 4 1 2 2 1 2 1 4 2 1 2 2 2 2 2 2 4
	29B	KAW. PASIR GUDANG	5	TUKANG BATU BULUH LATOH MASAI PEREMBI	1 1 1 1 1

Jadual 5.2 Jabatan Alam Sekitar: Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2003
Table 5.2 Department of Environment: List of River Basins and Rivers Monitored, 2003 (continued)

NEGERI STATE	KOD WKA CODE WQR	LEMBANGAN SUNGAI RIVER BASIN	BIL. STESEN NO. OF STATIONS	SUNGAI DIAWASI RIVERS MONITORED	BIL. STESEN NO. OF STATIONS
	30A	SEDILI BESAR	13	AMBAT	2
				DOHOL	1
				MUPUR	1
				SEDILI BESAR	5
				SEMANGGOT KANAN	1
				SEMANGGOT KIRI	1
				TEMUBOR KANAN	2
	30B	SEDILI KECIL	5	ANAK SEDILI KECIL	1
				BAHAN	2
				SEDILI KECIL	2
	30C	PALOI	2	PALOI	2
	31A	MERSING	1	MERSING	1
	31B	JEMALUANG	2	JEMALUANG	2
	32	ENDAU	29	A.S. SEMBERONG	2
				DENGAR	2
				ENDAU	1
				JEBONG	1
				LENGA	2
				LENGGOR	2
				MAMAI	2
				MELANTAI	2
				MENGKIBOL	3
				PALOH	2
				PAMOL	1
				SEMBERONG	5
				SINGOL	2
				TAMOK	2
	32/33	PONTIAN	3	PONTIAN	2
	32AE	ANAK ENDAU	2	SEPAYANG	1
				ANAK ENDAU	2
	33	ROMPIN	18	AUR	1
				BAKAR	1
				JEKATIH	2
				JERAM	1
				KEPASING	1
				KERATONG	4
				PUKIN	3
				REKOH	1
				ROMPIN	4
	34	BEBAR/MERCHONG	8	BEBAR	1
				KELAYAT	1
				MERBA	1
				MERCHONG	1
				SERAI	2
	35	SERTING	5	TEMIANG	2
				MOKEK	2
	35B	BERA	5	SERTING	3
				BERA	3

Jadual 5.2 Jabatan Alam Sekitar: Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2003
Table 5.2 Department of Environment: List of River Basins and Rivers Monitored, 2003 (continued)

NEGERI STATE	KOD WKA CODE WQR	LEMBANGAN SUNGAI RIVER BASIN	BIL. STESEN NO. OF STATIONS	SUNGAI DIAWASI RIVERS MONITORED	BIL. STESEN NO. OF STATIONS
PAHANG	35CH	BERTAM	10	TRIANG	1
				TASIK BERA	1
				BERTAM	2
				BURUNG	1
				HABU	1
				LENGGOK	1
				RINGLET	1
				TELOM	2
				TERLA	1
				TRINGKAP	1
	35L	LEPAR	10	ANAK SG. LEPAR	1
				BELAYAR	1
				BERKAPOR	2
				CHINI	1
				LEPAR	3
				T. PAYA BUNGOR	1
	35M	MENTIGA	2	TASIK CHINI	1
				MENTIGA	2
	35P	PAHANG	53	BATU	1
				BENTONG	4
				BENUS	2
				BILUT	1
				JELAI	2
				JEMPOL	2
				JENGKA	2
				KELAU	2
				KERTAM	1
				KOYAN	1
				KUNDANG	1
				LIPIS	3
				LUIT	1
				MARAN	2
				PAHANG	9
				PENJURING	1
				PERTANG (N.S)	2
				PERTING	1
				SEMANTAN	3
				SERTING	2
				SIAM	1
				TANGLIR	1
				TEKAL	1
				TEKAM	2
				TELANG	1
	35P	PAHANG		TELEMONG	2
				TERANUM	1
				TERAS	1
	36	KUANTAN	11	BELAT	1
				CHARU	1
				GALING BESAR	1

Jadual 5.2 Jabatan Alam Sekitar: Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2003
Table 5.2 Department of Environment: List of River Basins and Rivers Monitored, 2003 (continued)

NEGERI STATE	KOD WKA CODE WQR	LEMBANGAN SUNGAI RIVER BASIN	BIL. STESEN NO. OF STATIONS	SUNGAI DIAWASI RIVERS MONITORED	BIL. STESEN NO. OF STATIONS
				GALING KECIL	1
				KENAU	1
				KUANTAN	4
				PINANG	1
				RIAU	1
	37	BALOK/TONGGOK	5	BALOK	2
				TONGGOK	3
	37A	CERATING	1	CERATING	1
TERENGGANU	38	KEMAMAN	10	CHERUL	2
				KEMAMAN	2
				NERAM	2
				PERASING	2
				RANSAN	2
	39C	CHUKAI	5	CHUKAI	1
				IBOK	2
				RUANG	2
	39K	KERTIH	2	KERTIH	2
	40	PAKA	10	BESUL	2
				PAKA	4
				RASAU	2
				RENGAT	2
	41	DUNGUN	4	DUNGUN	2
				TELEMBOH	2
	42I	IBAI	3	IBAI	3
	42L	LANDAS	2	LANDAS	2
	42M	MARANG	5	KERAK	2
				MARANG	1
				TEMALA	2
	43	TERENGGANU	9	BERANG	2
				NERUS	3
				PUEH	2
				TERENGGANU	2
KELANTAN	44	SETIU	3	SETIU	1
				TAROM	2
				BESUT	2
	46	BESUT	4	JERTIH	2
	47K	KEMASIN	1	KEMASIN	1
	47S	SEMERAK	2	SEMERAK	2
	48	KELANTAN	38	ARING	2
				BELATOP	2
				BER	1
				BEROK	2
				BETIS	1
				CHIKU	2
				GALAS	1
				KELANTAN	4
				KELESA	2
				KERAK	2
				KERILLA	2

Jadual 5.2 Jabatan Alam Sekitar: Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2003
Table 5.2 Department of Environment: List of River Basins and Rivers Monitored, 2003 (continued)

NEGERI STATE	KOD WKA CODE WQR	LEMBANGAN SUNGAI RIVER BASIN	BIL. STESEN NO. OF STATIONS	SUNGAI DIAWASI RIVERS MONITORED	BIL. STESEN NO. OF STATIONS
				KETIL	2
				NAL	3
				PEHI	2
				PENGKALAN CHEPA	1
				PENGKALAN DATU	3
				PERGAU	2
				PERTOK	2
				RELAI	2
	49	GOLOK	4	GOLOK	2
				TASIK GARU	2
SARAWAK	50	KAYAN	4	KAYAN	3
				SEMATAN	1
	51	SARAWAK	15	KUAP	2
				MAONG KIRI	1
				SANTUBONG	1
				SARAWAK	6
				SARAWAK KANAN	1
				SARAWAK KIRI	1
				SEMENGGOH	2
				TABUAN	1
	51BS	SAMARAHAN	2	SAMARAHAN	2
	52	SADONG	6	KARANGAN	1
				SADONG	3
				TARAT	2
	53	LUPAR	7	AI	1
				LUPAR	3
				SEKERANG	1
				SETERAP	1
				UNDUP	1
	54	SARIBAS	2	RIMBAS	1
				SARIBAS	1
	55	KERIAN	3	KERIAN	2
				SEBLAK	1
	56	RAJANG	18	BINATANG	1
				JULAU	1
				MERADONG	1
				RAJANG	14
				SARIKEI	1
	57	OYA	3	OYA	3
	58	MUKAH	4	MUKAH	4
	59	BALINGIAN	2	BALINGIAN	2
	60	TATAU	1	TATAU	1
	61	KEMENA	3	KEMENA	2
				SIBIU	1
	62	SIMILAJAU	1	SIMILAJAU	1
	63	SUAI	1	SUAI	1
	64	NIAH	5	NIAH	2
				SEKALOH	3

Jadual 5.2 Jabatan Alam Sekitar: Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2003
Table 5.2 Department of Environment: List of River Basins and Rivers Monitored, 2003 (continued)

NEGERI STATE	KOD WKA CODE WQR	LEMBANGAN SUNGAI RIVER BASIN	BIL. STESEN NO. OF STATIONS	SUNGAI DIAWASI RIVERS MONITORED	BIL. STESEN NO. OF STATIONS
	65	KABULOH	6	KABULOH KEJAPIL SATAP SIBUTI	2 1 1 2
	66	MIRI/LUTONG	7	LUTONG MIRI ADONG PADANG LIKU DALAM	2 2 1 1 1
	67	BARAM	5	BARAM	4
	68	LIMBANG	1	LIMBANG	5
	69	TRUSAN	2	TRUSAN	1
	70	LAWAS		LAWAS	2
	71	MENGGALONG	3	LAKUTAN LINGKUNGAN MENGGALONG	1 1 1
SABAH	72	PADAS	7	BUNSIT LIAWAN PADAS PANGATAN TANDULU	1 1 3 1 1
	73	MEMBAKUT	2	MEMBAKUT	1
	75	PAPAR		PAPAR	2
	76	MOYOG	11	MENGGATAL MOYOG LIKAS INANAM TELIPOK	2 3 1 3 2
	77	DAMIT/TUARAN	6 3	DAMIT SONG SAI TUARAN	2 1 3
	78	KEDAMAIAN		TEMPASUK TENGHILAN	2 1
	79	BINGKONGAN	3 1	BANDAU TANDEK MENGGARIS	1 1 1
	80	BENGKOKA		BENGKOKA	1
	83	SUGUT	6	BONGKUD LOHAN	1 2
				MERALI SUGUT	1 2
	84	LABOK	8 1	KINIPIR LIWAGU MALIAU SAPI SUALONG	2 2 1 2 1
	85	KAYA		MOUNAD	1

Jadual 5.2 Jabatan Alam Sekitar: Senarai Lembangan Sungai dan Sungai-Sungai Yang Dipantau, 2003
Table 5.2 Department of Environment: List of River Basins and Rivers Monitored, 2003 (continued)

NEGERI STATE	KOD WKA CODE WQR	LEMBANGAN SUNGAI RIVER BASIN	BIL. STESEN NO. OF STATIONS	SUNGAI DIAWASI RIVERS MONITORED	BIL. STESEN NO. OF STATIONS
SABAH	86	KINABATANGAN	4	KINABATANGAN	2
			1	KOYAH	1
			1	TENEGANG BESAR	1
	87	SEGAMA	2	SEGAMA	1
	88	SILABUKAN	1	SILABUKAN	2
	89	TINGKAYU		TINGKAYU	1
	90	KALUMPANG	5	INTAN	1
				KALUMPANG	2
				PANG BURONG 1	1
				PANG BURONG 2	1
	91	TAWAU	5	APAS	1
				BALUNG	1
			1	TAWAU	3
	93	UMAS-UMAS	1	UMAS-UMAS	1
	94	BRANTIAN	2	BRANTIAN	1
	95	KALABAKAN		KALABAKAN	

Jadual 5.3 Jabatan Alam Sekitar: Stesen Pemantauan Kualiti Air Sungai, 1995-2003
Table 5.3 Department of Environment: River Quality Monitoring Stations, 1995-2003

Pemantauan Monitoring	Tahun Year								
	1995	1996	1997	1998	1999	2000	2001	2002	2003
Pemantauan Manual Manual Monitoring									
Lembangan Sungai River Basin	115	116	117	120	120	120	120	120	120
Bilangan Stesen Pemantauan Number of Monitoring Stations	821	909	909	900	902	901	931	827	926
Pemantauan Berterusan Automatik Automatic Continuous Monitoring									
Lembangan Sungai River Basin	2	4	6	8	10	10	10	12	12
Bilangan Stesen Pemantauan Number of Monitoring Stations	2	4	6	8	10	10	10	12	15



Gambarfoto 5.1 : Sg. Melaka-Program Pencegahan dan Peningkatan Kualiti Air Sungai
Photo 5.1 : Sg. Melaka-River Pollution Prevention and Water Quality Improvement Programme



Gambarfoto 5.2 : Pengawasan Kualiti Udara Melalui Udara
Photo 5.2 : Air Quality Aerial Surveillance

PROGRAM PENCEGAHAN PENCEMARAN DAN PENINGKATAN KUALITI AIR SUNGAI

Bahagian Sungai yang telah ditubuhkan secara rasmi pada 1 April 2003 bagi menguruskan Program Pencegahan Pencemaran dan Peningkatan Kualiti Air Sungai.

Lembangan Sungai Melaka di Negeri Melaka, Lembangan Batang Rajang di Negeri Sarawak, Lembangan Sungai Telom, Bertam dan Lemoi di Cameron Highlands telah dikenalpasti pada tahun 2003 untuk dijalankan Kajian Pencegahan Pencemaran dan Peningkatan Kualiti Air Sungai di bawah Program Pencegahan Pencemaran dan Peningkatan Kualiti Air Sungai. Pemilihan dibuat berdasarkan kepada penggunaan berfaedah dan ancaman pencemaran yang sedang dihadapi. Tujuan utama kajian adalah:

- Mengenalpasti semua punca pencemaran di lembangan sungai yang dipilih dan menentukan beban pencemaran dari punca-punca tersebut;
- Menentukan impak beban pencemaran ke atas kualiti air sungai; dan
- Membentuk pelan-pelan tindakan untuk memperbaiki kualiti air sungai.

RIVER POLLUTION PREVENTION AND WATER QUALITY IMPROVEMENT PROGRAMME

The River Division was established on 1 April 2003 to manage the River Pollution Prevention and Water Quality Improvement Programme.

The Melaka River Basin in the State of Melaka, the Batang Rajang Basin in Sarawak, the Telom, Bertam and Lemoi River Basins in Cameron Highlands, Pahang were identified for the 2003 River Pollution Prevention and Water Quality Improvement Programme. The selection was done based on their beneficial uses and the pollution threat. The main objectives of the study were:

- To identify all pollution sources in the selected river basins and to determine the pollution loading from each source;
- To determine the impact of pollution on the water quality; and
- To formulate action plans for water quality improvement.

Pemilihan dan perlantikan perunding untuk menjalankan kajian bagi ketiga-tiga sungai yang dipilih telah siap pada akhir tahun 2003. Hanya kajian bagi Lembangan Sungai Melaka sahaja dapat dilaksanakan dalam tahun 2003. Kajian untuk dua lembangan sungai lagi akan dimulakan pada tahun 2004.



Gambarfoto 5.3 : Latihan di Lapangan Program Kawalan Kualiti dan Jaminan Kualiti

Photo 5.3 : Hands-on Training: River Monitoring Quality Assurance and Quality Control

Perlaksanaan Pelan Tindakan

Pelaksanaan bagi pelan-pelan tindakan ini Sungai Langat, Sungai Segget dan Sungai Tebrau tidak dapat dimulakan dalam tahun 2003 kerana tiada peruntukan yang sedia ada sama ada dari Kerajaan Persekutuan ataupun Kerajaan Negeri. Demi kesinambungan program ini, pelan-pelan tindakan ini akan dibentangkan oleh agensi-agensi pelaksana untuk mendapatkan peruntukan di bawah Rancangan Malaysia Kesembilan.

Penguatkuasaan

Untuk mempertingkatkan lagi keberkesanan Program Pencegahan dan Peningkatan Kualiti Air Sungai di 26 lembangan sungai yang telah dipilih (Rajah 5.1), sebanyak 1,672 lawatan penguatkuasaan telah dilaksanakan dalam tahun 2003 untuk memastikan punca-punca yang sedia ada di dalam lembangan sungai berkenaan mematuhi standard pelepasan

The selection and appointment of consultants for the three studies were completed in late 2003. The actual study for the Melaka River basin started in 2003. The other two studies were rescheduled for 2004.



Gambarfoto 5.4 : Mencantikkan Tebing Sungai-Sungai Sebagai Tempat Rekreasi

Photo 5.4 : Riverbank Beautification - River As Your Front Yard

Implementation of Action Plans

Implementation of action plans for Sungai Langat, Sungai Segget and Sungai Tebrau did not take off in 2003 due to shortage of funding. In order to sustain the continuity of the Programme, these Action Plans would be tabled by the respective implementing agencies for funding approval under the Ninth Malaysian Plan.

Enforcement

To further enhance the effectiveness of the River Pollution Prevention and Water Quality Improvement Programme in the 26 selected river basins (Figure 5.1), 1,672 enforcement visits were conducted in 2003 to ensure compliance of discharge standards. 289 premises were given written notices to improve their effluent treatment systems, 23 premises were

yang telah ditetapkan. Sebanyak 289 premis telah diberi Notis Arahan untuk memperbaiki sistem pengolahan effluen, 23 premis telah dikemukakan untuk tindakan mahkamah dan perintah larangan telah dikeluarkan kepada tiga premis untuk diberhentikan operasi (Rajah 5.2).

Program Kesedaran Awam

Program Kesedaran Awam mengenai pencegahan pencemaran seperti seminar, ceramah, dialog, bengkel, pameran dan gotong-royong telah diadakan pada tahun 2003 untuk kumpulan sasaran seperti sektor industri, pelaksana-pelaksana projek, komuniti setempat, murid-murid sekolah dan guru-guru di lembangan sungai berkenaan (Rajah 5.3).

recommended for court action and 3 premises were given prohibition order to cease operation (Figure 5.2).

Public Awareness Programmes

Public awareness programmes on pollution prevention like seminars, talks, dialogues, workshops, exhibitions and 'gotong-royong' were conducted in 2003 for targeted groups such as industries, development project proponents, local communities, school children and teachers within the selected river basins (Figure 5.3).



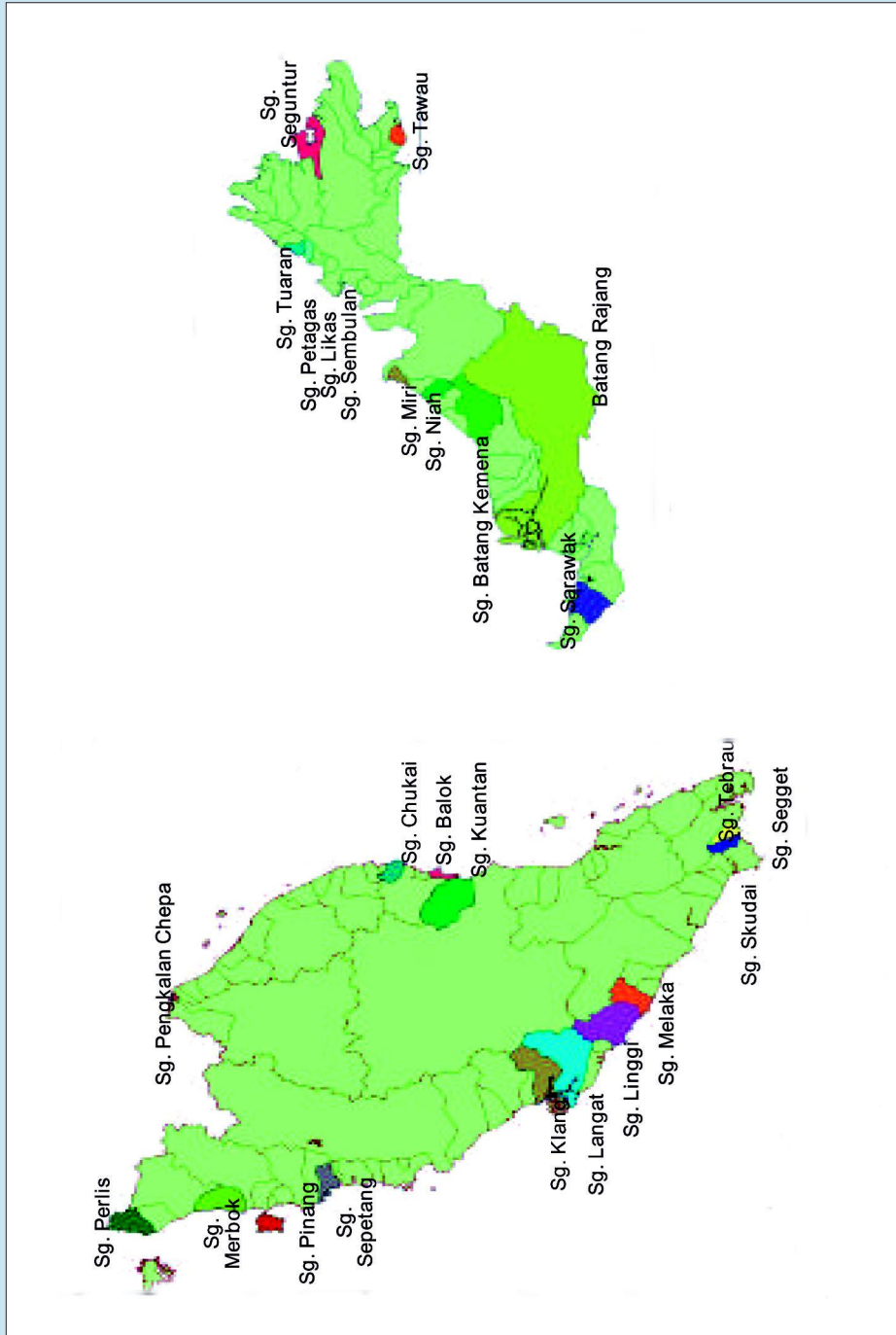
Gambarfoto 5.5 : Kempen Kesedaran Awam: Larangan Pembakaran Terbuka

Photo 5.5 : Public Awareness Campaign: Prohibition of Open Burning

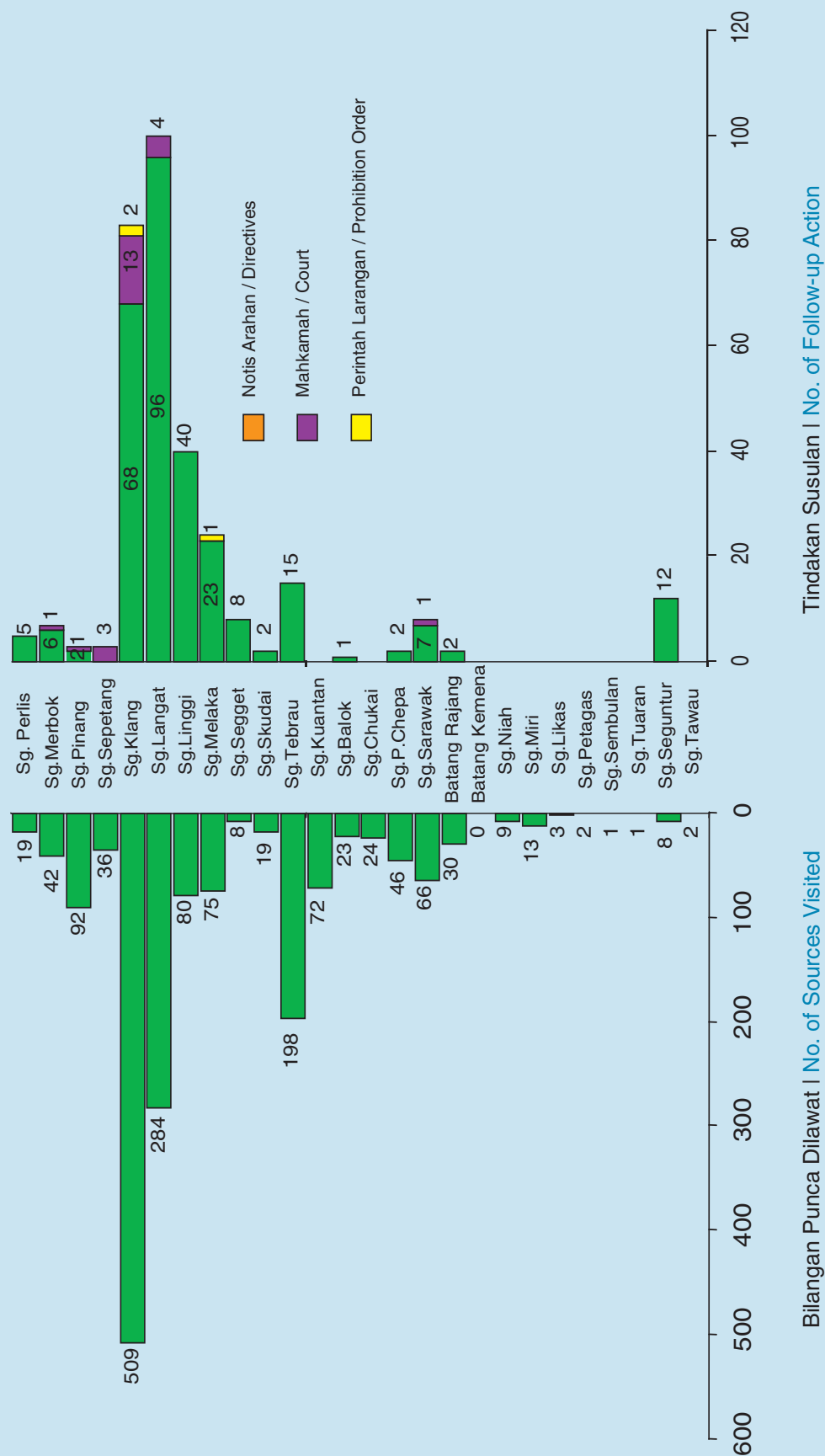


Gambarfoto 5.6 : Kempen Kesedaran Awam: Pencegahan Pencemaran Sungai

Photo 5.6 : Public Awareness Campaign: Prevention of River Pollution



Rajah 5.1 Jabatan Alam Sekitar: Lembangan Sungai Di Bawah Program Pencegahan Pencemaran Sungai dan Peningkatan Kualiti Air (Rancangan Malaysia Kelapan)
Figure 5.1 Department of Environment: River Basins under the River Pollution Prevention and Water Quality Improvement Programme (Eighth Malaysian Plan)

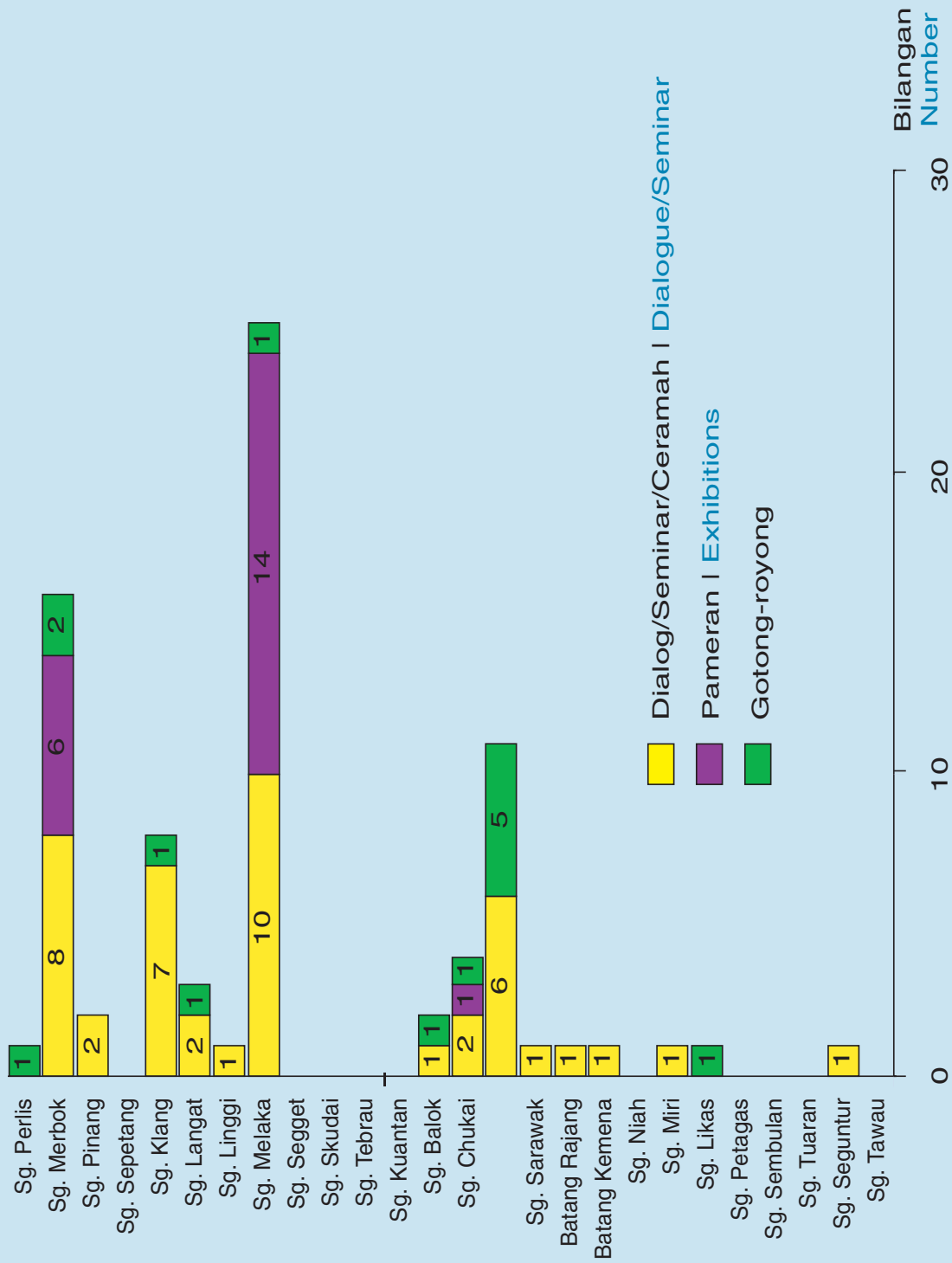


Bilangan Punca Dilawat | No. of Sources Visited

Tindakan Susulan | No. of Follow-up Action

Rajah 5.2 Jabatan Alam Sekitar: Lawatan Penguatkuasaan Tindakan Susulan Ke Atas Punca-Punca Di Bawah Program Pencegahan Pencemaran dan Peningkatan Kualiti Air Sungai, 2003

Figure 5.2 Department of Environment: Enforcement Visits/Follow-up Actions on Pollution Sources Under River Pollution Prevention and Water Quality Improvement Programme, 2003



Rajah 5.3 Jabatan Alam Sekitar: Aktiviti-Aktiviti Kesedaran di Bawah Program Pencegahan Pencemaran dan Peningkatan Kualiti Air Sungai, 2003

Figure 5.3 Department of Environment: Awareness Activities under River Pollution Prevention and Water Quality Improvement Programme, 2003

PENGAWASAN KUALITI AIR MARIN KEBANGSAAN

Status kualiti air marin memainkan peranan yang penting dalam menjaga sumber-sumber semulajadi marin seperti terumbu karang, perikanan dan paya bakau yang menyumbang kepada keseimbangan ekosistem marin. Punca-punca pencemaran dari daratan dan juga lautan mengancam sumber-sumber ini.

Program Pengawasan Kualiti Air Marin Kebangsaan telah dimulakan pada tahun 1978 di Semenanjung Malaysia dan pada tahun 1985 di Sabah dan Sarawak untuk memberikan maklumat amaran awal, mengenalpasti tren pencemaran sesuatu lokasi termasuk asal, pergerakan dan destinasi pencemaran tersebut. Ianya juga menghasilkan pangkalan data untuk kegunaan pihak-pihak yang berkaitan dan juga penting untuk audit alam sekitar.

Pada tahun 2003, terdapat 219 stesen pengawasan yang telah diwujudkan di seluruh Malaysia; Perlis (2); Kedah (3); Pulau Langkawi (7); Pulau Pinang (23 stesen); Perak (13); Selangor (14); Negeri Sembilan (13); Melaka (9); Johor (45); Pahang (11); Terengganu (19); Kelantan (10); Sabah (26); Wilayah Persekutuan Labuan (5) dan Sarawak (19) (Peta 5.3, Peta 5.4 dan Jadual 5.4). Terdapat beberapa stesen yang telah ditutup atas sebab-sebab tertentu (Jadual 5.5).

Sebagai tambahan di bawah Program Pengawasan 'Malaysia-Singapore Joint Committee on the Environment' (MSJCE), 14 stesen telah dipantau sebanyak tiga (3) kali pada tahun 2003 (Jadual 5.6).

Pengawasan kualiti air laut akibat Projek Penambakan Singapura juga dijalankan pada tahun 2003 dimana data marin dikumpul setiap bulan daripada 20 buah stesen di Selat Johor (Jadual 5.7).

MARINE WATER QUALITY MONITORING

The quality of marine waters is important for the conservation of marine resources such as coral reefs, fisheries and mangroves, which contribute to the stability of the marine ecosystem. Sources of pollution from land as well as from the sea are threats to these resources.

The National Marine Water Quality Monitoring Programme which started in 1978 for Peninsular Malaysia and in 1985 for Sabah and Sarawak aims to provide early warning of water quality change and to identify the origin, pathway and fate of pollutants. It also provides useful database for relevant stakeholders. Monitoring is also essential for environmental auditing.

In 2003, 219 monitoring stations were set up all over Malaysia; Perlis (2); Kedah (3); Pulau Langkawi (7); Pulau Pinang (23); Perak (13); Selangor (14 stations); Negeri Sembilan (13); Melaka (9); Johor (45); Pahang (11 stations); Terengganu (19); Kelantan (10); Sabah (26); Wilayah Persekutuan Labuan (5) and Sarawak (19 stations) (Map 5.3, 5.4 and Table 5.4). Due to technical reasons (Table 5.5) a number of stations had to be closed down.

In addition under the Malaysia-Singapore Joint Committee on the Environment (MSJCE) Monitoring Programme, 14 stations were monitored thrice in 2003 (Table 5.6).

Monitoring of marine waters due to the Singapore Reclamation Project was also carried out in 2003. Monthly marine data were collected from 20 stations situated along Straits of Johor (Table 5.7).

Jadual 5.4 Jabatan Alam Sekitar: Stesen Pengawasan Kualiti Air Marin Kebangsaan, 2003
Table 5.4 Department of Environment: National Marine Water Quality Monitoring Stations, 2003

BIL. NO	NEGERI STATE	KAWASAN AREA	NAMA STESEN STATION NAME	NO. STESEN STATION NO.	LATITUD LATITUDE	LONGITUD LONGITUDE
1	PERLIS	KUALA	KUALA SG. BARU	6302903	N 06° 19' 54"	E 100° 09' 16.68"
2	PERLIS	KUALA	KUALA SG. PERLIS	6401901	N 06° 23' 59"	E 100° 07' 34.8"
1	P.LANGKAWI	PANTAI	LANGKAWI IS. RESORT	6399914	N 06° 17' 55.2"	E 099° 51' 37.8"
2	P.LANGKAWI	PANTAI	PANTAI KOK	6397922	N 06° 21' 58.2"	E 099° 40' 54"
3	P.LANGKAWI	PANTAI	PANTAI KUAH	6398913	N 06° 17' 50.4"	E 099° 51' 39"
4	P.LANGKAWI	PANTAI	PANTAI PASIR TENGGORAK	6497901	N 06° 25' 49.2"	E 099° 43' 37.2"
5	P.LANGKAWI	PANTAI	PANTAI TELUK BURAU	6396923	N 06° 21' 45.6"	E 099° 40' 21"
6	P.LANGKAWI	PANTAI	PANTAI TELUK NIBUNG	6497915	N 06° 21' 37.2"	E 099° 42' 37.8"
7	P.LANGKAWI	PANTAI	PANTAI TENGAH	6297903	N 06° 13' 19.8"	E 099° 43' 54"
1	KEDAH	KUALA	KUALA SG. KEDAH	6102908	N 6° 06' 13"	E 100° 16' 32"
2	KEDAH	KUALA	KUALA JERLUN	6302925	N 6° 12' 36"	E 100° 14' 20.88"
3	KEDAH	PANTAI	PANTAI MERDEKA	5603905	N 5° 40' 10"	E 100° 40"
1	PULAU PINANG	KUALA	KUALA SG. JAWI	5204901	N 05° 16' 50"	E 100° 25' 00"
2	PULAU PINANG	KUALA	KUALA SG. JURU	5304904	N 05° 20' 20"	E 100° 24' 20"
3	PULAU PINANG	KUALA	KUALA SG. KERIAN	5104901	N 05° 10' 00"	E 100° 25' 00"
4	PULAU PINANG	KUALA	KUALA SG. PINANG	5403934	N 05° 24' 00"	E 100° 25' 05"
5	PULAU PINANG	KUALA	KUALA SG. PERAI	5303908	N 05° 23' 00"	E 100° 22' 00"
6	PULAU PINANG	PANTAI	BATU FERINGGI (CASUARINA)	5402904	N 05° 28' 10"	E 100° 14' 30"
7	PULAU PINANG	PANTAI	BATU MAUNG	5202901	N 05° 17' 10"	E 100° 17' 25"
8	PULAU PINANG	PANTAI	GERTAK SANGGUL	5201919	N 05° 16' 50"	E 100° 12' 40"
9	PULAU PINANG	PANTAI	KAW.PER.BAYAN LEPAS I	5303932	N 05° 20' 00"	E 100° 18' 45"
10	PULAU PINANG	PANTAI	KAW.PER.BAYAN LEPAS II	5303933	N 05° 19' 00"	E 100° 18' 30"
11	PULAU PINANG	PANTAI	KAW.PER.BAYAN LEPAS III	5302939	N 05° 18' 20"	E 100° 17' 45"
12	PULAU PINANG	PANTAI	LUAR PANTAI TELUK BAHANG	5402930	N 05° 27' 45"	E 100° 12' 45"
13	PULAU PINANG	PANTAI	PANTAI BERSIH	5403906	N 05° 26' 30"	E 100° 22' 40"
14	PULAU PINANG	PANTAI	PANTAI MIAMI	5502901	N 05° 28' 30"	E 100° 16' 00"
15	PULAU PINANG	PANTAI	PANTAI PASIR PANJANG	5201938	N 05° 17' 50"	E 100° 11' 00"
16	PULAU PINANG	PANTAI	PERSIARAN GURNEY	5403902	N 05° 25' 30"	E 100° 19' 30"
17	PULAU PINANG	PANTAI	PULAU AMAN	5203910	N 05° 15' 50"	E 100° 23' 35"
18	PULAU PINANG	PANTAI	RUMAH PAM BARU PERAI	5304927	N 05° 21' 15"	E 100° 23' 15"
19	PULAU PINANG	PANTAI	RUMAH PAM LAMA PERAI	5303926	N 05° 20' 00"	E 100° 18' 45"
20	PULAU PINANG	PANTAI	SELAT PP SELATAN (JELUTONG)	5303911	N 05° 23' 30"	E 100° 19' 50"
21	PULAU PINANG	PANTAI	TANJUNG BUNGAH	5402937	N 05° 28' 00"	E 100° 16' 50"
22	PULAU PINANG	PANTAI	TELUK BAHANG (P. MUTIARA)	5402912	N 05° 28' 46"	E 100° 15' 41"
23	PULAU PINANG	PANTAI	TELUK TEMPOYAK	5202923	N 05° 28' 30"	E 100° 17' 30"

Jadual 5.4 Jabatan Alam Sekitar: Stesen Pengawasan Kualiti Air Marin Kebangsaan, 2003
Table 5.4 Department of Environment: National Marine Water Quality Monitoring Stations, 2003

BIL. NO	NEGERI STATE	KAWASAN AREA	NAMA STESEN STATION NAME	NO. STESEN STATION NO.	LATITUD LATITUDE	LONGITUD LONGITUDE
1	PERAK	KUALA	KUALA SG. MANJUNG	4205930	N 4° 14' 9"	E 100° 39' 57"
2	PERAK	KUALA	KUALA SG. TG. PIANDANG	5003921	N 5° 04' 27"	E 100° 22' 34"
3	PERAK	KUALA	KUALA SG.GULA	4906926	N 4° 55' 7"	E 100° 28' 57"
4	PERAK	KUALA	KUALA SG.KURAU	4994919	N 4° 59' 13"	E 100° 25' 46"
5	PERAK	KUALA	KUALA SG.PERAK	4007901	N 3° 59' 03"	E 100° 48' 58"
6	PERAK	KUALA	KUALA SG.SEPETANG	4806925	N 4° 50' 7"	E 100° 37' 57"
7	PERAK	PANTAI	PANTAI PASIR BOGAK	4205908	N 4° 12' 58"	E 100° 37' 55"
8	PERAK	PANTAI	PANTAI PASIR PANJANG	4205924	N 4° 25' 7"	E 100° 35' 35"
9	PERAK	PANTAI	PANTAI PUTERI DEWI	4205907	N 4° 15' 17"	E 100° 32' 47"
10	PERAK	PANTAI	PANTAI TANJUNG BATU	4406927	N 4° 25' 7"	E 100° 35' 35"
11	PERAK	PANTAI	PANTAI TELUK BATIK	4205923	N 4° 11' 14"	E 100° 36' 33"
12	PERAK	PANTAI	PANTAI TELUK DALAM	4205928	N 4° 14' 53"	E 100° 33' 25"
13	PERAK	PANTAI	PANTAI TELUK GEDUNG	4205929	N 4° 15' 39"	E 100° 34' 49"
1	SELANGOR	PANTAI	PANTAI BAGAN LALANG	2616927	N 02° 36' 20"	E 101° 41' 30"
2	SELANGOR	PANTAI	PANTAI MORIB	2712902	N 02° 45' 00"	E 101° 26' 20"
3	SELANGOR	PANTAI	SELAT PULAU BABI	3012929	N 03° 01' 10"	E 101° 15' 55"
4	SELANGOR	PANTAI	SELAT KLANG UTARA	3013908	N 03° 04' 00"	E 101° 21' 00"
5	SELANGOR	KUALA	KUALA SG. SEPANG	2517922	N 02° 35' 35"	E 101° 42' 56"
6	SELANGOR	KUALA	KUALA SG. SEPANG (KECIL)	2612928	N 02° 36' 40"	E 101° 42' 15"
7	SELANGOR	KUALA	KUALA SG. SEPANG (KAWALAN)	2616926	N 02° 36' 20"	E 101° 41' 30"
8	SELANGOR	KUALA	KUALA SG. KLANG	3013909	N 03° 00' 06"	E 101° 23' 24"
9	SELANGOR	KUALA	KUALA SG LANGAT (JUGRA)	2814925	N 02° 48' 25"	E 101° 24' 15"
10	SELANGOR	KUALA	KUALA SG LANGAT (LUMUT)	2913903	N 02° 55' 50"	E 101° 21' 15"
11	SELANGOR	KUALA	KUALA SG. BULOH	3212930	N 03° 15' 10"	E 101° 15' 50"
12	SELANGOR	KUALA	KUALA SG. SELANGOR	3312915	N 03° 20' 00"	E 101° 13' 30"
13	SELANGOR	KUALA	KUALA SG. TENGI	3311931	N 03° 23' 00"	E 101° 10' 20"
14	SELANGOR	KUALA	KUALA SG. BERNAM	3808924	N 03° 51' 00"	E 100° 49' 00"
1	N. SEMBILAN	KUALA	KUALA SUNGAI LINGGI	2319901	N 02° 23' 20"	E 101° 58' 19"
2	N. SEMBILAN	KUALA	KUALA SUNGAI LUKUT	2517910	N 02° 34' 45"	E 101° 47' 16"
3	N. SEMBILAN	PANTAI	BAGAN PINANG	2418915	N 02° 30' 31"	E 101° 49' 44"
4	N. SEMBILAN	PANTAI	KG.TELUK SINTING	2419908	N 02° 24' 57"	E 101° 56' 31"
5	N. SEMBILAN	PANTAI	P.D. BANDAR	2517907	N 02° 31' 16"	E 101° 47' 51"
6	N. SEMBILAN	PANTAI	P.D. BATU 10	2418914	N 02° 24' 58"	E 101° 51' 23"
7	N. SEMBILAN	PANTAI	P.D. BATU 5	2418906	N 02° 29' 48"	E 101° 50' 15"
8	N. SEMBILAN	PANTAI	P.D. BATU 6	2418916	N 02° 29' 05"	E 101° 50' 46"
9	N. SEMBILAN	PANTAI	P.D. BATU 7	2418905	N 02° 27' 43"	E 101° 51' 04"
10	N. SEMBILAN	PANTAI	P.D. BATU 8	2418912	N 02° 27' 16"	E 101° 51' 20"
11	N. SEMBILAN	PANTAI	P.D. BATU 8 (STESEN KAWALAN)	2418913	N 02° 27' 16"	E 101° 51' 10"
12	N. SEMBILAN	PANTAI	P.D. JANAKUASA TNB	2517909	N 02° 32' 08"	E 101° 47' 42"

Jadual 5.4 Jabatan Alam Sekitar: Stesen Pengawasan Kualiti Air Marin Kebangsaan, 2003
Table 5.4 Department of Environment: National Marine Water Quality Monitoring Stations, 2003

BIL. NO	NEGERI STATE	KAWASAN AREA	NAMA STESEN STATION NAME	NO. STESEN STATION NO.	LATITUD LATITUDE	LONGITUD LONGITUDE
13	N. SEMBILAN	PANTAI	TELOK PELANDUK	2419917	N 02° 25' 03"	E 101° 53' 34"
1	MELAKA	KUALA	KUALA SG. KESANG	2186905	N 2° 05' 43"	E 102° 29' 12"
2	MELAKA	KUALA	KUALA SG. MELAKA	2122903	N 2° 11' 06"	E 102° 14' 52"
3	MELAKA	KUALA	KUALA SG. MERLIMAU	2124912	N 2° 09' 25"	E 102° 25' 28"
4	MELAKA	KUALA	KUALA SG. SEBATU	2186904	N 2° 06' 06"	E 102° 27' 35"
5	MELAKA	PANTAI	PANTAI KUNDOR	2221908	N 2° 14' 37"	E 102° 08' 29"
6	MELAKA	PANTAI	PANTAI ROMBANG	2221906	N 2° 13' 35"	E 102° 08' 57"
7	MELAKA	PANTAI	PANTAI TG. BIDARA	2320909	N 2° 17' 30"	E 102° 05' 18"
8	MELAKA	PANTAI	PULAU BESAR	2123911	N 2° 07' 57"	E 102° 20' 09"
9	MELAKA	PANTAI	TELUK GONG PENGKALAN BALAK	2320902	N 2° 20' 23"	E 102° 03' 30"
1	JOHOR	PANTAI	KG.TANJUNG KOPOK	SJ1	N 1° 25' 31"	E 104° 00' 03"
2	JOHOR	PANTAI	KG. PASIR PUTIH	SJ2	N 1° 25' 48"	E 103° 55' 40"
3	JOHOR	PANTAI	J/K SULTAN ISKANDAR	SJ3	N 1° 26' 49"	E 103° 46' 09"
4	JOHOR	PANTAI	KG.SENIBUNG	SJ4	N 1° 29' 01"	E 103° 48' 47"
5	JOHOR	KUALA	KUALA SG.TEBRAU	SJ4A	N 1° 28' 56"	E 103° 47' 48"
6	JOHOR	PANTAI	TANJUNG PUTRI	SJ5	N 1° 27' 20"	E 103° 46' 09"
7	JOHOR	PANTAI	HADAPAN MPJB (W.F.CT)	SJ6	N 1° 27' 08"	E 103° 45' 43"
8	JOHOR	PANTAI	TANJUNG DANGA	SJ7	N 1° 27' 24"	E 103° 42' 52"
9	JOHOR	KUALA	KUALA SG.SKUDAI	SJ7A	N 1° 27' 46"	E 103° 43' 22"
10	JOHOR	PANTAI	DEPAN PUSAT ISLAM	SJ7B	N 1° 27' 19"	E 103° 44' 51"
11	JOHOR	PANTAI	TEBING RUNTUH	SJ8	N 1° 25' 10"	E 103° 40' 06"
12	JOHOR	KUALA	KUALA SG.MELAYU	SJ8A	N 1° 26' 53"	E 103° 41' 53"
13	JOHOR	PANTAI	TANJUNG BUNGA	SJ9	N 1° 23' 07"	E 103° 39' 02"
14	JOHOR	PANTAI	TANJUNG KUPANG	SJ10	N 1° 23' 36"	E 103° 39' 11"
15	JOHOR	KUALA	KUALA SUNGAI BATU PAHAT	1729930	N 1° 47' 44"	E 102° 53' 22"
16	JOHOR	KUALA	KUALA SUNGAI JOHOR	1440916	N 1° 29' 04"	E 104° 01' 22"
17	JOHOR	KUALA	KUALA SUNGAI MELAYU	1437946	N 1° 27' 15"	E 103° 41' 56"
18	JOHOR	KUALA	KUALA SUNGAI MERSING	2438905	N 2° 26' 10"	E 103° 50' 35"
19	JOHOR	KUALA	KUALA SUNGAI MUAR	2024932	N 2° 02' 54"	E 102° 33' 11"
20	JOHOR	KUALA	KUALA SUNGAI SEGGET	1437919	N 1° 27' 21"	E 103° 45' 58"
21	JOHOR	KUALA	KUALA SUNGAI SKUDAI	1437922	N 1° 28' 28"	E 103° 43' 12"
22	JOHOR	KUALA	KUALA SUNGAI TEBRAU	1438943	N 1° 28' 56"	E 103° 47' 48"
23	JOHOR	PANTAI	JETI TANJONG BELUNGKOR	1440963	N 1° 27' 14"	E 104° 04' 03"
24	JOHOR	PANTAI	JETI TELUK JAWA	1438913	N 1° 28' 22"	E 103° 50' 23"
25	JOHOR	PANTAI	PANTAI AIR PAPAN	2538959	N 2° 31' 05"	E 103° 50' 00"
26	JOHOR	PANTAI	PANTAI DESARU	1542914	N 1° 32' 48"	E 104° 15' 41"
27	JOHOR	PANTAI	PANTAI KUKUP	1334925	N 1° 19' 30"	E 103° 26' 29"
28	JOHOR	PANTAI	PANTAI LIDO	1437921	N 1° 27' 56"	E 103° 43' 29"

Jadual 5.4 Jabatan Alam Sekitar: Stesen Pengawasan Kualiti Air Marin Kebangsaan, 2003
Table 5.4 Department of Environment: National Marine Water Quality Monitoring Stations, 2003

BIL. NO	NEGERI STATE	KAWASAN AREA	NAMA STESEN STATION NAME	NO. STESEN STATION NO.	LATITUD LATITUDE	LONGITUD LONGITUDE
29	JOHOR	PANTAI	PANTAI SRI PANTAI	2339960	N 2° 22' 45"	E 103° 53' 19"
30	JOHOR	PANTAI	PANTAI STULANG LAUT	1437951	N 1° 28' 02"	E 103° 46' 46"
31	JOHOR	PANTAI	PANTAI SUNGAI LURUS	1730962	N 1° 43' 14"	E 103° 01' 43"
32	JOHOR	PANTAI	PANTAI TANJONG SETAPA	1341961	N 1° 20' 33"	E 104° 08' 09"
33	JOHOR	PANTAI	PANTAI TELUK GOREK	2538958	N 2° 34' 57"	E 103° 48' 18"
34	JOHOR	PANTAI	PANTAI TELUK MAHKOTA	1841911	N 1° 53' 52"	E 104° 06' 15"
35	JOHOR	PANTAI	PANTAI TG.LEMAN	2140694	N 2° 08' 43"	E 104° 00' 24"
36	JOHOR	PANTAI	PASIR GOGOK	1441966	N 1° 25' 2.82"	E 104° 05' 59.7"
37	JOHOR	PANTAI	PEL. PASIR GUDANG	1428939	N 1° 25' 44"	E 103° 54' 03"
38	JOHOR	PANTAI	PULAU MERAMBONG	1336972	N 1° 18' 25.9"	E 103° 36' 42.2"
39	JOHOR	PANTAI	TANJUNG BUAI	1340973	N 1° 29' 48.1"	E 104° 2' 43.4"
40	JOHOR	PANTAI	TANJUNG MERAK	1441968	N 1° 21.765'	E 104° 06 59.2'
41	JOHOR	PANTAI	TANJUNG PENGELIH	1441967	N 1° 22. 245'	E 104° 05 32.5'
42	JOHOR	PANTAI	TANJUNG PENYUSUP	1444920	N 1° 22' 12.9"	E 104° 16' 48.3"
43	JOHOR	PANTAI	TANJUNG SEPANG	1443969	N 1° 23' 1.2"	E 104° 06' 44.8"
44	JOHOR	PANTAI	TELUK RAMUNIA	1432971	N 1° 22' 4.6"	E 104°14' 30.8"
45.	JOHOR	PANTAI	HADAPAN HSAJB	1437920	N 1° 27' 18.9"	E 103° 44' 44.1"
1	PAHANG	PANTAI	PANTAI SEPAT	3633940 (A)	N 3° 42' 02"	E 103° 20' 16"
				3633940 (B)	N 3° 41' 54"	E 103° 20' 19"
2	PAHANG	PANTAI	PANTAI BATU HITAM	3833915 (A)	N 3° 53' 06"	E 103° 21' 58"
				3833915 (B)	N 3° 53' 09"	E 103° 21' 59"
3	PAHANG	PANTAI	PANTAI CHERATING (Club Med)	4133903 (A)	N 4° 08' 41.0"	E 103° 24' 31"
				4133903 (B)	N 4° 07' 51.0"	E 103° 24' 23"
4	PAHANG	PANTAI	PANTAI CHERATING (Legend)	4133942 (A)	N 4° 06' 16.0"	E 103° 23' 06"
				4133942 (B)	N 4° 06' 12.0"	E 103° 23' 07"
5	PAHANG	PANTAI	PANTAI KUALA API-API	3235917 (A)	N 3° 31' 20.0"	E 103° 23' 45"
6	PAHANG	PANTAI	PANTAI MUHIBBAH BALOK	3933901 (A)	N 3° 55' 28.0"	E 103° 22' 21"
				3933901 (B)	N 3° 55' 30.0"	E 103° 22' 23"
7	PAHANG	PANTAI	PANTAI BESERAH	3933941 (A)	N 3° 54' 41.0"	E 103° 22' 02"
				3933941 (B)	N 3° 54' 39.0"	E 103° 22' 01"
8	PAHANG	PANTAI	PANTAI TANJUNG BATU	3334915 (A)	N 3° 31' 10.0"	E 103° 23' 45"
9	PAHANG	PANTAI	PANTAI TELUK CEMPEDAK	3833910 (A)	N 3° 48' 51"	E 103° 22' 19"
				3833910 (B)	N 3° 48' 49"	E 103° 22' 21"
10	PAHANG	PANTAI	PANTAI TELUK GELOLA	3833909 (A)	N 3° 48' 16"	E 103° 20' 43"
				3833909 (B)	N 3° 48' 20"	E 103° 20' 53"
11	PAHANG	PANTAI	PANTAI LEGENDA	3534943 (A)	N 3° 12' 16.7"	E 103° 26' 53.7"
				3534943 (B)	N 3° 12' 16.7"	E 103° 26' 53.7"
1	TERENGGANU	KUALA	KUALA SG. BESUT	5825902	N 05° 50' 45"	E 102° 34' 15"
2	TERENGGANU	KUALA	KUALA SG. DUNGUN	4734918	N 04° 46' 40"	E 103° 26' 10"

Jadual 5.4 Jabatan Alam Sekitar: Stesen Pengawasan Kualiti Air Marin Kebangsaan, 2003
Table 5.4 Department of Environment: National Marine Water Quality Monitoring Stations, 2003

BIL. NO	NEGERI STATE	KAWASAN AREA	NAMA STESEN STATION NAME	NO. STESEN STATION NO.	LATITUD LATITUDE	LONGITUD LONGITUDE
3	TERENGGANU	KUALA	KUALA SG. IBAI	5231949	N 05° 16' 30"	E 103° 10' 34"
4	TERENGGANU	KUALA	KUALA SG. KERTEH	4534922	N 04° 30' 45"	E 102° 27' 15"
5	TERENGGANU	KUALA	KUALA SG. KERTEH	4234950	N 04° 16' 05"	E 103° 28' 35"
6	TERENGGANU	KUALA	TIOXIDE UTARA KUALA SG. KERTEH	4234951	N 04° 16' 03"	E 103° 28' 45"
7	TERENGGANU	KUALA	TIOXIDE DISCHARGE KUALA SG. KERTEH	4234952	N 04° 16' 00"	E 103° 28' 45"
8	TERENGGANU	KUALA	TIOXIDE SELATAN KUALA SG. MARANG	5232911	N 05° 12' 15"	E 103° 12' 00"
9	TERENGGANU	KUALA	KUALA SG. PAKA	4634920	N 04° 39' 20"	E 103° 26' 30"
10	TERENGGANU	KUALA	KUALA SG. SETIU	5627953	N 05° 39' 05"	E 102° 45' 45"
11	TERENGGANU	KUALA	KUALA SG. TERENGGANU	5331907	N 05° 20' 30"	E 103° 08' 34"
12	TERENGGANU	KUALA	KUALA SUNGAI CHUKAI	4234929	N 04° 14' 20"	E 102° 27' 00"
13	TERENGGANU	PANTAI	PANTAI BATU BURUK	5331935	N 05° 19' 00"	E 103° 09' 00"
14	TERENGGANU	PANTAI	PANTAI BUKIT KELUANG	5825903	N 05° 48' 10"	E 102° 34' 30"
15	TERENGGANU	PANTAI	PANTAI CHENDERING	5231934	N 05° 16' 25"	E 103° 11' 10"
16	TERENGGANU	PANTAI	PANTAI RANTAU ABANG	4833917	N 04° 52' 00"	E 103° 23' 40"
17	TERENGGANU	PANTAI	KIPC UTARA	4634954	N 04° 36' 35"	E 103° 26' 55.9"
18	TERENGGANU	PANTAI	KIPC TENGAH	4534955	N 04° 34' 51.4"	E 103° 27' 35.8"
19	TERENGGANU	PANTAI	KIPC SELATAN	4534956	N 04° 33' 10.8"	E 103° 28' 08.9"
1	KELANTAN	KUALA	KUALA SG. KEMASIN	5824914	N 5° 53' 50"	E 102° 29' 05"
2	KELANTAN	KUALA	KUALA SG. GOLOK	6220911	N 6° 14' 05"	E 102° 05' 35"
3	KELANTAN	KUALA	KUALA SG. KELANTAN	6222901	N 6° 13' 12"	E 102° 13' 50"
4	KELANTAN	KUALA	KUALA SG. PENG. DATU	6123913	N 6° 10' 20"	E 102° 20' 40"
5	KELANTAN	KUALA	KUALA SG. PENG. CHEPA	6223912	N 6° 12' 20"	E 102° 18' 10"
6	KELANTAN	PANTAI	PANTAI BISIKAN BAYU	5825905	N 5° 52' 00"	E 102° 31' 00"
7	KELANTAN	PANTAI	PANTAI CAHAYA BULAN	6122903	N 6° 10' 45"	E 102° 16' 50"
8	KELANTAN	PANTAI	PANTAI IRAMA BACHOK	6024908	N 6° 03' 00"	E 102° 25' 15"
9	KELANTAN	PANTAI	PANTAI SABAK	6123909	N 6° 10' 25"	E 102° 02' 10"
10	KELANTAN	PANTAI	PANTAI SERI TUJUH	6221910	N 6° 13' 00"	E 102° 08' 00"
1	W.P. LABUAN	PANTAI	LAYANG-LAYANGAN	5251902	N 05° 19' 59"	E 115° 11' 36"
2	W.P. LABUAN	PANTAI	TANJUNG ARU	5251903	N 05° 23' 14"	E 115° 14' 18"
3	W.P. LABUAN	PANTAI	PULAU PAPAN	5151905	N 05° 15' 22"	E 115° 16' 03"
4	W.P. LABUAN	PANTAI	KIAMSAM	5151906	N 05° 15' 22"	E 115° 10' 28"
5	W.P. LABUAN	PANTAI	SUNGAI PAGAR	5151907	N 05° 16' 20"	E 115° 10' 19"
1	SABAH	KUALA	KUALA SUNGAI	5050905	N 05° 01' 05"	E 115° 07' 07"
2	SABAH	KUALA	MENGKATAL/INANAM KUALA SUNGAI PENYU	5453901	N 05° 34' 13"	E 115° 35' 55"
3	SABAH	PANTAI	BORNEO GOLF SEAWATER	5355901	N 05° 33' 00"	E 115° 47' 01"

Jadual 5.4 Jabatan Alam Sekitar: Stesen Pengawasan Kualiti Air Marin Kebangsaan, 2003
Table 5.4 Department of Environment: National Marine Water Quality Monitoring Stations, 2003

BIL. NO	NEGERI STATE	KAWASAN AREA	NAMA STESEN STATION NAME	NO. STESEN STATION NO.	LATITUD LATITUDE	LONGITUD LONGITUDE
4	SABAH	PANTAI	PANTAI BAK-BAK	6665901	N 06° 56' 44"	E 116° 50' 23"
5	SABAH	PANTAI	PANTAI ULU TUNGKU	5085901	N 05° 01' 09"	E 118° 53' 22"
6	SABAH	PANTAI	PANTAI BATU SAPI	5580903	N 05° 47' 42"	E 118° 02' 22"
7	SABAH	PANTAI	PANTAI DALIT	6161901	N 06° 11' 25"	E 116° 09' 45"
8	SABAH	PANTAI	PANTAI LOK KAWI	5560904	N 05° 55' 00"	E 116° 02' 00"
9	SABAH	PANTAI	PANTAI MANGROVE PARADISE	6161902	N 06° 15' 02"	E 116° 13' 50"
10	SABAH	PANTAI	PANTAI MANIS	5555901	N 05° 45' 15"	E 115° 52' 04"
11	SABAH	PANTAI	PANTAI MELINSUNG	5565902	N 05° 50' 18"	E 115° 50' 45"
12	SABAH	PANTAI	PANTAI PASIR PUTIH SANDAKAN	5580901	N 05° 49' 26"	E 118° 04' 58"
13	SABAH	PANTAI	PANTAI SABANDAR	6161903	N 06° 15' 02"	E 116° 13' 50"
14	SABAH	PANTAI	PANTAI SARINA KUNAK	4481901	N 04° 39' 41"	E 118° 17' 01"
15	SABAH	PANTAI	PANTAI SILAM LAHAD DATU	4681902	N 04° 58' 08"	E 118° 14' 46"
16	SABAH	PANTAI	PANTAI TELUK BRUNEI 1	5053901	N 05° 09' 55"	E 115° 32' 53"
17	SABAH	PANTAI	PANTAI TELUK BRUNEI 2	5053902	N 05° 09' 55"	E 115° 32' 53"
18	SABAH	PANTAI	PANTAI TELUK BRUNEI 3	5053903	N 05° 09' 55"	E 115° 32' 53"
19	SABAH	PANTAI	PANTAI TELUK BRUNEI 4	5053904	N 05° 09' 55"	E 115° 32' 53"
20	SABAH	PANTAI	PANTAI TELUK BRUNEI 5	5053905	N 05° 09' 55"	E 115° 32' 53"
21	SABAH	PANTAI	PANTAI TELUK BRUNEI 6	5053906	N 05° 09' 55"	E 115° 32' 53"
22	SABAH	PANTAI	PANTAI TG. ARU (REST LIDO)	5656901	N 05° 55' 01"	E 115° 59' 03"
23	SABAH	PANTAI	PANTAI TG. ARU (REST SKATING)	5656902	N 05° 55' 01"	E 115° 59' 03"
24	SABAH	PANTAI	PANTAI TG.ARU (No. 3)	5656903	N 05° 55' 01"	E 115° 59' 03"
25	SABAH	PANTAI	PANTAI TINAGAT TAWAU	4473901	N 04° 13' 22"	E 118° 59' 04"
26	SABAH	PANTAI	PANTAI TLDM	5580902	N 05° 50' 00"	E 118° 08' 01"
1	SARAWAK	KUALA	KUALA BAKO	1704905	N 01° 40' 00"	E 110° 52' 08"
2	SARAWAK	KUALA	KUALA BATANG KEMENA	3130911	N 03° 10' 59"	E 113° 01' 53"
3	SARAWAK	KUALA	KUALA BATANG RAJANG	2111909	N 02° 07' 22"	E 111° 11' 21"
4	SARAWAK	KUALA	KUALA SG MIRI	4349915	N 04° 23' 55"	E 113° 58' 23"
5	SARAWAK	KUALA	KUALA SG. SANTUBONG	1702903	N 01° 46' 38"	E 110° 16' 46"
6	SARAWAK	KUALA	KUALA SG. SEMANTAN	1898901	N 01° 48' 49"	E 109° 46' 29"
7	SARAWAK	KUALA	KUALA SG. SARAWAK	1604907	N 01° 36' 44"	E 110° 29' 44"
8	SARAWAK	KUALA	KUALA BATANG MUKAH	2927920	N 02° 55' 30"	E 112° 45' 25"
9	SARAWAK	PANTAI	PANTAI BAKO	1704906	N 01° 42' 49"	E 110° 25' 40"
10	SARAWAK	PANTAI	PANTAI BELAWAI	2212913	N 02° 14' 27"	E 111° 12' 51"
11	SARAWAK	PANTAI	PANTAI BRIGHTON	4449917	N 04° 23' 00"	E 113° 58' 23"
12	SARAWAK	PANTAI	PANTAI DAMAI	1702904	N 01° 47' 55"	E 110° 17' 58"
13	SARAWAK	PANTAI	PANTAI LIKAU	3230915	N 03° 20' 42.6"	E 113° 09' 2.9"
14	SARAWAK	PANTAI	PANTAI PANDAN	1824918	N 01° 50' 16"	E 109° 40' 11"

Jadual 5.4 Jabatan Alam Sekitar: Stesen Pengawasan Kualiti Air Marin Kebangsaan, 2003
Table 5.4 Department of Environment: National Marine Water Quality Monitoring Stations, 2003

BIL. NO	NEGERI STATE	KAWASAN AREA	NAMA STESEN STATION NAME	NO. STESEN STATION NO.	LATITUD LATITUDE	LONGITUD LONGITUDE
15	SARAWAK	PANTAI	PANTAI PASIR PUTIH	1604910	N 01° 30' 14"	E 110° 30' 00"
16	SARAWAK	PANTAI	PANTAI PIASAU	4539918	N 04° 27' 34"	E 113° 59' 28"
17	SARAWAK	PANTAI	PANTAI SEMANTAN	1898902	N 01° 49' 38"	E 109° 46' 29"
18	SARAWAK	PANTAI	PANTAI TANJUNG BATU	3132602	N 03° 12' 35.3"	E 113° 02' 38.9"
19	SARAWAK	PANTAI	PANTAI HARMONI	1626921	N 01° 38' 35"	E 112° 40' 35"
		Kuala I Estuarine	68			
		Pantai I Coastal	149			
		Jumlah Total	217			

Jadual 5.5 Jabatan Alam Sekitar: Senarai Stesen Yang Telah Ditutup, 2003
Table 5.5 Department of Environment: List of Closed-Down Stations, 2003

NEGERI STATE	NAMA STESEN STATION NAME	NO. STESEN STATION NO.	LATITUD LATITUDE	LONGITUD LONGITUDE
P.LANGKAWI	PANTAI TELUK EWA	6498901	N 06° 25' 18.6"	E 099° 46' 28.2"
P.LANGKAWI	PANTAI TANJUNG RHU	6498916	N 06° 27' 9.6"	E 099° 49' 8.4"
P.LANGKAWI	PANTAI CENANG	6397902	N 06° 17' 13.8"	E 099° 43' 38.4"
P.LANGKAWI	JETI KUAH	6398924	N 06° 18' 55.2"	E 099° 51' 39"
MELAKA	PANTAI KUNDOR (Stesen Kawalan)	2221910	N 02° 15' 00"	E 102° 08' 15"
MELAKA	TANAH MERAH (Petronas Penapisan Melaka S/B)	2221901	N 02° 07' 57"	E 102° 20' 09"
JOHOR	HADAPAN TITAN HIMONT	SJ2B	N 1° 26' 10"	E 103° 53' 10"
JOHOR	SUNGAI KIM-KIM	1439965	-	-
JOHOR	KUALA SUNGAI PULAI	1335923	N 1° 21' 26"	E 103° 32' 48"
SABAH	PANTAI CHE WAH, SANDAKAN	5680904	N 05° 57' 06"	E 118° 06' 50"
SARAWAK	PANTAI TG. KIDURONG	3230914	N 03° 13' 35"	E 113° 02' 00"

Jadual 5.6 Jabatan Alam Sekitar: Stesen Pengawasan 'Malaysia-Singapore Joint Committee on the Environment' - (MSJCE), 2003

Table 5.6 Department of Environment: Monitoring Stations under the Malaysia-Singapore Joint Committee on the Environment (MSJCE), 2003

BIL. NO.	KAWASAN AREA	NAMA STESEN STATION NAME	NO. STESEN STATION NO.	LATITUD LATITUDE	LONGITUD LONGITUDE
1.	PANTAI	KG.TANJUNG KOPOK	SJ1	N 1° 25' 31"	E 104° 00' 03"
2.	PANTAI	KG. PASIR PUTIH	SJ2	N 1° 25' 48"	E 103° 55' 40"
3.	PANTAI	J/K SULTAN ISKANDAR	SJ3	N 1° 26' 49"	E 103° 46' 09"
4.	PANTAI	KG.SENIBUNG	SJ4	N 1° 29' 01"	E 103° 48' 47"
5.	KUALA	KUALA SG.TEBRAU	SJ4A	N 1° 28' 56"	E 103° 47' 48"
6.	PANTAI	TANJUNG PUTRI	SJ5	N 1° 27' 20"	E 103° 46' 09"
7.	PANTAI	HADAPAN MPJB (W.F.CT)	SJ6	N 1° 27' 08"	E 103° 45' 43"
8.	PANTAI	TANJUNG DANGA	SJ7	N 1° 27' 24"	E 103° 42' 52"
9.	KUALA	KUALA SG.SKUDAI	SJ7A	N 1° 27' 46"	E 103° 43' 22"
10.	PANTAI	DEPAN PUSAT ISLAM	SJ7B	N 1° 27' 19"	E 103° 44' 51"
11.	PANTAI	TEBING RUNTUH	SJ8	N 1° 25' 10"	E 103° 40' 06"
12.	KUALA	KUALA SG.MELAYU	SJ8A	N 1° 26' 53"	E 103° 41' 53"
13.	PANTAI	TANJUNG BUNGA	SJ9	N 1° 23' 07"	E 103° 39' 02"
14.	PANTAI	TANJUNG KUPANG	SJ10	N 1° 23' 36"	E 103° 39' 11"

Jadual 5.7 Jabatan Alam Sekitar: Stesen Pengawasan Kualiti Air Marin (Projek Penambakan Singapura), 2003

Table 5.7 Department of Environment: Marine Water Quality Monitoring Stations (Singapore's Reclamation Project), 2003

BIL. NO.	NAMA STESEN STATION NAME	LATITUD LATITUDE	LONGITUD LONGITUDE
1.	LS1	N 1° 19' 54.70"	E 104° 05' 45.22"
2.	LS3	N 1° 21' 27.35"	E 104° 05' 47.44"
3.	LS5	N 1° 23' 01.78"	E 104° 05' 21.02"
4.	LS10	N 1° 26' 20.14"	E 104° 01' 21.38"
5.	LS12	N 1° 25' 39.48"	E 104° 00' 37.28"
6.	SG1	N 1° 20' 56.47"	E 104° 05' 03.01"
7.	SG2	N 1° 21' 06.56"	E 104° 05' 25.60"
8.	SG3	N 1° 21' 15.14"	E 104° 05' 46.69"
9.	SG4	N 1° 21' 25.66"	E 104° 06' 05.24"
10.	SG5	N 1° 21' 37.03"	E 104° 06' 23.14"
11.	NG1	N 1° 23' 22.96"	E 104° 05' 28.14"
12.	NG2	N 1° 23' 23.65"	E 104° 05' 48.16"
13.	NG3	N 1° 23' 25.36"	E 104° 06' 09.88"
14.	NG4	N 1° 23' 27.41"	E 104° 06' 28.88"
15.	NG5	N 1° 23' 29.47"	E 104° 06' 46.53"
16.	TK1	N 1° 25' 54.57"	E 104° 00' 52.86"
17.	TK2	N 1° 26' 11.59"	E 104° 00' 51.86"
18.	TK3	N 1° 26' 31.06"	E 104° 00' 50.50"
19.	TK4	N 1° 26' 47.79"	E 104° 00' 48.79"
20.	TK5	N 1° 27' 06.57"	E 104° 00' 47.43"

PROGRAM PENGAWASAN KUALITI AIR MARIN PULAU-PULAU

Program Pengawasan Kualiti Air Marin Pulau-Pulau telah diwujudkan pada Julai 1998 dan melibatkan 71 buah pulau terpilih dengan 85 buah stesen pengawasan untuk memperolehi tahap data aras latar (baseline) kualiti air marin di persekitaran pulau-pulau di Malaysia. Data ini adalah berfaedah untuk memberi input bagi pengurusan persisiran pantai secara bersepadu untuk tujuan spesifik seperti pelancongan dan rekreasi. Rangkaian pelaporan dikategorikan kepada empat (4) iaitu pulau-pulau pembangunan (3 buah), pulau-pulau peranginan (25 buah), pulau-pulau taman laut (38 buah) dan pulau-pulau yang dilindungi (5 buah) (Jadual 5.8).

Parameter kualiti air marin yang digunakan untuk pengawasan adalah seperti di Jadual 5.9. Program ini juga membolehkan pengemaskinian data Sistem Maklumat Geografi (GIS) yang antara lainnya memberikan maklumat mengenai sumber marin, aktiviti dan sumber pencemaran. Percontohan bebola tar pantai juga turut dilaksanakan.

ISLAND MARINE WATER QUALITY MONITORING PROGRAMME

The Island Marine Water Quality Monitoring Programme was established in July 1998 involving 71 selected islands and 85 stations to establish island water quality baseline levels in Malaysia. This would be beneficial to provide relevant input for intergrated coastal management such as for tourism and recreation. The islands were classified into four categories; development islands (3), resort islands (25), marine park islands (38) and protected islands (5) (Table 5.8).

Parameters measured are as specified in Table 5.9. This programme also provided data for updating of the Geographical Information System (GIS) which started in 2002 such as marine resources, activities and pollution sources. Tar ball sampling on beaches were also conducted.

Jadual 5.8 Jabatan Alam Sekitar: Pengawasan Kualiti Air Marin Pulau, 2003
Table 5.8 Department of Environment: Island Marine Water Quality Monitoring, 2003

BIL. NO.	NEGERI STATE	PULAU ISLAND	KATEGORI CATEGORY	NO. STESEN STATION NO.
1	Kedah	Singa Besar	R	1
		Dayang Bunting	R	1
		Payar	M	1
		Kaca	M	1
		Lembu	M	1
		Segantang	M	1
		Langkawi	D	4
2	Perak	Pangkor	R	2
		Pangkor Laut	R	1
		Sembilan	R	1
3	Pulau Pinang	Aman	R	1
		Jerejak	R	1
		Gedong	R	1

Jadual 5.8 Jabatan Alam Sekitar: Pengawasan Kualiti Air Marin Pulau, 2003
Table 5.8 Department of Environment: Island Marine Water Quality Monitoring, 2003

BIL. NO.	NEGERI STATE	PULAU ISLAND	KATEGORI CATEGORY	NO. STESEN STATION NO.
	Pulau Pinang	Kendi Rimau P.Pinang	R R D	1 1 4
4	Selangor	Ketam Angsa Lumut	R R R	1 1 1
5	Melaka	Besar Upeh	R R	1 1
6	Pahang	Tioman Tulai Chebeh Labas Sepui Seri Buat Sembilang Tokong Bahara But	M M M M M M M M M	2 1 1 1 1 1 1 1 1
7	Johor Johor	Setindan Harimau Mensirip Gual Rawa Pemanggil Babi Hujung Babi Tengah Sibu Tengah Dayang Aur Besar Tinggi Nanga Besar Sibu Besar Sibu Hujung	R M M M M M M M R R M M M M M M M	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
8	Terengganu	Gumia	R	1

Jadual 5.8 Jabatan Alam Sekitar: Pengawasan Kualiti Air Marin Pulau, 2003

Table 5.8 Department of Environment: Island Marine Water Quality Monitoring, 2003

BIL. NO.	NEGERI STATE	PULAU ISLAND	KATEGORI CATEGORY	NO. STESEN STATION NO.
	Terengganu	Kapas Tenggol Nyireh Bidong Duyong Susu Dara Perhentian Besar Redang Perhentian Kecil Lang Tengah Pinang Ekor Tebu Lima	M P P R R M M M M M M M M	1 1 1 1 1 1 2 2 1 1 1 1 1 1
9	Sabah (Labuan)	Gaya Layang-layang Mabul Sipadan Labuan Kuraman Rusukan Kecil Rusukan Besar	R R R R D M M M	1 1 1 2 4 1 1 1
10	Sarawak	Satang Talang-Talang Kecil Talang-Talang Besar	P P P	4 4 4

<i>Resort Island (R)</i>	25	27
<i>Marine Park Island (M)</i>	38	41
<i>Protected Island (P)</i>	5	5
<i>Development Island (D)</i>	3	12

Jadual 5.9 Jabatan Alam Sekitar: Parameter Kualiti Air Marin, 2003
Table 5.9 Department of Environment: Marine Water Quality Parameters, 2003

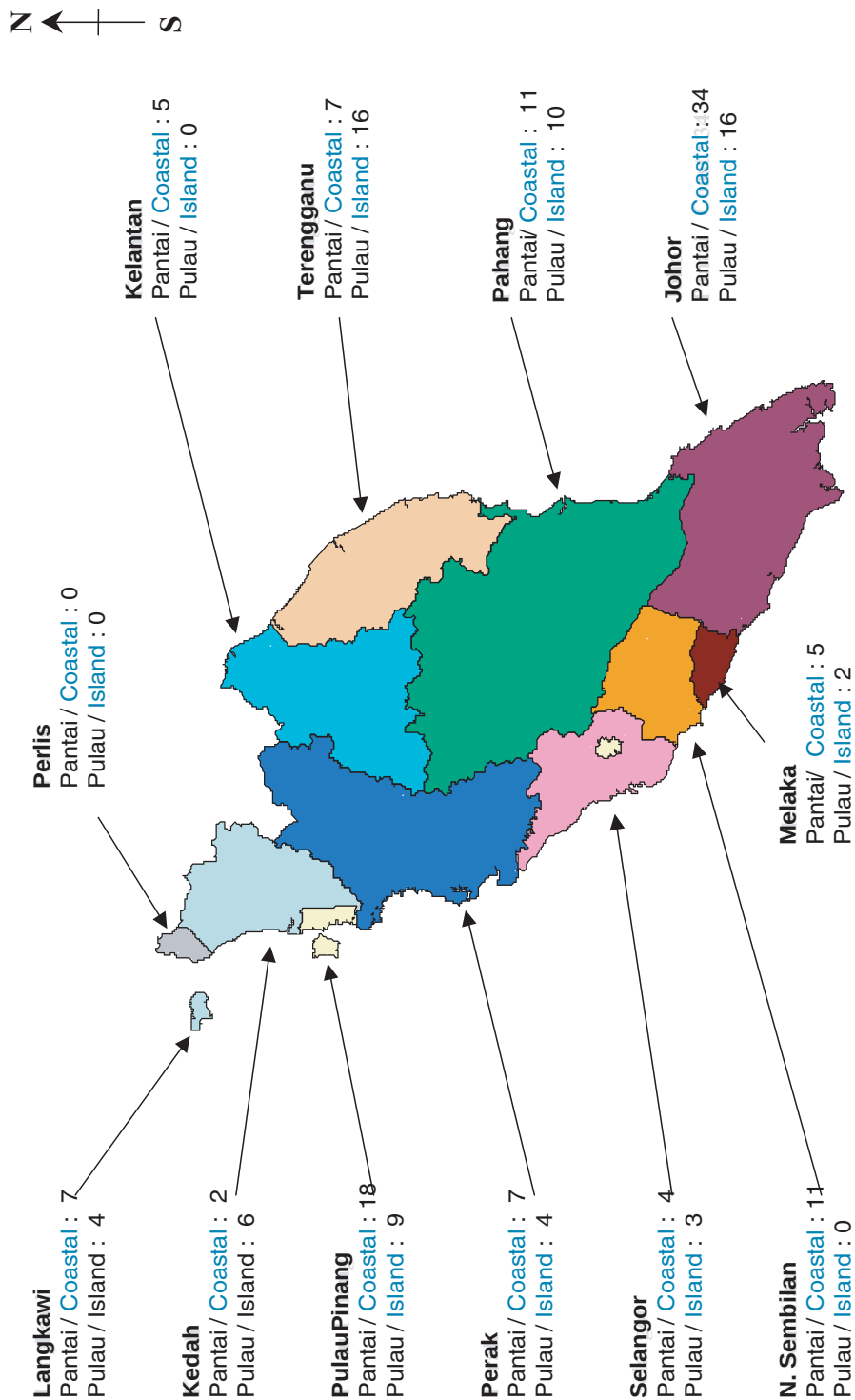
PARAMETER PARAMETERS	KOD CODE	UNIT UNIT
PENGUKURAN MAKMAL LABORATORY MEASUREMENT		
Jumlah Pepejal Terampai Total Suspended Solids	TSS	mg/l
Escherichia coli	E.coli	MPN/100ml
Minyak & Gris Oil & Grease	O&G	mg/l
Kuprum Copper	Cu	mg/l
Kadmium Cadmium	Cd	mg/l
Plumbum Lead	Pb	mg/l
Arsenik Arsenic	As	mg/l
Raksa Mercury	Hg	mg/l
Kromium Chromium	Cr	mg/l
Bebola Tar Tarball	Tar	mg/l
Jumlah Karbon Organik Total Organic Carbon	TOC	mg/l
Nitrat Nitrate	NO ₃ ⁻	mg/l
PENGUKURAN IN-SITU IN-SITU MEASUREMENTS		
Oksigen Terlarut Dissolved Oxygen	DO	mg/l
Saliniti Salinity	Sal	%
Suhu Temperature	Temp	°C
Konduktiviti Conductivity	Cond	İmhos/cm
Turbiditi Turbidity	Turb	NTU/FTU
pH	pH	mg/l



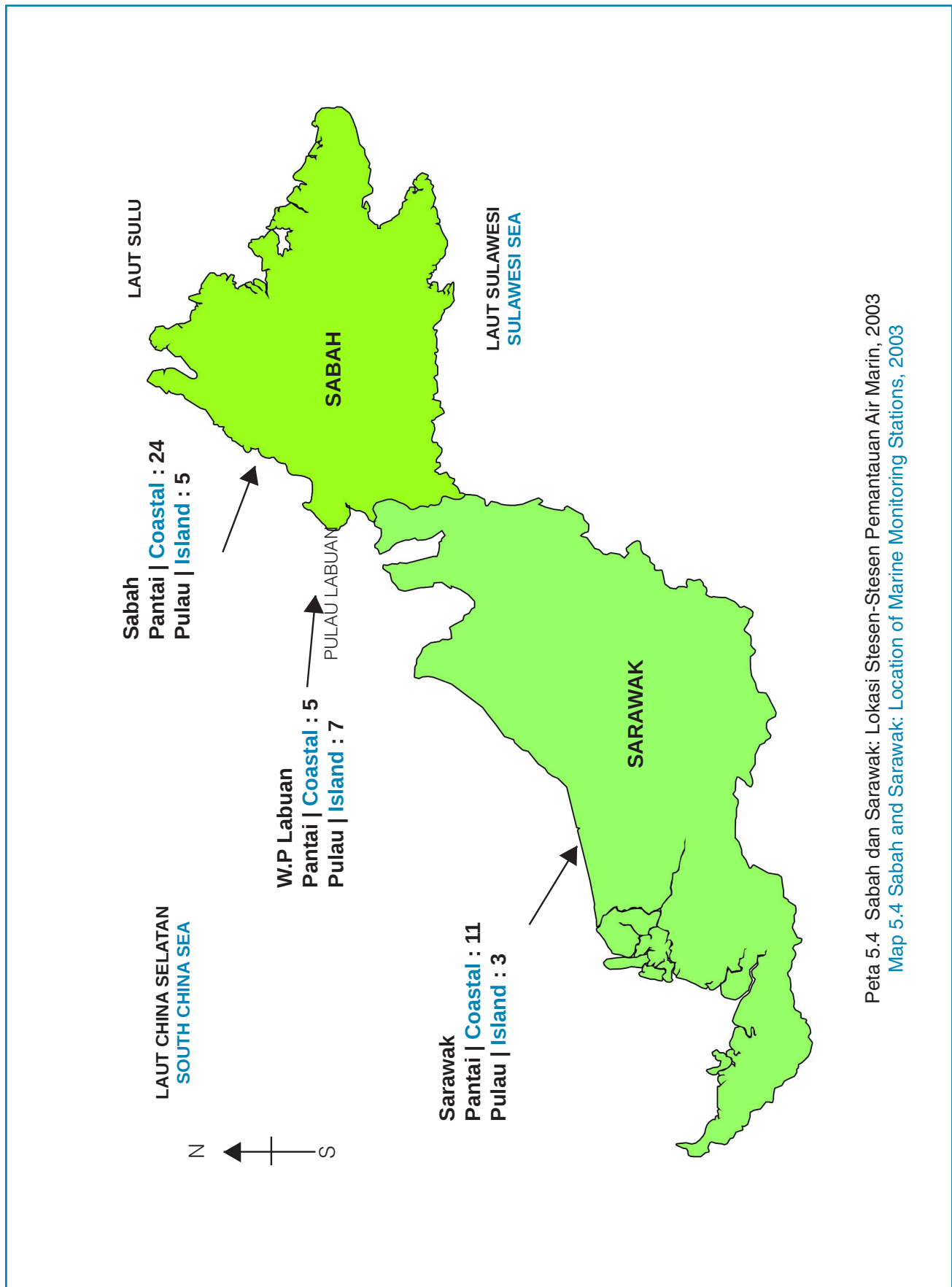
Gambarfoto 5.7 : Pengambilan Sampel Air Laut Dari Bot
Menggunakan 'Van Dorn Sampler'
Photo 5.7 : Marine Water Sampling Using Van Dorn Sampler



Gambarfoto 5.8 : Stesen Pengawasan Kualiti Marin Pulau
Photo 5.8 : Island Marine Water Quality Station



Peta 5.3 Semenanjung: Lokasi Stesen-Stesen Pemantauan Air Marin, 2003
Map 5.3 Peninsular: Location of Marine Monitoring Stations, 2003



Peta 5.4 Sabah dan Sarawak: Lokasi Stesen-Stesen Pemantauan Air Marin, 2003
Map 5.4 Sabah and Sarawak: Location of Marine Monitoring Stations, 2003

PENCEMARAN MARIN

Sebanyak 11 kes tumpahan minyak di perairan Malaysia telah dilaporkan kepada Jabatan Alam Sekitar pada tahun 2003 (Jadual 5.10). Daripada 11 kes yang dilaporkan, empat (4) berlaku di sekitar perairan Johor, dua (2) di Terengganu dan masing-masing satu (1) di Labuan, Negeri Sembilan, Sarawak, Kelantan dan Selangor. Satu (1) kes yang dilaporkan di Johor telah didakwa di bawah Seksyen 27, Akta Kualiti Alam Sekeliling, 1974.

Rancangan Kontigensi

Bagi tujuan penyediaan Pelan Tindakan Pembersihan Pantai Akibat Tumpahan Minyak Peringkat Negeri, sebanyak tujuh (7) buah negeri iaitu Johor, Kedah, Pulau Pinang, Perak, Selangor, Perak dan Wilayah Persekutuan Labuan telah mengadakan bengkel bagi merangka dan merumus Pelan Tindakan Pembersihan Pantai bagi negeri masing-masing. Bengkel tersebut telah dihadiri oleh wakil-wakil dari pelbagai agensi Kerajaan Persekutuan dan Tempatan serta pihak swasta. Bagi Negeri Johor dan Wilayah Persekutuan Labuan, ianya telah siap diterbitkan dan telah dipersetujui oleh pihak Kerajaan Negeri untuk digunakan.

Dua (2) sesi Latihan Peralatan Melawan Tumpahan Minyak telah diadakan pada 10 September 2003, bertempat di Jabatan Laut, Kota Kinabalu. Sesi latihan ini telah disertai oleh wakil-wakil dari Jabatan Laut Sabah, Jabatan Alam Sekitar, Pelabuhan Kota Kinabalu, PIMMAG (*Petroleum Industry Malaysia Mutual Aid Groups*) dan pihak kontraktor yang mengendalikan penyelenggaraan peralatan melawan tumpahan minyak. Latihan yang sama juga telah diadakan bersama Jabatan Laut Sarawak di Bintulu pada 4 dan 5 Ogos 2003.

MARINE POLLUTION

Eleven (11) oil spills in Malaysian waters were reported to the Department of Environment in 2003. Out of these eleven cases, four (4) were in the State of Johor, two (2) in Terengganu and one (1) each in Labuan, Negeri Sembilan, Sarawak, Kelantan and Selangor respectively (Table 5.10). One of the four Johor cases had been prosecuted under Section 27, Environmental Quality Act, 1974, while the rest are still under investigation.

Contingency Planning

For the purpose of preparation of Oil Spill Control and Beach Clean-up Action Plans at the State level, seven (7) States, namely Johor, Kedah, Penang, Selangor, Perak and Labuan had organised workshops to formulate action plans for each respective State. The workshops were attended by participants from various agencies at the Federal and Local Government level as well as the private sector. To date the Action Plans for Johor and the Labuan Federal Territory had already been approved by the respective State Government and had been published for use.

Two Oil Spill Combat exercises were conducted in 2003, at the Sabah Marine Department, Kota Kinabalu. The exercises were attended by representatives from the Marine Department of Sabah, the Department of Environment, the Kota Kinabalu Port Authority, PIMMAG (*Petroleum Industry Malaysia Mutual Aid Group*) and the contractor responsible for service and maintenance of oil spill control equipment. The same exercise was also carried out by the Marine Department of Sarawak on 4-5 August 2003 in Bintulu.

Pada tahun 2003 juga, Jabatan Alam Sekitar telah memperolehi peralatan melawan tumpahan minyak yang berkeupayaan mengawal sehingga 13 kilobarel tumpahan minyak. Alat ini ditempatkan di Pejabat Pelabuhan Jabatan Laut di Tanjung Lembung, Langkawi.

Jawatankuasa Tabung Pusingan Bagi Selat Melaka Dan Selat Singapura (RFC)

Malaysia adalah bertanggungjawab bagi mengurus Tabung Pusingan Selat Melaka dan Selat Singapura (*Revolving Fund Committee-RFC*) bagi tempoh 2001-2006. Pada tahun 2003, mesyuarat Jawatankuasa Teknikal RFC telah diadakan pada 17-19 Mac 2003. Mesyuarat Jawatankuasa Pengurusan Tabung Pusingan Selat Melaka dan Selat Singapura pula telah diadakan pada 2-3 September 2003 (kali ke-24), yang mana telah dihadiri oleh delegasi dari Indonesia, Malaysia dan Singapura. Turut hadir ialah wakil daripada *Melaka Strait Council* (MSC). Mesyuarat Jawatankuasa Teknikal RFC, telah dipengerusikan oleh Pengarah Bahagian Kawalan JAS, manakala mesyuarat kali ke-24 Jawatankuasa Pengurusan RFC telah dipengerusikan oleh Ketua Pengarah Alam Sekitar Malaysia.

In 2003, a set of oil spill control equipment with the capacity for 13 kilobarrel of oil spill was delivered to the Department of Environment located at the Marine Department in Tanjung Lembung, Langkawi.

The Straits Of Malacca And Singapore Oil Spill Revolving Fund Committee (RFC)

Malaysia was given the responsibility to manage the Straits of Malacca and Singapore Oil Spill Revolving Fund Committee (RFC) for the year 2001-2006. A RFC Technical Meeting was held on 17-19 March 2003 and the 24th RFC Management Committee Meeting was held on 2-3 September 2003 which were attended by delegates from Indonesia, Malaysia and Singapore as well as representatives from the Melaka Straits Council (MSC). The RFC Technical Committee Meeting was chaired by the Department of Environment's Control Division Directors, while the RFC Management Meeting was chaired by the Director-General of Environment, Malaysia.

Jadual 5.10 Jabatan Alam Sekitar: Laporan Tumpahan Minyak, 2003
Table 5.10 Department of Environment: Oil Spill Reports, 2003

PUNCA TUMPAHAN SOURCE	SEBAB CAUSES	LOKASI LOCATION		JUMLAH KES TOTAL CASES
		PERAIRAN NEGARA TERRITORIAL WATERS	ZEE EEZ	
Pelantar Minyak Oil Platform	Masalah Mekanikal Mechanical Failure	1	-	1
	Kelalaian Manusia Human Error	-	-	-
Saluran Paip Pipeline	Pecah Rupture	-	-	-
Kapal Vessel	Perlanggaran Collision	2	-	2
	Tersadai Grounding	1	-	2
	Letupan & Kebakaran Explosion & Fire	-	-	-
	Pelepasan Haram Illegal Discharging	2	-	2
Terminal dan Depoh Terminal and Depot	Lebih Muatan Overfilling	-	-	-
	Hos Pecah Burst Hose	-	-	-
	Letupan & Kebakaran Explosion & Fire	-	-	-
	Injap bocor Leaking valves and phlanges	-	-	-
	Cuci Tangki & "deballasting" Tank washing deballasting	-	-	-
Lain-Lain Others	Tiada maklumat lengkap Incomplete information	5	-	5
JUMLAH KES TOTAL		11	-	11

PROGRAM PEMANTAUAN KUALITI AIR TANAH

Program Pemantauan Kualiti Air Tanah Kebangsaan dimulakan oleh Jabatan Alam Sekitar pada tahun 1997. Sehingga tahun 2003, sebanyak 94 stesen pemantauan kualiti air tanah (telaga air tanah) telah ditubuhkan di Semenanjung Malaysia, 19 di Sarawak dan 15 di Sabah (Jadual 5.11). Frekuensi persampelan ialah empat (4) kali setahun setiap stesen. Kawasan stesen-stesen tersebut dipilih dan dikategorikan mengikut kegunaan tanah seperti kawasan pertanian, bandar, luar bandar, industri, tapak pelupusan sampah, padang golf, tapak penyimpanan bahan radioaktif, tapak pelupusan bangkai haiwan, bekalan air tempatan, bekas lombong emas dan kolam akuakultur.

GROUNDWATER QUALITY MONITORING PROGRAMME

The National Groundwater Quality Monitoring Programme was initiated by DOE in 1997. By 2003, 94 monitoring wells had been established at Peninsular Malaysia, 19 in Sarawak and 15 in Sabah (Table 5.11). The frequency of sampling was four (4) times per year for each station. The sites were selected and categorized according to the surrounding landuse such as agricultural, urban/suburban, rural, industrial, solid waste landfills, golf courses, radioactive storage site, animal burial areas, municipal water supply, leachate (gold mine) and aquaculture farm.

Jadual 5.11 Jabatan Alam Sekitar: Telaga-Telaga Pemantauan Kualiti Air Tanah, 2003
Table 5.11 Department of Environment: Groundwater Quality Monitoring Wells, 2003

NEGERI STATE	BIL. NO.	LOKASI LOCATION	KATEGORI CATEGORY
PERLIS	1	Rimba Mas	Agriculture
	2	Arau, Perlis	Urban/Suburban
	3	Arau, Perlis	Urban/Suburban
KEDAH	4	S.K. Darul Uloom, K. Batas	Agriculture/Urban
	5	Kulim, Hi-Tech	Industrial
P.LANGKAWI	6	Padang Mat Sirat. P. Langkawi	Agriculture/Urban
	7	Padang Mat Sirat. P. Langkawi	Agriculture/Urban
P.PINANG	8	Mak Mandin (Kastam)	Industrial
	9	Mak Mandin (P.Penjaja)	Industrial
	10	Bayan Lepas	Industrial
	11	Ladang Valdor	Animal Burial
	12	Ladang Valdor	Animal Burial
	13	Ladang Valdor	Animal Burial
PERAK	14	Pusing (Landfill)	Solid Waste Landfill
	15	Lahat (Radioactive Storage)	Radioactive Landfill
	16	Ldg. Bak Hua, Sg. Siput	Animal Burial
	17	Ldg. Bak Hua, Sg. Siput	Animal Burial
	18	Bazaar PKNP, Ipoh	Animal Burial
KUALA LUMPUR	19	Sg. Besi Landfill	Solid Waste Landfill
	20	Sg. Besi Landfill	Solid Waste Landfill
	21	Sg. Besi Landfill	Solid Waste Landfill
	22	Tmn. Beringin, Kepong	Solid Waste Landfill
	23	Tmn. Beringin, Kepong	Solid Waste Landfill
	24	Royal Selangor Golf Club	Golf Course
SELANGOR	25	CIAST, Shah Alam	Industrial
	26	CIAST, Shah Alam	Industrial
	27	S.K. SS 20, Shah Alam	Industrial
	28	Saujana Golf, Subang	Urban/Suburban
	29	Saujana Golf, Subang	Urban/Suburban
	30	Sepang	Animal Burial
	31	Sepang	Animal Burial
	32	Sepang	Animal Burial
	33	Templer Park, Rawang	Saltwater
	34	Templer Park, Rawang	Saltwater
	35	Kolam Memancing, Jln. Reko	Saltwater
	36	Kolam Memancing Tanjung, Kuala Langat	Saltwater
NEGERI SEMBILAN	37	Senawang Edible Oil	Industrial
	38	Kualiti Alam	Solid Waste Landfill
	39	Kualiti Alam	Solid Waste Landfill

Jadual 5.11 Jabatan Alam Sekitar: Telaga-Telaga Pemantauan Kualiti Air Tanah, 2003
Table 5.11 Department of Environment: Groundwater Quality Monitoring Wells, 2003

NEGERI STATE	BIL. NO.	LOKASI LOCATION	KATEGORI CATEGORY
	40	Bkt. Pelanduk	Animal Burial
	41	Bkt. Pelanduk	Animal Burial
MELAKA	42	Petronas	Industrial
	43	Kota Tinggi	Landfill
	44	Bkt. Bakeri, Muar	Landfill
	45	Bkt. Bakeri, Muar	Landfill
	46	Tg. Puteri , Pasir Gudang	Industrial
	47	Tg. Puteri , Pasir Gudang	Industrial
	48	Ulu Choh, Pekan Nanas	Animal Burial
	49	Ulu Choh, Pekan Nanas	Animal Burial
	50	Ulu Choh, Pekan Nanas	Animal Burial
PAHANG	51	Kuantan Landfill	Landfill
	52	Sek. Keb. Lepar	Agriculture
	53	Nenasi	Suburban
	54	Kg. Tekek , Pulau Tioman	Salt.Int/Rural
	55	Kg. Tekek , Pulau Tioman	Salt.Int/Rural
	56	Nenasi	Aquaculture Farm
	57	Nenasi	Aquaculture Farm
	58	Nenasi	Aquaculture Farm
	59	Nenasi	Aquaculture Farm
	60	Nenasi	Aquaculture Farm
	61	Nenasi	Aquaculture Farm
	62	Nenasi	Aquaculture Farm
	63	Nenasi	Aquaculture Farm
	64	Nenasi	Aquaculture Farm
	65	Nenasi	Aquaculture Farm
	66	Nenasi	Aquaculture Farm
TERENGGANU	67	Kg. Kubang Badak	Landfill
	68	Kg. Kubang Badak	Landfill
	69	Teluk Kalong	Industrial
	70	Teluk Kalong	Industrial
	71	Padang Pak Wan	Rural
	72	Kg. Raja	Urban
	73	Kg. Raja	Urban
	74	Kertih	Industrial
	75	Kertih	Industrial
	76	Kg. Merang	Urban
KELANTAN	77	Pengkalan Chepa	Golf Course
	78	Pengkalan Chepa	Golf Course

Jadual 5.11 Jabatan Alam Sekitar: Telaga-Telaga Pemantauan Kualiti Air Tanah, 2003
Table 5.11 Department of Environment: Groundwater Quality Monitoring Wells, 2003

NEGERI STATE	BIL. NO.	LOKASI LOCATION	KATEGORI CATEGORY
KELANTAN	79	Kg. Jembal	Agriculture
	80	Eastern Garment, PC	Industrial
	81	Eastern Garment, PC	Industrial
	82	Panji	Landfill
	83	Panji	Landfill
	84	Kubang Kerian	Golf Course
	85	Kubang Kerian	Golf Course
	86	Rantau Panjang	Urban/Suburban
	87	Rantau Panjang	Urban/Suburban
	88	Pasir Mas	Urban/Suburban
	89	Sek. Keb.Jelawat	Rural
	90	Kg. Gelong Badak	Rural
	91	Kg. Beris Lalang	Agriculture
	92	Kg. Gajah Mati	Agriculture
	93	Kg. Gajah Mati	Agriculture
	94	Kg. Gajah Mati	Agriculture
SARAWAK	95	Matang	Landfill
	96	Matang	Landfill
	97	Bau	Leachate (gold mine)
	98	Bau	Leachate (gold mine)
	99	Bau	Leachate (gold mine)
	100	Kabong	Municipal water supply
	101	Kabong	Municipal water supply
	102	Kabong	Municipal water supply
	103	Kabong	Municipal water supply
	104	Kabong	Municipal water supply
	105	Oya, Sibu	Animal Burial
	106	Oya, Sibu	Animal Burial
	107	Kemuyang, Sibu	Landfill
	108	Kemuyang, Sibu	Landfill
	109	Lambir, Miri	Municipal water supply
	110	Lambir, Miri	Municipal water supply
	111	Lambir, Miri	Municipal water supply
	112	Kuala Lawas, Lawas	Municipal water supply
	113	Kuala Lawas, Lawas	Municipal water supply
SABAH	114	Stesen Pertanian Limbawang	Agriculture
	115	Sandakan Golf Club	Golf Course
	116	Sandakan Golf Club	Golf Course
	117	Inanam	Urban/Suburban

Jadual 5.11 Jabatan Alam Sekitar: Telaga-Telaga Pemantauan Kualiti Air Tanah, 2003
Table 5.11 Department of Environment: Groundwater Quality Monitoring Wells, 2003

NEGERI STATE	BIL. NO.	LOKASI LOCATION	KATEGORI CATEGORY
SABAH	118	Yong's Farm, Tawau	Agriculture
	119	Kg. Tajau Laut, Kudat	Municipal water supply
	120	IATC, Kg. Duvanson	Landfill
	121	IATC, Kg. Duvanson	Landfill
	122	IATC, Kg. Duvanson	Landfill
	123	Penampang	Landfill
	124	Penampang	Landfill
	125	Penampang	Landfill
	126	Penampang	Landfill
	127	Pulau Manukan	Resort
	128	Asian Supply Base Sdn. Bhd Labuan	Heavy Industry

PREMIS YANG DITETAPKAN

Kilang Getah Asli Mentah dan Kilang Kelapa Sawit Mentah dikategorikan sebagai premis yang ditetapkan di bawah Perintah Kualiti Alam Sekeliling (Premis Yang Ditetapkan)(Getah Asli Mentah) 1978 dan Perintah Kualiti Alam Sekeliling (Premis Yang Ditetapkan)(Kelapa Sawit Mentah) 1977. Operasi premis-premis ini adalah tertakluk kepada keperluan Seksyen 18, Akta Kualiti Alam Sekeliling, 1974 di mana tuannya premis-premis ini perlu mempunyai lesen daripada Jabatan Alam Sekitar bagi menduduki dan menggunakan premis.

Kilang Getah Asli Mentah

Pada tahun 2003, sejumlah 96 buah kilang getah asli mentah telah dilesenkan di bawah Peraturan-Peraturan Kualiti Alam Sekeliling (Premis Yang Ditetapkan) (Getah Asli Mentah), 1978. Sebanyak 81 buah kilang telah dilesenkan untuk melepaskan effluen terolah ke alur air, 5 buah kilang dilesenkan untuk melepaskan effluen ke atas tanah manakala baki 10 buah kilang dibenarkan untuk mengitar semula effluen. Tempoh lesen yang diberikan bagi setiap

PRESCRIBED PREMISES

Raw Natural Rubber Factories and Crude Palm Oil Processing Mills are prescribed premises under the Environmental Quality (Prescribed Premises) (Raw Natural Rubber) Order, 1978 and the Environmental Quality (Prescribed Premises) (Crude Palm Oil) Order, 1977. The operation of these premises is subjected to the requirement of Section 18 of the Environmental Quality Act, 1974, whereby the owners of such premises are required to obtain a license from the Department of Environment for occupation and use.

Raw Natural Rubber

In 2003, 96 raw natural rubber factories were licensed under the Environmental Quality (Prescribed Premises) (Raw Natural Rubber) Regulations, 1978. Out of these, 81 factories were licensed to discharge treated effluent into inland watercourses, five (5) factories were permitted to practise land disposal, while the remaining 10 factories were allowed to recycle their effluent. The licensing varied from one (1) to three (3) years depending on the record of

premises are beza from one (1) to three (3) years depending on the level of compliance that is believed for the mills concerned regarding the requirements of the license (Figure 5.4).

Throughout the year 2003, the State DOE enforcement officers conducted 156 inspections on 82 raw natural rubber factories, priority given to those with low compliance record (Figure 5.4).

Kilang Kelapa Sawit Mentah

Sejumlah 369 buah kilang kelapa sawit mentah telah dilesenkan di bawah Peraturan-Peraturan Kualiti Alam Sekeliling (Premis Yang Ditetapkan) (Kelapa Sawit Mentah), 1977 pada tahun 2003, pertambahan sebanyak lima (5) buah kilang berbanding dengan tahun 2002. Dari 369 buah kilang yang dilesenkan, sebanyak 218 buah kilang telah dilesenkan untuk melepaskan effluen yang diolah ke dalam alur air, 124 buah kilang untuk melupuskan effluen ke atas tanah, 26 buah kilang melupuskan effluen dengan menggunakan kedua-dua kaedah dan sebuah kilang secara kitar semula (Rajah 5.5).

Throughout the year 2003, 699 inspections on the palm oil processing mills were conducted by the DOE State Officers (Figure 5.5).

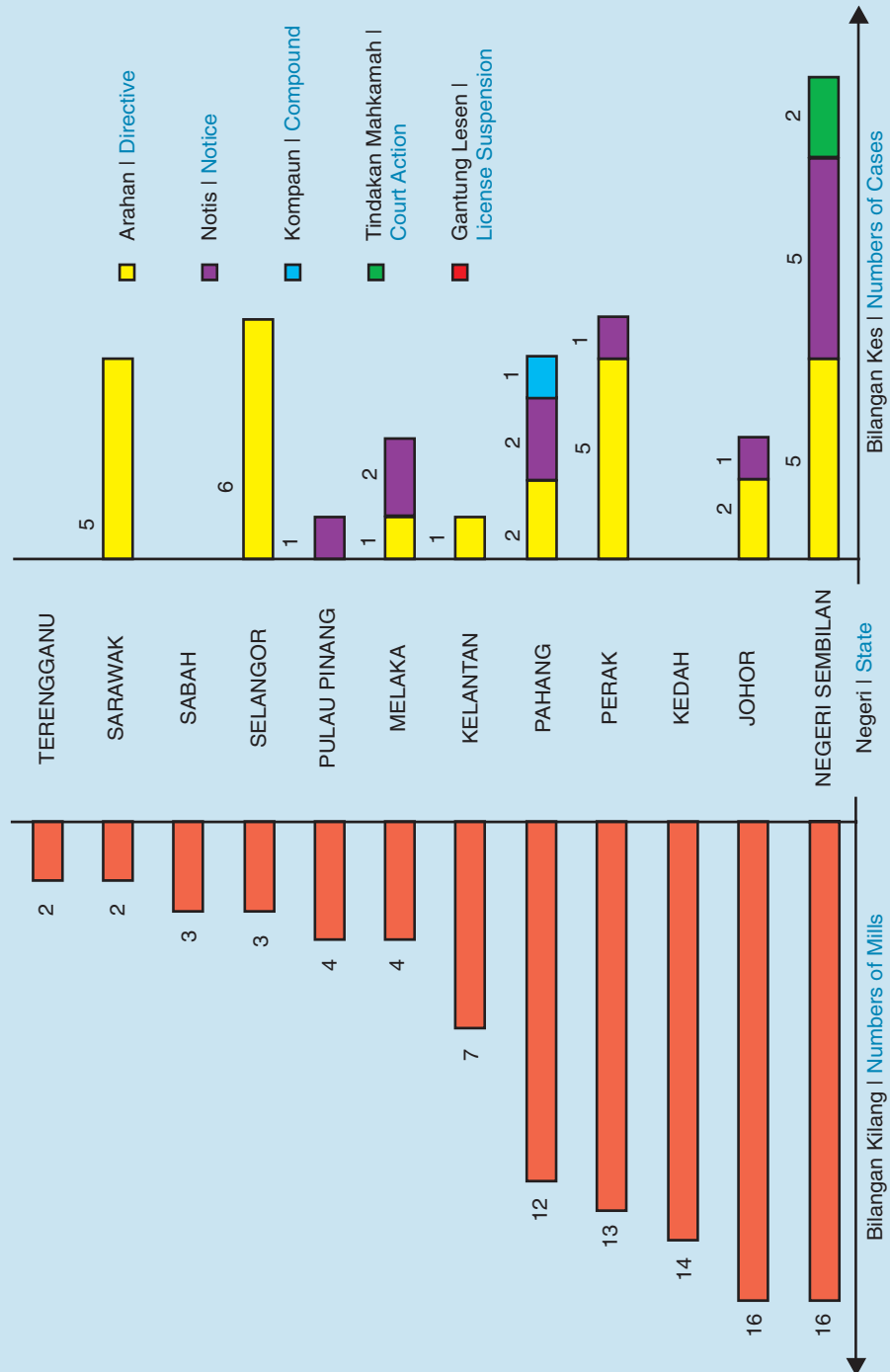
compliance of the stated conditions of the licenses (Figure 5.4).

Throughout the year 2003, the State DOE enforcement officers conducted 156 inspections on 82 raw natural rubber factories, priority given to those with low compliance record (Figure 5.4).

Crude Palm Oil

There were 369 palm oil processing mills licensed under the Environmental Quality (Prescribed Premises) (Crude Palm Oil Mill) Regulations, 1977 in 2003, an increase of five (5) mills compared to 2002. Of these 369 licensed prescribed premises, 218 premises were granted permission to discharge treated effluent into inland watercourses, 124 premises were approved for land disposal, 26 were licensed to implement both methods of effluent disposal and one mill for effluent recycling (Figure 5.5).

Throughout the year, 699 inspections on the palm oil processing mills were conducted by the DOE State Officers (Figure 5.5).



Rajah 5.4 Jabatan Alam Sekitar: Bilangan Kes Tindakan Undang-Undang Terhadap Kilang Getah Asli Mentah, 2003
Figure 5.4 Department of Environment: Legal Action Taken Against Raw Natural Rubber Factories, 2003



Rajah 5.5 Jabatan Alam Sekitar: Bilangan Kes Tindakan Undang-Undang Terhadap Kelapa Sawit Mentah, 2003
Figure 5.5 Department of Environment: Legal Action Taken Against Crude Palm Oil Mills, 2003

PREMIS YANG BUKAN DITETAPKAN

Status Pemuatan: Peraturan-peraturan Kualiti Alam Sekeliling (Kumbahan dan Effluen-effluen Perindustrian) 1979.

Pada tahun 2003, Jabatan Alam Sekitar telah menjalankan 2,565 pemeriksaan penguatkuasaan terhadap sejumlah 1,957 industri pembuatan yang tertakluk kepada Peraturan-Peraturan Kualiti Alam Sekeliling (Kumbahan dan Effluen-effluen Perindustrian) 1979. 83% daripada premis yang dilawat mematuhi Peraturan ini. Sebanyak 17% premis pula didapati menghadapi pelbagai kesukaran pemuatan seperti tidak mematuhi standard pelepasan effluen (Peraturan 8), tidak mempunyai Kelulusan Bertulis bagi pembinaan loji pengolahan effluen serta pembesaran kilang (Peraturan 4), tidak melepaskan effluen di takat pelepasan yang diluluskan (Peraturan 16) dan tidak memaklumkan Jabatan Alam Sekitar mengenai kejadian tumpahan atau pelepasan secara tidak sengaja (Peraturan 18).

Sebanyak 59 kes dari premis-premis yang tidak patuh ini telah didakwa di mahkamah. Sejumlah RM1,423,000.00 denda telah dikenakan. Tindakan-tindakan lain yang diambil adalah pengeluaran 945 surat arahan dan 304 notis arahan kepada industri supaya mereka mengambil tindakan yang sepatutnya bagi mematuhi Akta Kualiti Alam Sekeliling, 1974 dan Peraturan-Peraturan Kualiti Alam Sekeliling (Kumbahan dan Effluen-effluen Perindustrian) 1979.

NON-PRESCRIBED PREMISES

Compliance Status: Environmental Quality (Sewage and Industrial Effluents) Regulations, 1979

In 2003, the Department of Environment conducted 2,565 inspections of 1,957 industrial premises subjected to the Environmental Quality (Sewage and Industrial Effluents) Regulations, 1979. 83% of the premises inspected were in compliance with the Regulations. The other 17% non-compliance were offences such as exceeding effluent discharge standards (Regulation 8); no written approval for installing effluent treatment plant and factory expansion (Regulation 4); not discharging effluent at approved discharge points (Regulation 16); and not informing the Department of Environment of the occurrence of spill and accidental discharges (Regulation 18).

Of the non-complying premises, 59 cases were prosecuted in court. A total fine of RM1,423,000.00 were collected. Other actions taken were the issuance of 945 written field directives and 304 written notices to take appropriate action in order to comply with the Environmental Quality Act, 1974 and the Environmental Quality (Sewage and Industrial Effluents) Regulations, 1979.

Industri kulit dan jentera mencapai pematuhan 100%, sementara industri-industri kertas, fabrikasi logam, elektrik dan elektronik, sadur-elektrik dan penyudahan logam, simen, kenderaan, kuari, penapisan petroleum, penapisan minyak makan, plastik dan makanan haiwan mencapai 86% hingga 95% pematuhan. Walaupun demikian industri-industri berasaskan kayu, asas kimia, asas getah, pengilangan logam, makanan dan minuman, tekstil dan mineral bukan logam masih menghadapi masalah mematuhi kehendak-kehendak Peraturan dengan peratus pematuhan kurang 85% (Rajah 5.6). Beberapa industri ini didapati beroperasi tanpa loji pengolahan atau loji pengolahan effluen yang ada tidak berupaya untuk mengolah effluen yang mematuhi standard pelepasan yang ditetapkan. Faktor lain yang menyebabkan ketidakpatuhan ini adalah penyelenggaraan yang lemah dan kurangnya pengetahuan/pengalaman dalam pengendalian loji pengolahan effluen.

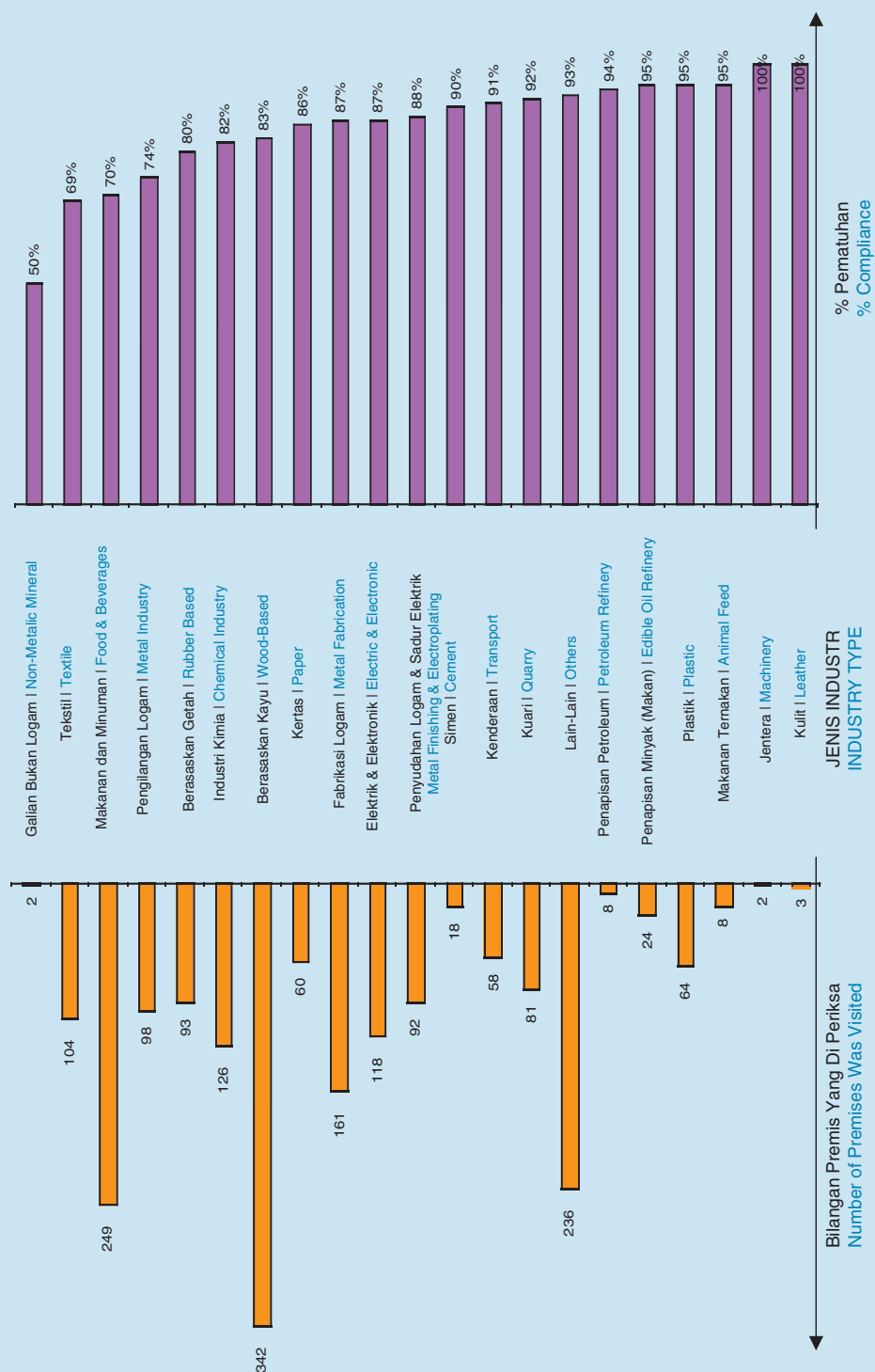
Pada umumnya, parameter-parameter yang sukar dipatuhi oleh industri-industri yang tidak patuh ialah keperluan oksigen biokimia (BOD), keperluan oksigen kimia (COD), pepejal terampai (SS), minyak dan gris (O&G) dan logam-logam berat seperti tembaga, nikel, plumbum, kromium dan manganam. Secara spesifiknya, industri berasaskan kayu didapati sukar untuk mematuhi standard bagi parameter-parameter COD, BOD, SS fenol dan besi; industri asas kimia gagal mematuhi standard bagi parameter COD, BOD, O&G, SS, besi, plumbum dan zink; industri asas getah gagal mematuhi standard parameter COD, BOD, SS, O&G, zink, manganam, kromium dan sulfid; industri pengilangan logam tidak mematuhi parameter COD, BOD, SS, O&G, besi zink, tembaga, nikel dan kromium; industri makanan dan minuman sukar mematuhi parameter COD, BOD, SS, O&G, besi dan pH; industri tekstil sukar mematuhi parameter COD, BOD, SS, O&G, besi dan manganam; dan industri mineral bukan logam sukar mematuhi parameter COD, BOD dan Kadmium.

Industries such as leather and machinery achieved 100% compliance, while paper, metal fabrication, electric and electronic, metal finishing and electroplating, cement, transport, quarry, petroleum refinery, edible oil refinery, plastic and animal feed industries had between 86% to 95% compliance respectively. However industries like wood-based, chemical-based, rubber-based, basic metal, food and beverages, textile and non-metallic mineral had difficulties complying with the requirements of the Regulations and could only achieved below 85% (Figure 5.6). Some of these industries were found to be operating without effluent treatment plants or with inefficient effluent treatment plants. Other factors that contributed to non-compliance were poor maintenance and lack of knowledge or experience in operating the effluent treatment plants.

Generally, the parameters that most industries could not comply with were biochemical oxygen demand (BOD), chemical oxygen demand (COD), suspended solids (SS), oil and grease (O&G) and heavy metals such as copper, nickel, lead, chromium and manganese. Specifically, the wood-based industries were found to have difficulty in complying with the parameters such as COD, BOD, SS, phenol and iron; chemical-based industries with COD, BOD, O&G, SS, iron, lead and zinc; rubber-based industries with COD, BOD, SS, O&G, iron, zinc, manganese, chromium and sulphide; basic metal industries with COD, BOD, SS O&G, iron, zinc copper, nickel and chromium; food and beverages industries with COD, BOD, SS, O&G, iron and manganese; and non-metallic mineral industries with COD, BOD and cadmium.

Bagi meningkatkan pematuhan, Jabatan Alam Sekitar telah mengeluarkan arahan-arahan kepada pihak industri supaya memasang alat kawalan pencemaran yang lebih sesuai dan efisien serta meningkatkan keupayaan kemudahan kawalan pencemaran yang sedia ada. Di samping itu, berbagai aktiviti kesedaran dilaksanakan sepanjang tahun untuk kumpulan sasaran yang spesifik. Aktiviti-aktiviti tersebut termasuklah dialog, seminar dan bengkel untuk industri. Pihak industri juga dinasihatkan untuk mewujudkan sistem pengurusan alam sekitar yang baik dan digalakkan untuk mendapatkan pensijilan ISO 14000. Jabatan Alam Sekitar juga dalam usaha memastikan pematuhan sepenuhnya telah berusaha mempromosi penggunaan teknologi kawalan yang efisien, amalan pengeluaran bersih serta '*self-regulation*'.

In order to achieve more satisfactory compliance, the Department of Environment had issued directives to install more appropriate and efficient control equipment and upgrade existing pollution control facilities. In addition to the above measures, various awareness activities were implemented throughout the year for specific target groups which included dialogues, seminars and workshops for industries. The industries were also advised to set up a good environmental management system and encouraged to go for ISO 14000 certification. The Department of Environment in its effort to ensure full compliance is also promoting the adoption of more efficient control technologies, cleaner production practices as well as self-regulatory measures.



Rajah 5.6 Jabatan Alam Sekitar: Peraturan-peraturan Kualiti Alam Sekeliling (Kumbahan dan Effluen-Effluen Perindustrian) 1979, Status Pematuhan Industri, 2003
Figure 5.6 Department of Environment: Environmental Quality (Sewage and Industrial Effluents) Regulations, 1979, Compliance Status, 2003

PENGURUSAN BUANGAN TERJADUAL

Kebenaran Bertulis dan Lesen Premis Yang Ditetapkan

Sejumlah lapan (8) Kebenaran Bertulis telah diluluskan oleh Ketua Pengarah untuk pembinaan premis yang ditetapkan bagi mengolah dan melupus buangan terjadual. Kebenaran Bertulis berkenaan telah diberi kepada lima (5) kemudahan pemerolehan kembali dan tiga (3) kemudahan penunu buangan terjadual.

Sejumlah 233 lesen diluluskan kepada kemudahan baru dan sedia ada untuk pemerolehan kembali, penstoran luar tapak, penunu, pengolahan atas tanah, tapak pelupusan selamat dan pelupusan buangan ke atas tanah.

Import dan Eksport Buangan Terjadual

Pada tahun 2003, sebanyak 12 permohonan telah diberi Kebenaran Bertulis untuk mengimport 305,398 tan metrik buangan untuk tujuan penggunaan sebagai bahan mentah Industri (Jadual 5.12). Di samping itu, sejumlah 2,361 tan metrik buangan terjadual telah dieksport (Jadual 5.13 dan Jadual 5.14). Buangan yang dieksport kebanyakannya terdiri daripada mangkin terpakai industri dan enapcemar logam berat daripada 42 pengeluar buangan untuk pemerolehan kembali logam di luar negara.



Gambarfoto 5.9 : Persampelan Rasmi Bahan Yang Disyaki Buangan Terjadual

Photo 5.9 : Formal Sampling of Suspected Scheduled Wastes

SCHEDULED WASTE MANAGEMENT

Written Permission and Licences for Prescribed Premises

A total of eight (8) Written Permissions were granted by the Director General for the construction of prescribed premises for the treatment and disposal of scheduled wastes; five (5) off-site recovery plants and three (3) scheduled waste incinerators.

In 2003, a total of 233 licences were issued for both existing and new facilities for off-site recovery, off-site storage, incinerators, land treatment, off-site treatment, secured landfills and land disposal of wastes.

Import and Export of Scheduled Wastes

In 2003, 12 Written Approvals were issued for the import of 305,398 tonnes of wastes for use as raw materials in industrial processes (Table 5.12) and 2,361 tonnes of scheduled wastes were exported (Table 5.13 and Table 5.14). The exported wastes were derived from 42 waste generators and comprised mainly of spent industrial catalysts and metal hydroxide sludges destined for metal recovery in foreign countries.



Gambarfoto 5.10 : Pelupusan Haram Buangan Yang Disyaki Bahan Buangan Terjadual

Photo 5.10 : Indiscriminate Dumping of Suspected Scheduled Wastes

Jadual 5.12 Jabatan Alam Sekitar: Kuantiti Terjadual yang Diimport , 1999-2003
Table 5.12 Department of Environment: Quantity of Scheduled Wastes Imported, 1999-2003

JENIS BUANGAN TYPE OF WASTES	NEGARA COUNTRY	TAHUN YEAR	1999	2000	2001	2002	2003
Sangga Kuprum Copper Slag	Singapura Singapore		45,382	27,254	36,611	33,945	52,283
	Jepun Japan		12,391	-	-	-	-
	China China		-	-	-	-	-
	Korea Korea		-	-	-	-	-
Sangga Peleburan G.B. Furnace Slag	Singapura Singapore		-	-	90	170	-
	Jepun Japan		-	-	16,054	15,000	234,644
	China China		104,917	93,673	15,622	14,770	17,363
	Korea Korea		-	-	-	-	-
Mangkin Terpakai Spent Catalyst	Singapura Singapore		4,040	4,948	1,565	6,878	1,108
	Jepun Japan		-	-	-	-	-
	China China		-	-	-	-	-
	Korea Korea		-	-	-	-	-
JUMLAH (TAN) TOTAL (TONNES)			166,730	125,875	69,942	70,763	305,398

Jadual 5.13 Jabatan Alam Sekitar: Kuantiti Buangan Terjadual Yang Dieksport ,1999-2003
Table 5.13 Department of Environment: Quantity of Wastes Exported, 1999-2003

JENIS BUANGAN TYPE OF WASTES	TAHUN YEAR	1999	2000	2001	2002	2003
Enapcemar Hidroksida Logam Metal Hydroxide Sludge		2,597	1,678	1,795	1,537	212
Mangkin Terpakai Spent Catalyst		1,846	2,905	816	1,365	693
Kuprum Oksida Copper Oxide		635	-	-	142	1,209
Bahan Letupan Terpakai Used Blasting Material		5	36	19	-	-
Kadmium dan Nikel Oksida Cadmium Nickel Oxide		103	108	-	67	30
Sanga Aluminium Aluminium Dross		-	10	-	-	-
Nikel-Kadmium Bateri Nickel Cadmium Battery		-	-	-	-	217
Kutlet Kaca Glass Cutlet		-	141	45	-	-
JUMLAH (TAN) TOTAL (TONNES)		5,186	4,878	2,675	3,110	2,361

Jadual 5.14 Jabatan Alam Sekitar: Kuantiti Buangan Terjadual Yang Dieksport dan Destinasi, 1999-2003
Table 5.14 Department of Environment: Quantity of Wastes Exported and Destinations, 1999-2003

NEGARA COUNTRY	TAHUN YEAR	1999	2000	2001	2002	2003
Afrika Selatan South Africa		45	-	-	-	-
Amerika America		1,107	753	1,295	533	60
Australia Australia		280	69	-	315	209
Filipina Philippines		1,073	-	532	-	-
Finland Finland		-	-	-	100	23
Belgium Belgium		-	-	-	-	140
Holland Holland		1,266	1,235	487	570	323
Itali Italy		-	-	107	44	28
Jepun Japan		1,103	1,530	68	1,035	1,006
Jerman Germany		80	470	159	128	349
Korea Selatan South Korea		23	-	-	-	118
Perancis France		80	108	-	67	98
Singapura Singapore		27	500	-	169	-
Sweden Sweden		102	203	27	149	7
Switzerland Switzerland		-	10	-	-	-
Jumlah (Tan) Total (Tonnes)		5,186	4,878	2,675	3,110	2,361

PENGUATKUASAAN TERHADAP AKTIVITI PEMBAKARAN TERBUKA

Bagi mengelakkan berlaku kejadian jerebu yang diakibatkan oleh sumber tempatan, maka pada tahun 2003, semua pejabat JAS negeri telah meneruskan operasi rondaan mencegah pembakaran terbuka di kawasan-kawasan yang telah dikenalpasti sebagai kawasan yang cenderung berlaku kebakaran. Sepanjang tahun 2003, sejumlah 1,148 kes pembakaran terbuka dikesan dan disiasat termasuk *hotspot* yang dikesan melalui satelit (Rajah 5.7 dan Rajah 5.8).

Kejadian pembakaran terbuka yang sering berlaku adalah di kawasan ladang (253), tapak pembinaan (210) dan belukar (202), terutamanya semasa cuaca panas dan kering iaitu pada bulan-bulan Februari (144), Jun (212), Julai (144), dan Ogos (137). Daripada 1148 kes pembakaran terbuka tersebut, 267 kes telah dikompaun sebanyak RM440,300.00 dan dua kes telah dikenakan tindakan mahkamah dan didenda sebanyak RM100,000.00.

ENFORCEMENT AGAINST OPEN BURNING ACTIVITIES

In order to prevent open burning and the occurrence of haze due to local sources, all Department of Environment State Offices conducted daily ground surveillance of fire prone areas in 2003. Throughout the year, a total of 1,148 open burning cases were detected and investigated, including hotspots detected via satellites (Figure 5.7 and Figure 5.8).

Frequent open burning incidents were found to occur in plantations (253); constructions areas (210) and bushes (202), especially during the dry period in February (144); June (212); July (144); and August (137). Out of the 1,148 open burning cases detected, 267 cases were issued compounds amounting to RM440,300.00. Two cases were prosecuted in court and fined a total of RM100,000.00.

Untuk memperkemas lagi instrumen Perundangan bagi mengawal aktiviti pembakaran terbuka, Perintah Kualiti Alam Sekeliling (Aktiviti Yang Diisytiharkan) 2003, telah diwartakan pada 18 Disember 2003 dan telah mula berkuatkuasa pada 1 Januari 2004. Lima belas aktiviti pembakaran telah diisytiharkan sebagai bukan pembakaran terbuka sepertimana yang ditakrifkan dalam Seksyen 29A Akta Kualiti Alam Sekeliling, 1974 selagi aktiviti-aktiviti berkenaan dijalankan mengikut syarat-syarat yang dinyatakan dalam Perintah tersebut. Di bawah Perintah yang sama juga, kawasan dalam lingkungan 30 km jejari di sekitar Lapangan Terbang Antarabangsa Kuala Lumpur (KLIA) telah diwartakan sebagai kawasan larangan sebarang aktiviti pembakaran terbuka (selaras dengan peruntukan di bawah Seksyen 29AA, Akta Kualiti Alam Sekeliling, 1974) kecuali bagi lima (5) aktiviti iaitu pembakaran tumbuhan berpenyakit, pembakaran benda/bahan sebagai upacara keagamaan, pembakaran mayat, aktiviti gril/barbeku di luar rumah dan pembakaran gas mudah terbakar bagi tujuan *flaring* (Rajah 5.26).

Lesen Pelanggaran

Di bawah Akta Kualiti Alam Sekeliling (AKAS), 1974 Lesen Pelanggaran boleh dikeluarkan untuk tempoh masa yang spesifik bagi membenarkan industri yang menghadapi kesukaran untuk mematuhi standard pelepasan melanggar syarat-syarat yang dibenarkan untuk pelepasan effluen ke dalam pengairan daratan atau pelepasan bendasing udara ke atmosfera sebagaimana yang diperuntukkan di bawah Seksyen 25(1) dan Seksyen 22(1), AKAS, 1974. Lesen Pelanggaran ini merupakan satu langkah atau mekanisme untuk membantu, memudah dan membolehkan industri yang bermasalah memasang atau meningkatkan peralatan kawalan pencemaran dalam tempoh masa yang mencukupi.

Pada tahun 2003, jumlah permohonan Lesen Pelanggaran di bawah Seksyen 25, Akta adalah menurun kepada 66 berbanding 87 permohonan dalam tahun 2002 (Rajah 5.9). Dari 66 permohonan, 51 telah diluluskan dan 15 ditolak (Rajah 5.10). Dari 51 Lesen Pelanggaran yang diluluskan, 20 (39%) lesen adalah untuk industri makanan dan minuman;

To further strengthen the legal instrument to control open burning activities, the Environmental Quality (Declared Activities) (Open Burning) Order 2003 was gazetted on 18 December 2003 and came into force on 1 January 2004. Fifteen (15) activities were not classified as open burning as defined in Section 29A of Environmental Quality Act, 1974 so long as such activities are carried out in accordance with the conditions specified in the Order. Under the Order, the area within 30 kilometre radius of the Kuala Lumpur International Airport (KLIA) was gazetted as a prohibited zone (in accordance with section 29AA EQA, 1974) where open burning activities are totally banned except for five activities which include burning of diseased plant; burning of any articles as part of religious rites; cremation, outdoor grill or barbecue activities and the burning of flammable gases for flaring purposes (Figure 5.26).

Contravention Licenses

Under the Environmental Quality Act, 1974 contravention licenses may be granted for a specific time frame to allow industries with genuine difficulties complying with discharge or emission standards to contravene the acceptable conditions of effluent discharges into watercourses or air emissions into atmosphere as provided for under Section 25(1) and Section 22(1) of the Act. These contravention licenses are meant to assist, facilitate and allow problematic industries adequate time to install or upgrade their pollution control equipment.

In 2003, the total number of applications for Contravention Licenses under Section 25 of the Act decreased to 66 as compared to 87 applications in 2002 (Figure 5.9). Out of the 66 applications, 51 were approved and 15 rejected (Figure 5.10). Of the 51 approved contravention licenses, 20 (39%) licenses were for food and beverages industries; eight (8)

lapangan (8) (16%) untuk industri berasaskan kertas dan enam (6) (12%) untuk industri penyudahan logam dan sadur elektrik. Antara parameter yang sukar dipatuhi oleh industri dan diluluskan dalam Lesen Pelanggaran adalah keperluan oksigen biokimia, keperluan oksigen kimia, pepejal terampai, kadmium, kromium, sianid, plumbum, nikel, zink, boron, besi, fenol, sulfid, minyak dan gris. Penguatkuasaan telah dijalankan terhadap premis-premis yang dilesenkan bagi menentukan paras pematuhan. Pematuhan keseluruhan terhadap syarat-syarat Lesen Pelanggaran yang dikenakan pada tahun 2003 adalah 88%.

PENGAWASAN MELALUI UDARA

Program Pengawasan Melalui Udara diteruskan pelaksanaannya pada tahun 2003 untuk mengawasi dan mengesan dari udara kejadian pencemaran alam sekitar seperti aktiviti pembakaran terbuka, pelepasan dari industri, pencemaran pantai dan laut dan aktiviti pembukaan tanah dan pembangunan di kawasan tanah tinggi dan pulau-pulau. Maklumat mengenai kejadian pencemaran alam sekitar yang dikesan melalui pengawasan dari udara ini akan disalurkan ke Bilik Operasi JAS untuk diambil tindakan penguatkuasaan susulan oleh pegawai penguatkuasa di lapangan.

Pada tahun 2003, sebanyak RM3 juta telah diperuntukkan bagi pelaksanaan program tersebut di mana JAS telah memperolehi perkhidmatan pesawat udara dari Unit Udara Polis Diraja Malaysia, dan dua (2) syarikat swasta di Sabah dan Sarawak.

Sebanyak 464 bilangan penerbangan yang melibatkan 1,392 jumlah jam penerbangan telah dibuat sepanjang tahun 2003. Sebanyak 280 kes pembakaran terbuka telah dikesan melalui program ini di mana 35 kes telah dikenakan kompaun dan dua (2) kes dikenakan tindakan mahkamah.

(16%) for paper-based industries; and six (6) (12%) for metal finishing and electroplating industries. Among the parameters applied for contravention were biochemical oxygen demand, chemical oxygen demand, suspended solids, cadmium, chromium, cyanide, lead, nickel, zinc, boron, iron, phenol, sulphide, oil and grease. Regular enforcement visits were conducted on these contravention cases to monitor the progress of compliance. The overall compliance with the conditions of contravention licenses in 2003 was 88%.

AIRBORNE SURVEILLANCE

The National Airborne Surveillance Programme continued to be implemented in 2003 to monitor and detect environmental pollution such as open burning activities, emission from industries, coastal and marine pollution and land clearing activities for development on highlands and islands. Information obtained would be transmitted to the Department of Environment Operation Room for follow up enforcement action by ground surveillance teams.

For 2003, an allocation of RM3 million was allocated for aircraft services from the Royal Malaysian Police Air Wing and two other private aviation companies in Sabah and Sarawak.

In 2003, 464 flights were carried out with a total of 1,392 flight hours. 280 cases of open burning activities were detected during the surveillance. Out of the 280 cases detected, 35 cases were compounded and two (2) cases were prosecuted in court.

Pematuhan Peraturan-Peraturan Kualiti Alam Sekeliling (Udara Bersih), 1978

Sepanjang tahun 2003, sebanyak 2,768 lawatan penguatkuasaan telah dijalankan ke atas 1,925 premis-premis perindustrian (industri pembuatan dan premis yang ditetapkan) yang tertakluk di bawah Peraturan-peraturan Kualiti Alam Sekeliling (Udara Bersih) 1978 dan didapati jumlah keseluruhan tahap pematuhan adalah sebanyak 85%. Daripada jumlah ini, didapati industri penyudahan logam/sadur elektrik dan penapisan minyak masak mencapai pematuhan sebanyak 100%, diikuti dengan industri berasaskan kimia dan industri elektronik (99%). Kilang minyak kelapa sawit mentah, kilang padi dan kilang simen merekodkan tahap pematuhan yang rendah (73%; 72%; 64%) (Rajah 5.11). Antara sebab utama yang menyumbang kepada tahap pematuhan yang rendah bagi ketiga-tiga sektor tersebut adalah akibat penggunaan alat kawalan pencemaran yang kurang efisien.

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

Throughout 2003, 2,768 enforcement visits to 1,925 premises (both manufacturing industries and prescribed premises) were conducted. Overall compliance to the Environmental Quality (Clean Air) Regulations 1978 was 85%. Metal finishing/electroplating and edible oil refinery sectors achieved 100% compliance, followed by chemical based and electronics industry (99%). Palm oil mill, rice mill and cement industries recorded a low compliance of 73%, 72% and 64% respectively (Figure 5.11). The main reason for the low compliance level of these three sectors was inefficient pollution control equipment.

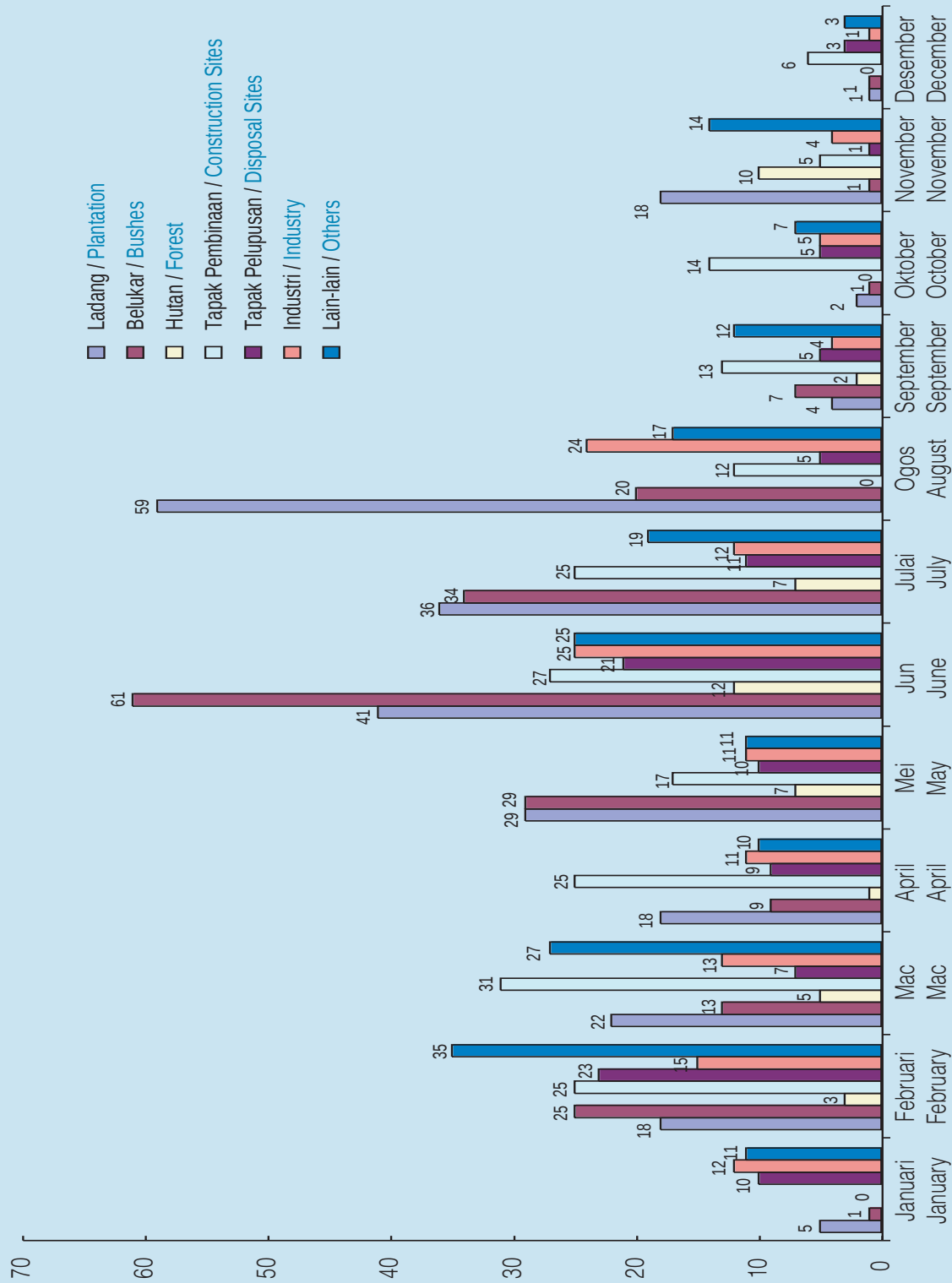


Gambarfoto 5.11 : Pengukuran Pencemaran Asap Hitam dari Cerombong Industri

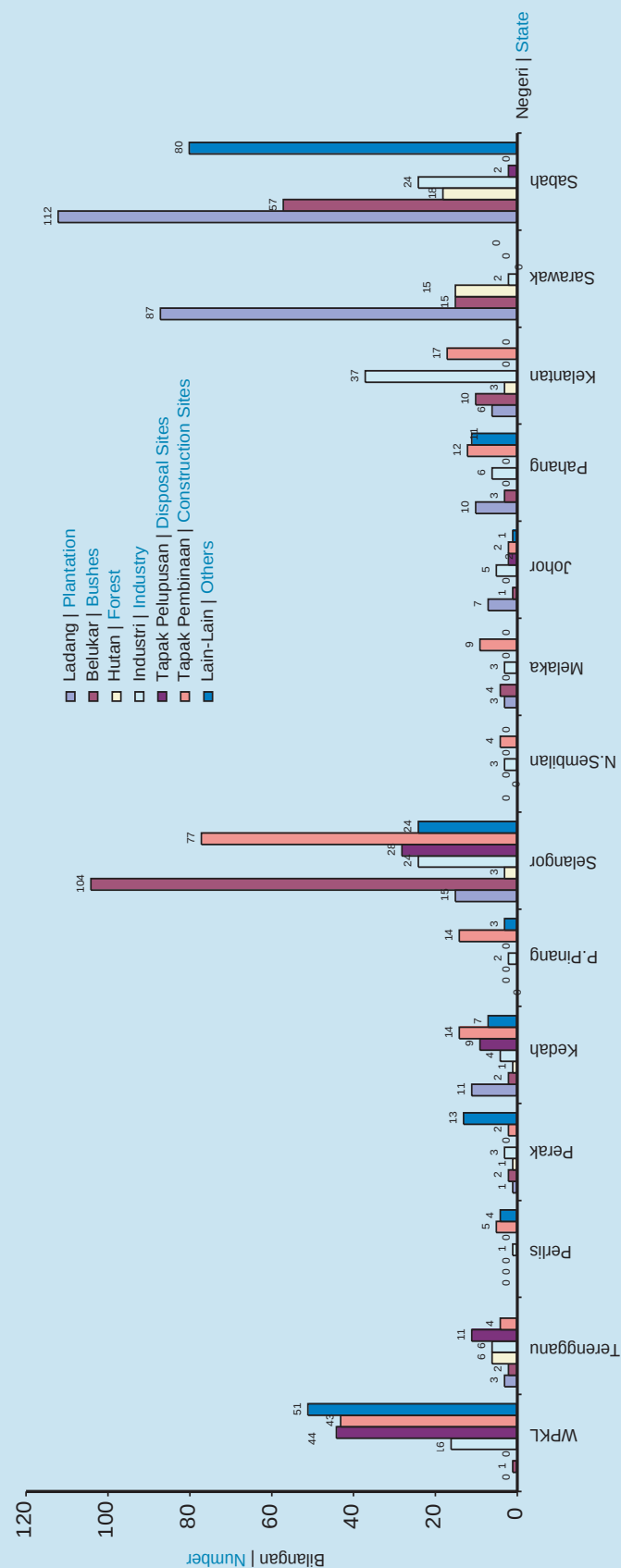
Photo 5.11 : Measurement of Dark Smoke Emission from Industrial Stack



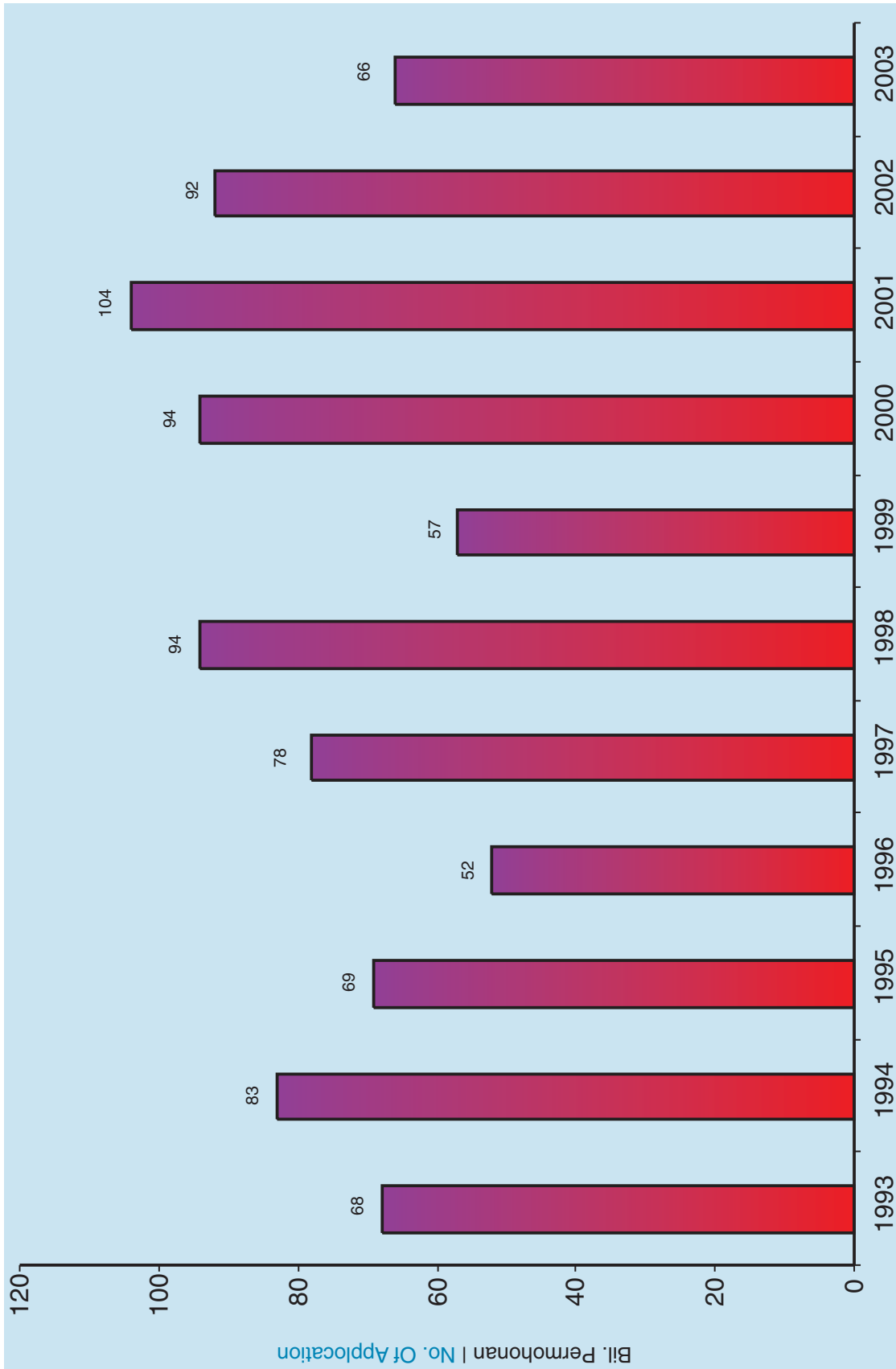
Gambarfoto 5.12 : Ops Asap Bersama Polis Diraja Malaysia
Photo 5.12 : 'Ops Asap' with the co-operation of Royal Malaysian Police



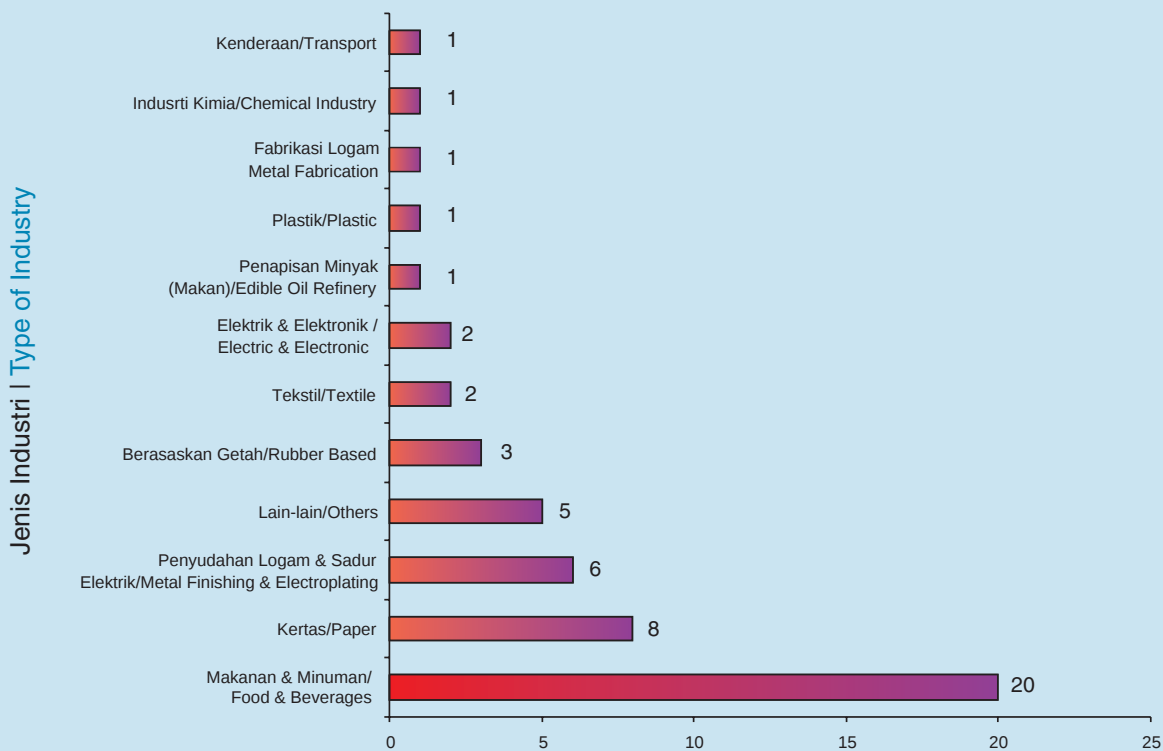
Rajah 5.7 Jabatan Alam Sekitar: Bilangan Kes Pembakaran Terbuka Bulanan, 2003
Figure 5.7 Department of Environment: Number of Open Burning Cases By Month, 2003



Rajah 5.8 Jabatan Alam Sekitar: Bilangan Kes Pembakaran Terbuka Mengikut Negeri, 2003
Map 5.8 Department of Environment: Number of Open Burning Cases By State, 2003

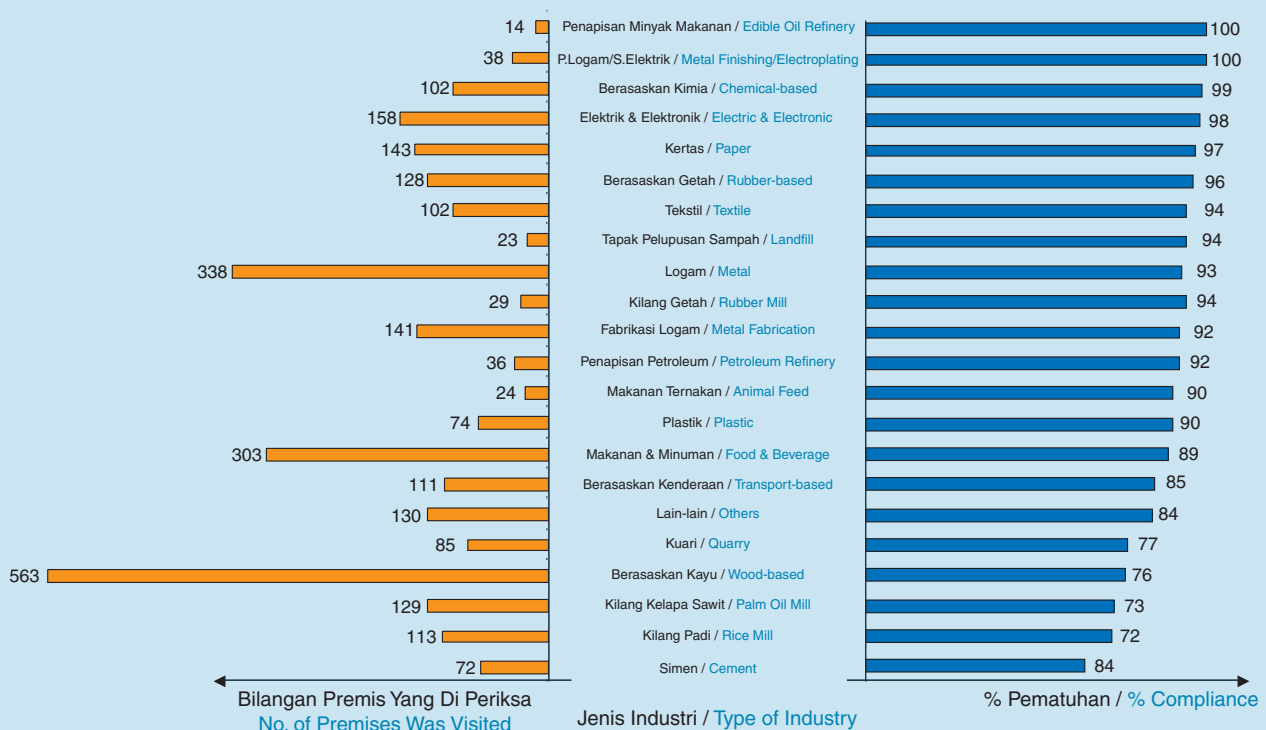


Rajah 5.9 Jabatan Alam Sekitar: Bilangan Permohonan Lesen Pelanggaran Di Bawah Seksyen 25(1) AKAS 1974, (1993 - 2003)
Figure 5.9 Department of Environment: Number of Contravention Licenses Under Section 25(1) EQA1974, (1993 - 2003)



Rajah 5.10 Jabatan Alam Sekitar: Lesen Pelanggaran Di Bawah Seksyen 25(1) AKAS 1974 Mengikut Jenis Industri, 2003

Figure 5.10 Department of Environment : Contravention Licenses Under Section 25(1) By Industry Type, 2003



Rajah 5.11 Jabatan Alam Sekitar: Status Pematuhan Industri-Industri Pembuatan Terhadap Peraturan-Peraturan Kualiti Alam Sekeliling (Udara Bersih) 1978, 2003

Figure 5.11 Department of Environment : Environmental Quality (Clean Air) Regulations, 1978; Compliance Status, 2003

PUNCA-PUNCA BERGERAK (KENDERAAN BERMOTOR)

Bilangan kenderaan bermotor yang berdaftar di Malaysia sehingga akhir tahun 2003 adalah sebanyak 12,819,248 buah, penambahan sebanyak 797,309 buah kenderaan iaitu (atau 6.22 %) berbanding tahun 2002 (Rajah 5.12).

Dari sejumlah 797,309 buah kenderaan baru yang didaftarkan dalam tahun 2003, kategori motorsikal dan motokar membentuk bilangan yang paling tinggi iaitu masing-masing sebanyak 322,341 unit (atau 40.43%) dan 427,501 unit (atau 53.62%), manakala baki selebihnya sebanyak 47,467 buah (atau 5.95%) adalah dari jenis kenderaan lain termasuk lori, bas, van dan sebagainya.

Taburan bilangan kenderaan bermotor di Malaysia mengikut negeri adalah seperti dalam Rajah 5.13. Wilayah Persekutuan Kuala Lumpur masih mendahului negeri-negeri lain dengan bilangan kenderaan sebanyak 2.7 juta (atau 21.28%) daripada keseluruhan bilangan kenderaan yang berdaftar di negara ini, diikuti oleh Johor, Selangor, Pulau Pinang dan Perak.

Kawalan Pelepasan Asap dan Gas dari Kenderaan Bermotor

Pelepasan asap serta gas-gas pencemar seperti karbon monoksida (CO), hidrokarbon (HC), oksida-oksida nitrogen (NOx) serta partikulat (PM) yang dilepaskan melalui ekzos kenderaan bermotor adalah dikawal di bawah Peraturan-Peraturan Kualiti Alam Sekeliling (Kawalan Pelepasan Daripada Enjin Diesel) 1996 dan Peraturan-Peraturan Kualiti Alam Sekeliling (Kawalan Pelepasan Daripada Enjin Petrol) 1996.

MOBILE SOURCES (MOTOR VEHICLES)

By the end of 2003, there were about 12,819,248 registered motor vehicles in Malaysia, an increase of 797,309 (6.22%) compared to 2002 (Figure 5.12).

Out of these 797,309 new vehicles registered, motorcycles and motorcars made up the highest number 322,341 (40.43%) and 427,501 (53.62%) respectively, while the remaining 47,467 (5.95%) were other vehicle types such as lorries, buses and vans.

The distribution of registered vehicles throughout the States is given in Figure 5.13. The Federal Territory of Kuala Lumpur topped the other States with a vehicle population of 2.7 million (21.28 %), followed by Johor, Selangor, Pulau Pinang and Perak.

Control of Smoke and Gaseous Emissions from Motor Vehicles

Emission of smoke and gaseous pollutants such as carbon monoxide, hydrocarbons, oxides of nitrogen and particulate matters emitted from motor vehicle exhausts are controlled under the Environmental Quality (Control of Emission from Diesel Engines) Regulations 1996 and the Environmental Quality (Control of Emission from Petrol Engines) Regulations 1996.

Kawalan Pelepasan Asap Hitam Dari Kenderaan Diesel

Kawalan pelepasan asap hitam berlebihan dari ekzos kenderaan diesel dilaksanakan melalui Program AWASI (*Area Watch And Sanction Inspection*). Melalui Program AWASI ini, skuad peronda JAS akan menjalankan rondaan dan pemerhatian pelepasan asap hitam dari ekzos kenderaan. Tindakan kompaun akan diambil secara serta merta kepada pemandu dan tuan punya kenderaan yang didapati gagal mematuhi had pelepasan asap 50 Unit Asap Hartridge (HSU); kompaun serta perintah larangan menggunakan kenderaan di jalan raya akan dikeluarkan sekiranya kenderaan didapati melepaskan asap hitam melebihi 70 HSU.

Sepanjang tahun 2003, sebanyak 1,267 operasi penguatkuasaan AWASI telah dilaksanakan di bandar-bandar di seluruh negara. Dalam operasi tersebut, sebanyak 108,574 buah kenderaan diesel telah diperiksa. Dari jumlah tersebut, sebanyak 4,373 buah kenderaan telah disaman kerana gagal mematuhi had 50 HSU, manakala 1,554 daripadanya telah dikenakan perintah larangan. Pemuatan keseluruhan pelepasan asap hitam dari kenderaan diesel adalah sebanyak 96% (Rajah 5.14, Rajah 5.15). Tindakan mahkamah telah juga diambil ke atas 78 pemilik kenderaan kerana gagal menjelaskan kompaun yang telah dikenakan.

Sebagai tambahan pula, satu program penguatkuasaan baru, iaitu program penguatkuasaan keatas kenderaan diesel di sepanjang lebuh raya dan jalan utama di seluruh negara telah dilaksanakan oleh JAS. Di bawah program ini, pemeriksaan ke atas kenderaan telah dilaksanakan oleh penguatkuasa JAS selama tiga hari sepanjang lebuh raya. Upacara perasmian program Kempen Kawalan Pelepasan Asap Hitam Kenderaan Diesel Sepanjang Lebuh raya dan Jalan Utama Seluruh Negara peringkat Kebangsaan telah disempurnakan oleh Y.B. Timbalan Menteri Sains, Teknologi dan Alam Sekitar Malaysia pada 25 Ogos 2003 di Plaza Tol Sungai Besi, Kuala Lumpur.

Control of Black Smoke Emission from Diesel Vehicles

The control of excessive black smoke emission from diesel vehicle exhausts was implemented through the AWASI (*Area Watch And Sanction Inspection*) Programme. Through this programme, the Department of Environment mobile squads would be on patrol, observing and testing diesel vehicles belching excessive smoke. On-the-spot compounds were issued to drivers and owners of vehicles which failed the stipulated smoke limit of 50 HSU, and when the smoke limit exceeded 70 HSU, Prohibition Orders (prohibiting vehicle usage) were issued.

In 2003, a total of 1,267 AWASI enforcement programmes were conducted within cities throughout the country in 2003. Some 108,574 diesel vehicles were visually inspected, of which 4,373 vehicles were summoned for failing to comply with the 50 HSU smoke limits. Out of this, 1,554 vehicles were issued with Prohibition Orders and were only allowed back on the road after rectification and retesting by the Department of Environment. The overall percentage of compliance for diesel vehicles was 96% (Figure 5.14 , 5.15). Court action was also taken against 78 vehicle owners for failing to settle the compounds issued.

In addition, a new enforcement programme conducted along highways and main roads was also introduced by the Department of Environment. Under this programme road side vehicle inspections were carried out simultaneously by all Department of Environment State Offices for three consecutive days. The National Campaign on Control of Black Smoke Emission from Diesel Vehicles along Highways and Main Roads was launched by the Honourable Deputy Minister of Science, Technology and the Environment at the Sungai Besi Toll Plaza, Kuala Lumpur on 25 August 2003.

Dua kempen telah dilaksanakan secara serentak oleh semua pejabat-pejabat JAS negeri pada tahun 2003. Melalui kempen tersebut sebanyak 20,274 kenderaan diesel telah diperiksa, di mana 1,317 telah disaman dan 289 telah dikenakan perintah larangan menggunakan kenderaan (Rajah 5.16).

Kawalan Pelepasan Gas CO dan HC Dari Kenderaan Petrol

Pada tahun 2003, JAS meneruskan kempen kawalan pelepasan gas dari kenderaan petrol. Sejumlah 5,401 buah kenderaan petrol telah diuji pelepasan CO dan HC dengan menggunakan metergas *CO-HC Analyzer* (kaedah 'ujian idling') di jalan raya. Daripada jumlah ini, 4,035 kenderaan telah mematuhi had CO dan HC; sementara 1,366 kenderaan pula gagal untuk mematuhi had tersebut. Peratus pematuhan secara keseluruhannya adalah 74.71%. Notis amaran telah dikeluarkan kepada pemandu-pemandu kenderaan supaya segera memperbaiki kenderaan mereka untuk memastikan had pelepasan yang ditetapkan oleh undang-undang dipatuhi.

Ujian Kelulusan Jenis (Kenderaan Petrol)

Pada tahun 2003, Jabatan Alam Sekitar telah mengeluarkan sebanyak 36 Sijil Ujian Kelulusan Jenis bagi model-model baru kenderaan yang akan dipasarkan di pasaran Malaysia seperti dikehendaki dibawah Peraturan-peraturan Kualiti Alam Sekililing (Kawalan Pelepasa Daripada Enjin Pertol) 1996. Peraturan-peraturan ini menetapkan jisim Karbon Monoksida yang dibenarkan hendaklah tidak melebihi 2.2 g/km, manakala kombinasi Hidrokarbon dan Nitrogen Oksida pula hendaklah tidak melebihi 0.5g/km.

Two such simultaneous campaigns were carried out in 2003. From the above campaigns, a total of 20,274 diesel vehicles were inspected, 1,317 vehicles were summoned and 289 were issued with Prohibition Orders (Figure 5.16).

Control of CO and HC Gas Emissions from Petrol Vehicles

Throughout 2003, the campaign on control of gas emissions from petrol vehicles was continued. A total of 5,401 petrol-powered vehicles were tested for CO and HC gas emissions using the CO-HC gas analyzer (idling test method) at the roadside. From the above total, 4,035 vehicles were able to comply to the stipulated CO and HC limits, while the remaining 1,366 vehicles failed the test. The overall percentage of compliance was 74.71%. Written notices were issued to drivers to take immediate action to ensure compliance.

Type Approval Testing for New Petrol Vehicles

In 2003, the Department Of Environment issued 36 Type Approval Test Certificates for new models to be marketed in Malaysia as required under the Environmental Quality (Control of Emmision From Petrol Engine) Regulations 1996. The Regulations required that Carbon Monoxide shall not exceed 2.2 g/km, while the combination of Hydrocarbon and Nitrogen Oxides shall not exceed 0.5 g/km.

Kemudahan Yang DiLuluskan

Bagi membolehkan orang ramai menghantar kenderaan mereka untuk menjalani ujian pelepasan asap dan gas, Jabatan Alam Sekitar meneruskan program pengiktirafan “Kemudahan Yang Di Luluskan (KYDL)” kepada bengkel-bengkel yang memenuhi kriteria-kriteria yang ditetapkan sebagai pusat untuk membaiki kenderaan yang gagal mematuhi undang-undang pelepasan asap.

Sehingga akhir 2003, sebanyak 63 bengkel dan pusat pemeriksaan kenderaan di seluruh negara telah diiktiraf sebagai “Kemudahan Yang Diluluskan” oleh JAS, 33 pusat atau bengkel untuk menguji pelepasan CO dan HC, 15 untuk ujian pelepasan asap hitam kenderaan diesel manakala 15 pula untuk menguji pelepasan asap dan gas dari kenderaan diesel dan petrol.

Kawalan Pelepasan Asap Daripada Motosikal

Pada tahun 2003, Peraturan-Peraturan Kualiti Alam Sekeliling (Kawalan Pelepasan Daripada Motosikal), 2003 telah diwartakan dan mula dikuatkuasa pada 1 Januari 2004. Peraturan ini telah menggariskan piawai pelepasan seperti berikut :

- Standard Kelulusan Jenis bagi motosikal baru : 97/24/EC
- Standard pelepasan(idling) bagi motosikal terpakai: 4.5 % CO (Karbon Monoksida)

Di bawah peraturan ini, pengimport motosikal adalah dikehendaki mematuhi standard pelepasan berkuatkuasa 1 Januari 2005 bagi model baru dan 1 Julai 2005 bagi model sedia ada, manakala pembuat tempatan dikehendaki mematuhi standard pelepasan berkuatkuasa 1 Julai 2005 bagi model baru dan 1 Julai 2006 bagi model sedia ada.

Establishment of Approved Testing Facilities

To facilitate convenient public access to workshops for smoke and gaseous emission testing, the Department of Environment gave accreditation to a number of workshops that had fulfilled the prescribed criteria as “Approved Testing Facilities” and as repair centres for non-complying vehicles.

By end of 2003, a total of 63 workshops and vehicle testing centers throughout the country were registered as “Approved Testing Facilities” by the Department of Environment; 33 for testing CO and HC emissions from petrol vehicles, 15 for testing of black smoke emissions from diesel vehicles and 15 for testing of smoke and gaseous emission from both petrol and diesel vehicles.

Control of Emission from Motorcycles

In 2003, the Environmental Quality (Control of Emission from Motorcycles) Regulations 2003 were gazetted and came into force on 1 January 2004. The emissions standards adopted are as follows:

- Type Approval Emission Standard for new motorcycles: 97/24/EC
- Idling Emission Standard for in-use motorcycles: 4.5% CO(Carbon Monoxide)

Motorcycle importers would be required to comply with the new emission standards effective from 1 January 2005 for new models and 1 July 2005 for current models, while local manufacturers would have to comply with the new emission standards effective from 1 July 2005 for new models and 1 July 2006 for current models.

Bunyi Bising Kenderaan Bermotor

Pelepasan bunyi bising daripada kenderaan bermotor dikawal di bawah Peraturan-peraturan Kualiti Alam Sekeliling (Bunyi Bising Kenderaan Bermotor) 1987.

Operasi penguatkuasaan bagi mengawal pelepasan bunyi bising dari kenderaan bermotor telah dilaksanakan secara bersama oleh pejabat-pejabat JAS Negeri dengan kerjasama Polis DiRaja Malaysia (Cawangan Trafik). Sepanjang tahun 2003, sejumlah 1,869 kenderaan motosikal telah ditahan untuk menjalani ujian pelepasan bunyi bising. Dari jumlah ini, 227 telah disaman kerana melanggar had bunyi bising yang dibenarkan. Peratus pematuan secara keseluruhannya ialah 87.85% (Rajah 5.17).

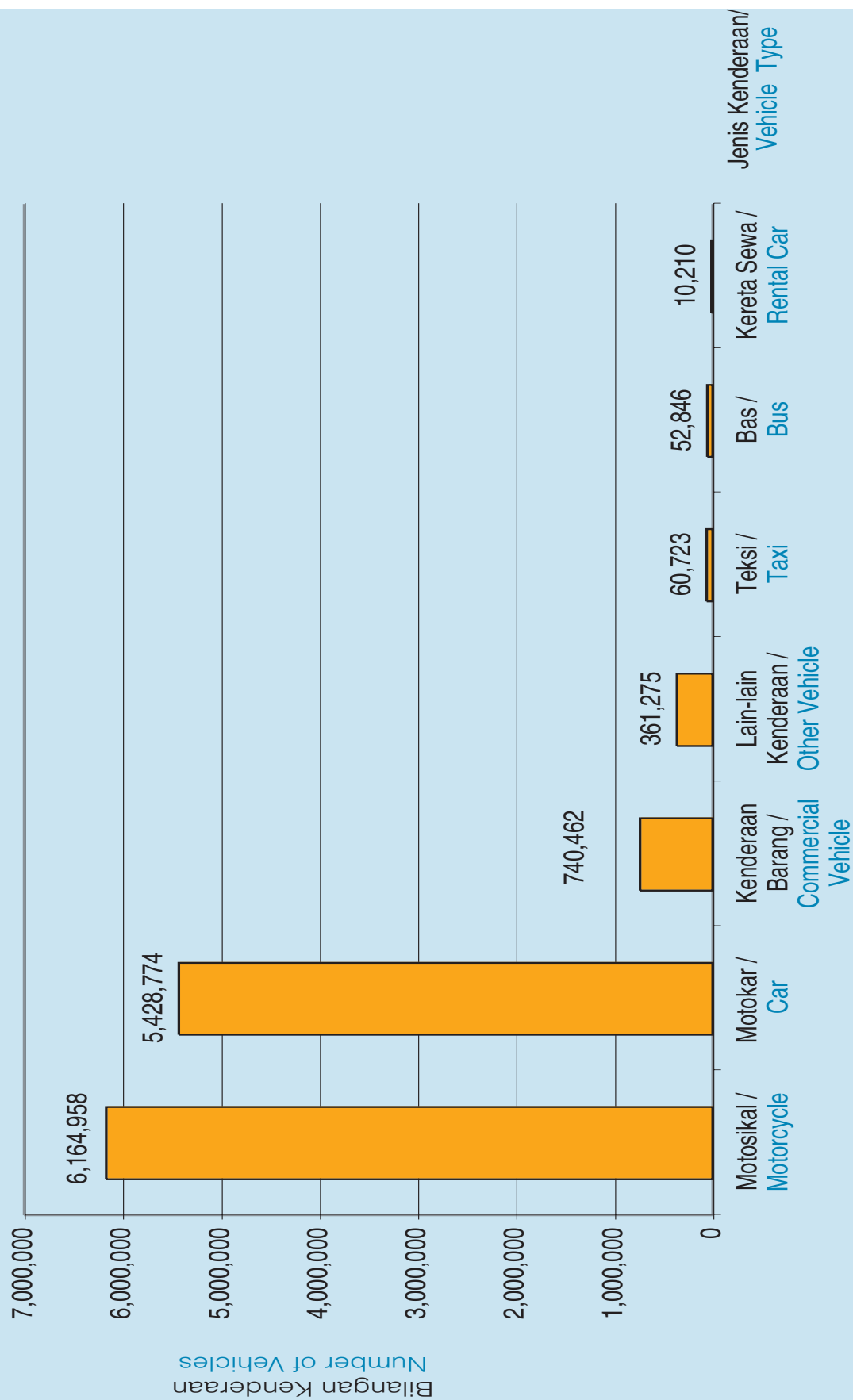
Ujian paras bunyi ke atas motosikal baru yang dipasang telah juga dilaksanakan oleh kesemua lima syarikat pemasang motosikal di negara ini (Rajah 5.18). Pada tahun 2003, sejumlah 2,409 buah motosikal baru yang meliputi 30 model yang berlainan telah diuji di kilang pemasang. Semua motosikal berkenaan didapati mematuhi had pelepasan bunyi bising yang telah ditetapkan.

Noise from Motor Vehicles

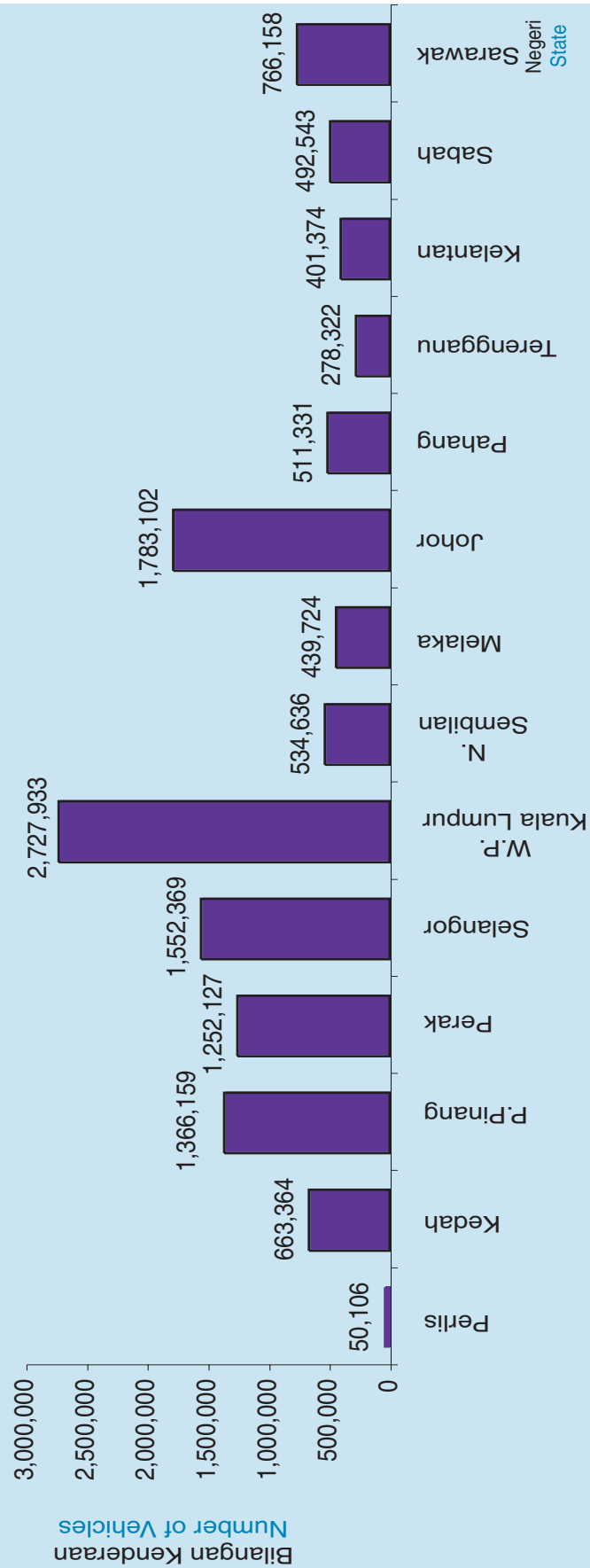
The control of noise from motor vehicles is enforced under the Environmental Quality (Motor Vehicle Noise) Regulations 1987.

Enforcements campaigns to control excessive noise from motor vehicles were jointly conducted by the DOE and the Traffic Police. In 2003, a total of 1,869 motorcycles were checked for noise pollution. From the above total, 227 motorcyclists were summoned for violating the stipulated noise limits. The overall percentage of compliance was 87.85% (Figure 5.17).

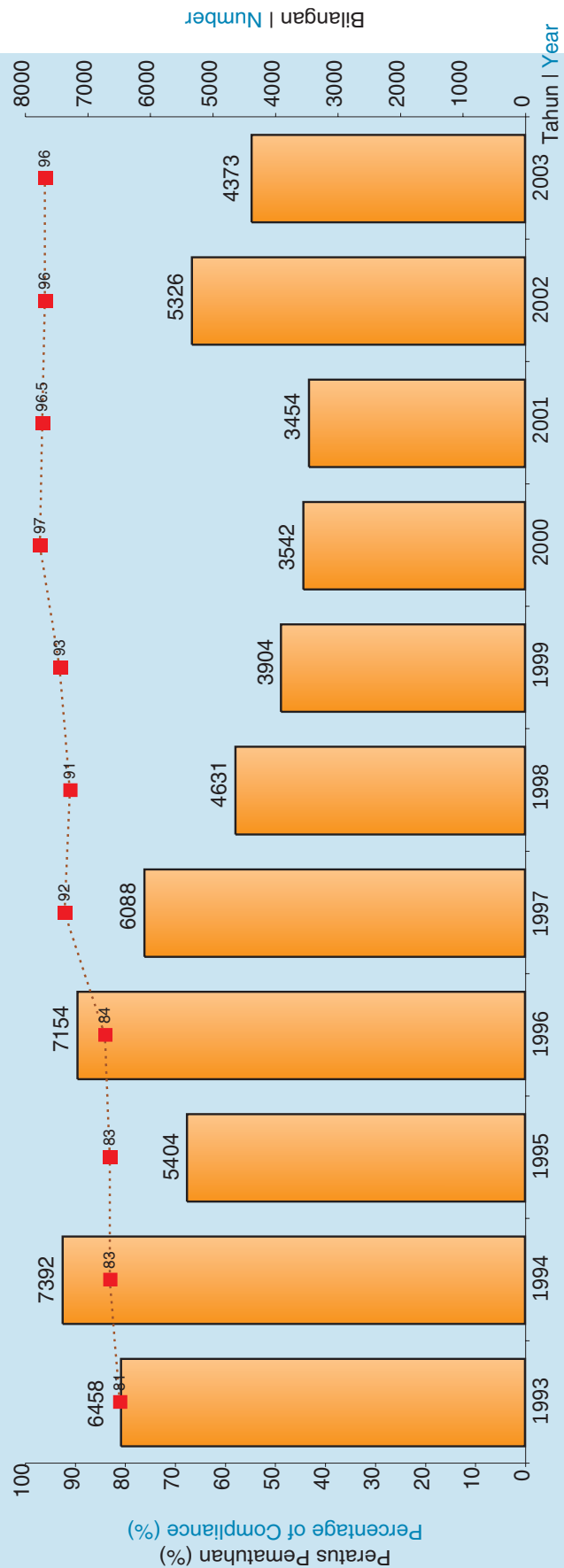
Noise level testing on new motorcycles was also conducted by all the five motorcycle assembly plants in the country (Figure 5.18). In 2003, a total of 2,409 newly assembled motorcycles from 30 different models were tested in their respective assembly plants. All the new motorcycles tested were found to be in compliance with the stipulated noise limit.



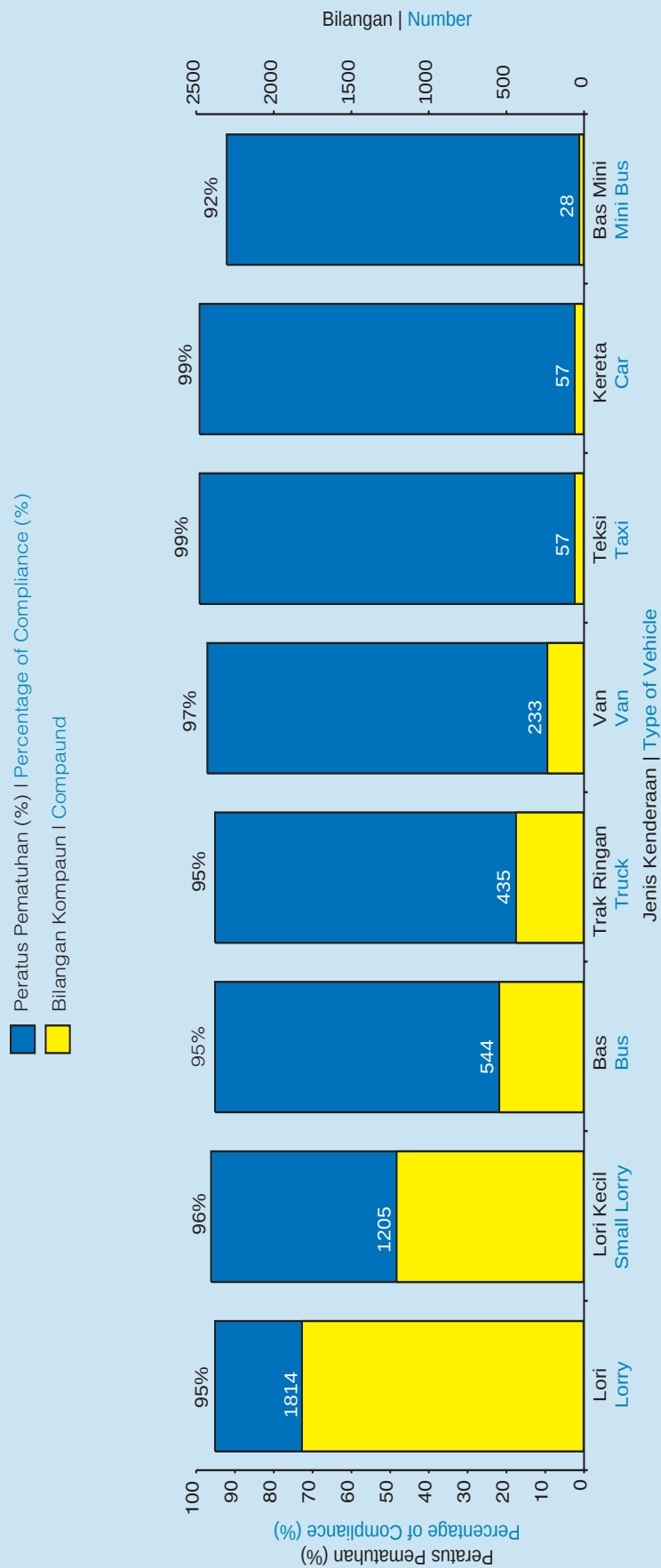
Rajah 5.12 Malaysia: Bilangan Kenderaan Bermotor Mengikut Jenis, 2003
Figure 5.12 Malaysia: Number of Motor Vehicles According to Type, 2003



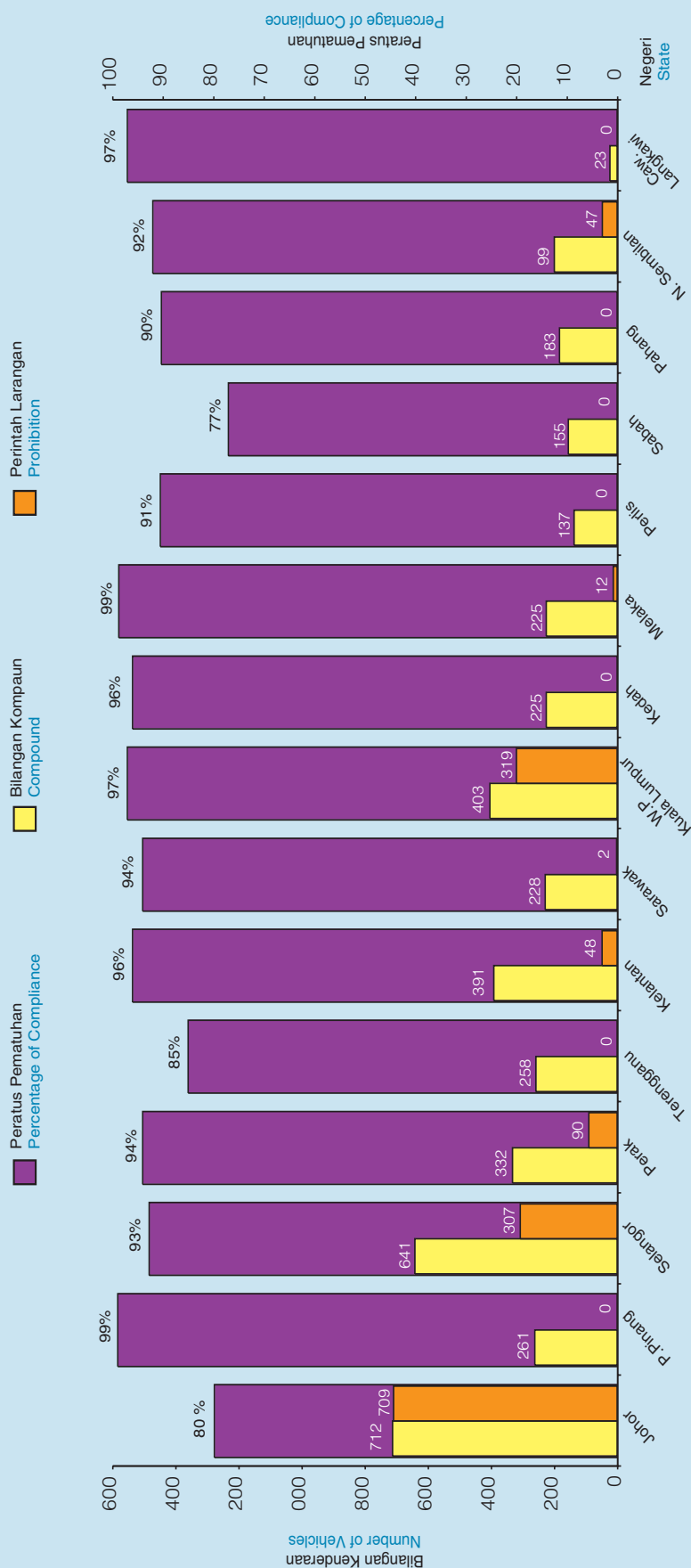
Rajah 5.13 Malaysia: Bilangan Kenderaan Bermotor Mengikut Negeri, 2003
Figure 5.13 Malaysia: Number of Motor Vehicles According to State, 2003



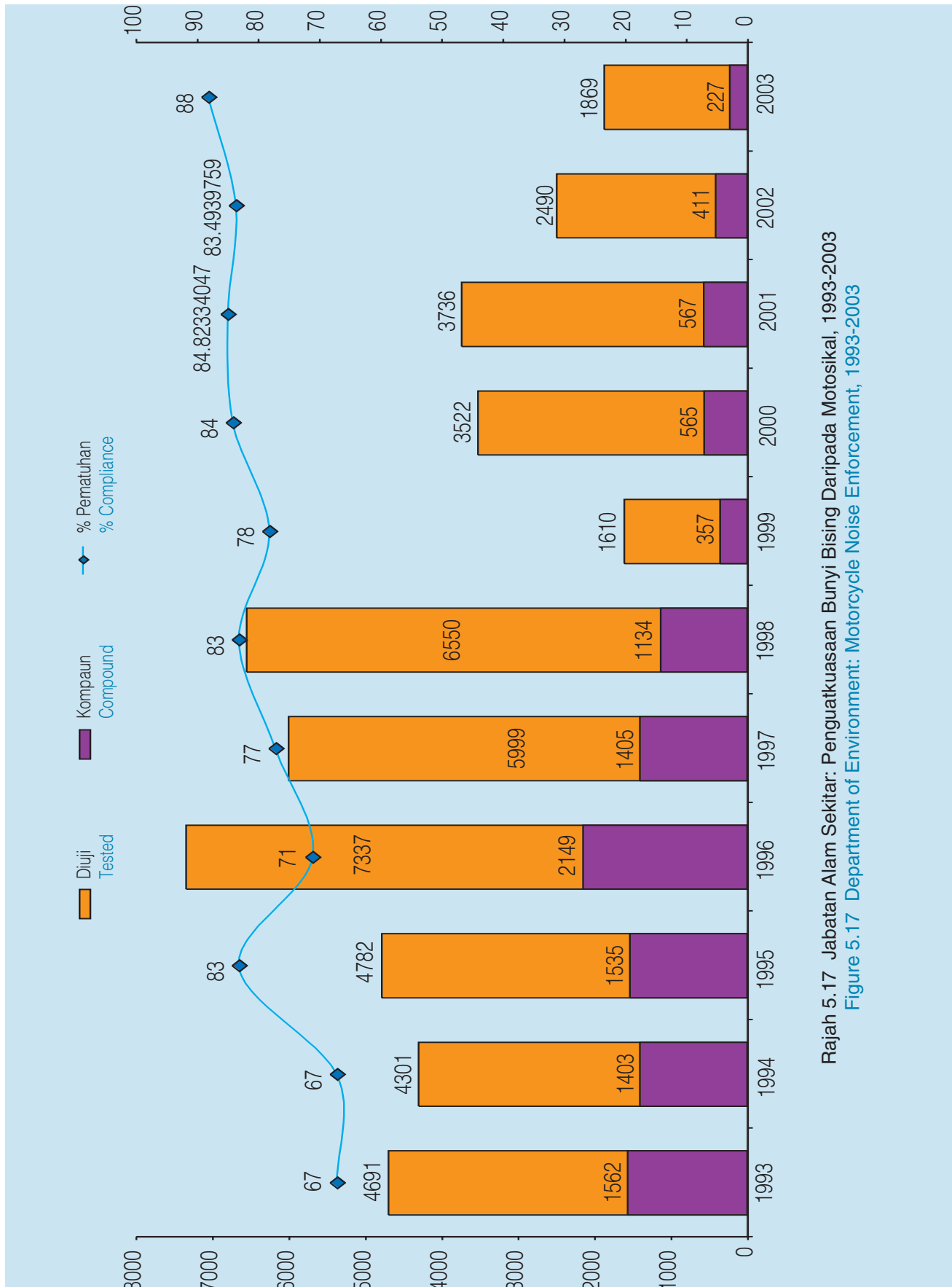
Rajah 5.14 Jabatan Alam Sekitar: Penguatkuasaan Pelepasan Asap Hitam Kenderaan, Diesel (Kompaun dan Peratus Pematuhan), 1993-2003
Figure 5.14 Department of Environment: Diesel Vehicle Black Smoke Enforcement, (Compound and Percentage of Compliance), 1993-2003



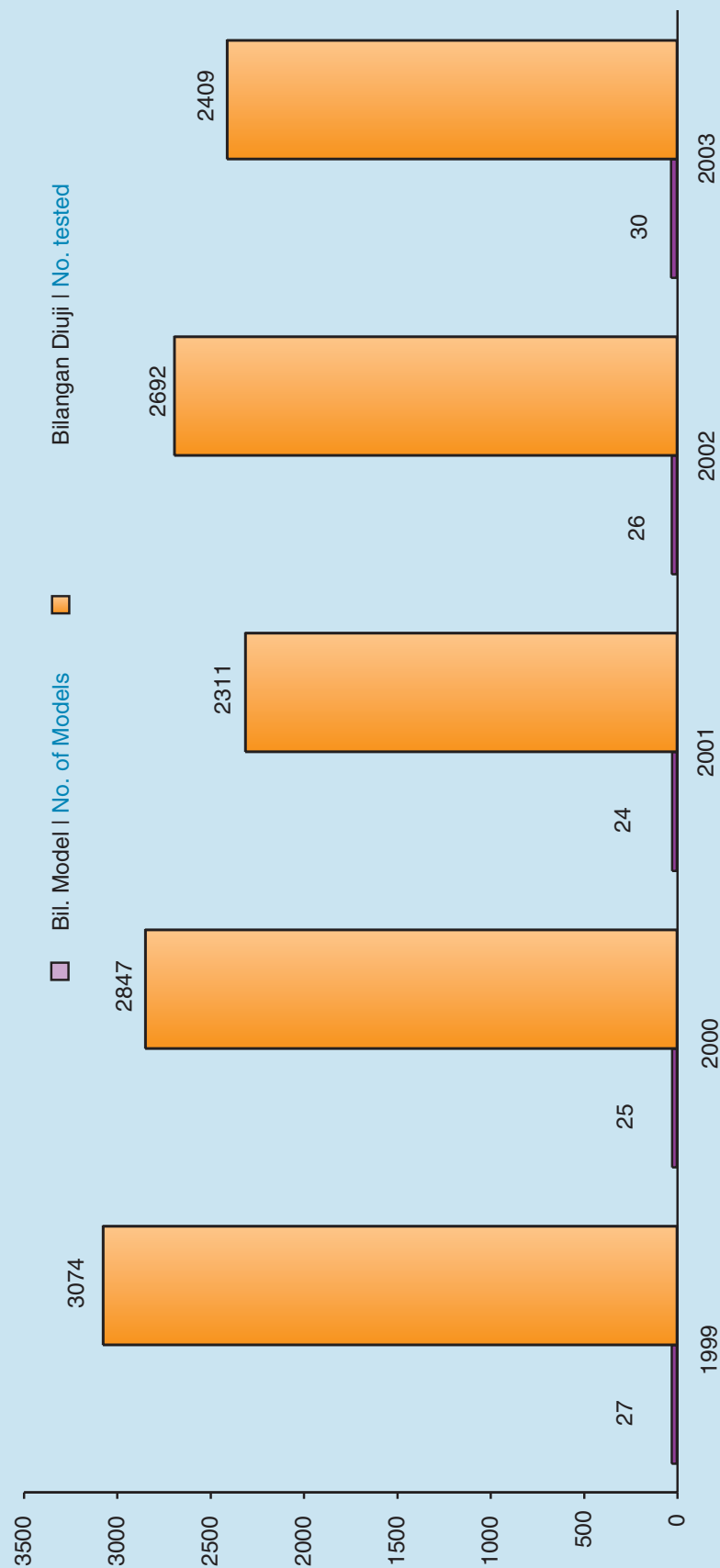
Rajah 5.15 Jabatan Alam Sekitar: Penguatkuasaan Pelepasan Asap Hitam Kenderaan Diesel Mengikut Jenis Kenderaan, 2003
 Figure 5.15 Department of Environment: Diesel Vehicle Black Smoke Enforcement According To Vehicle Type, 2003



Rajah 5.16 Jabatan Alam Sekitar: Penguatkuasaan Pelepasan Asap Hitam Kenderaan Diesel Mengikut Negeri, 2003
Figure 5.16 Department of Environment: Diesel Vehicle Black Smoke Enforcement, Summons According to State, 2003



Rajah 5.17 Jabatan Alam Sekitar: Penguatkuasaan Bunyi Bising Daripada Motosikal, 1993-2003
Figure 5.17 Department of Environment: Motorcycle Noise Enforcement, 1993-2003



Rajah 5.18 Jabatan Alam Sekitar: Ujian Pelepasan Bunyi Bising Motosikal Daripada Syarikat Pemasang Motosikal, 1999-2003
Figure 5.18 Department of Environment: Noise Testing by Motorcycle Assemblers, 1999-2003

TINDAKAN UNDANG-UNDANG

Pendakwaan

Pada tahun 2003, sejumlah 129 premis/syarikat telah didakwa dan disabitkan kesalahan oleh mahkamah dengan melibatkan denda berjumlah RM1,901,300.00 untuk kesalahan-kesalahan di bawah Akta Kualiti Alam Sekeliling 1974 (Rajah 5.19 dan Rajah 5.20). Daripada jumlah tersebut, sebanyak 55 (43%) kes mahkamah merupakan kesalahan mencemar perairan daratan melalui pengeluaran effluen melebihi had yang ditetapkan dibawah Seksyen 25(1) Akta Kualiti Alam Sekitar (AKAS) 1974. Terdapat 5 (29%) kes mahkamah yang melibatkan kesalahan pembakaran terbuka dengan jumlah denda sebanyak RM100,000.00.

Kompaun

Sejumlah 3502 kompaun telah dikeluarkan pada tahun 2003 kepada premis dan syarikat untuk pelbagai kesalahan di bawah Akta Kualiti Alam Sekeliling 1974. Daripada jumlah keseluruhan tersebut, sebanyak 2,320 (66%) kompaun adalah kesalahan di bawah Peraturan Kualiti Alam Sekeliling (Kawalan Pelepasan dari Enjin Diesel) 1996; 450 (13%) kompaun adalah kesalahan di bawah Peraturan Kualiti Alam Sekeliling (Buangan Terjadual) 1989; 384 (11%) kompaun adalah kesalahan di bawah Seksyen 29A, Akta Kualiti Alam Sekeliling 1974 dan sebanyak 348 (10%) kompaun adalah kesalahan di bawah Peraturan Kualiti Alam Sekeliling (Udara Bersih) 1978 (Rajah 5.21 dan Rajah 5.22).

Perintah Larangan

Perintah Larangan yang dikenakan ke atas sesuatu premis atau kilang merupakan langkah terakhir dalam tindakan penguatkuasaan setelah tindakan-tindakan lain seperti arahan, notis, kompaun dan tindakan mahkamah diambil kepada pihak premis atau pekilang. Bagi tahun 2003, tiada premis atau kilang yang dikenakan perintah larangan.

LEGAL ACTIONS

Prosecution

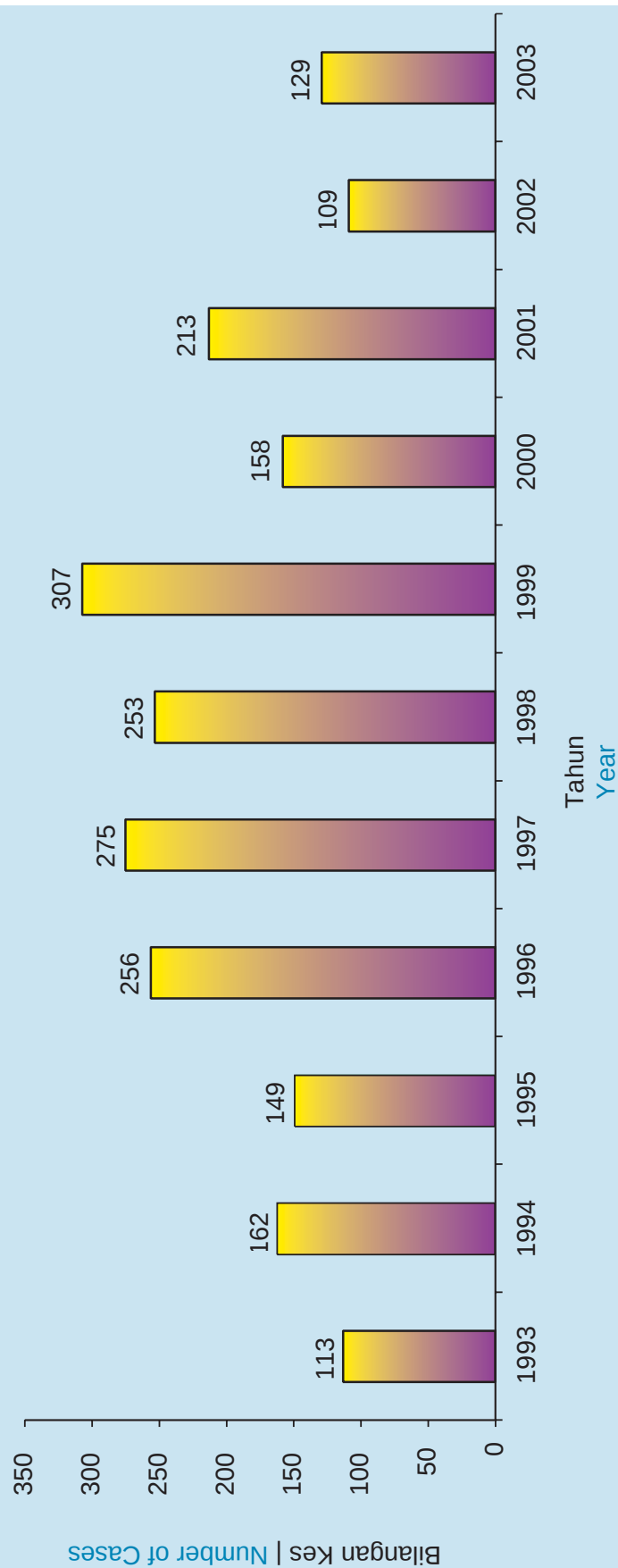
In 2003, a total of 129 premises or companies were taken to court and fined a total of RM1,901,300.00 for offences under the Environmental Quality Act, 1974 (Figure 5.19 and 5.20). Out of the total number of cases, 55 (43%) cases involved offences for polluting inland waters through discharges of effluent above the stipulated standard under Section 25(1) of the Environmental Quality Act (EQA) 1974. For open burning offences, 5 (29%) cases were prosecuted and fined a total of RM100,000.00.

Compounds

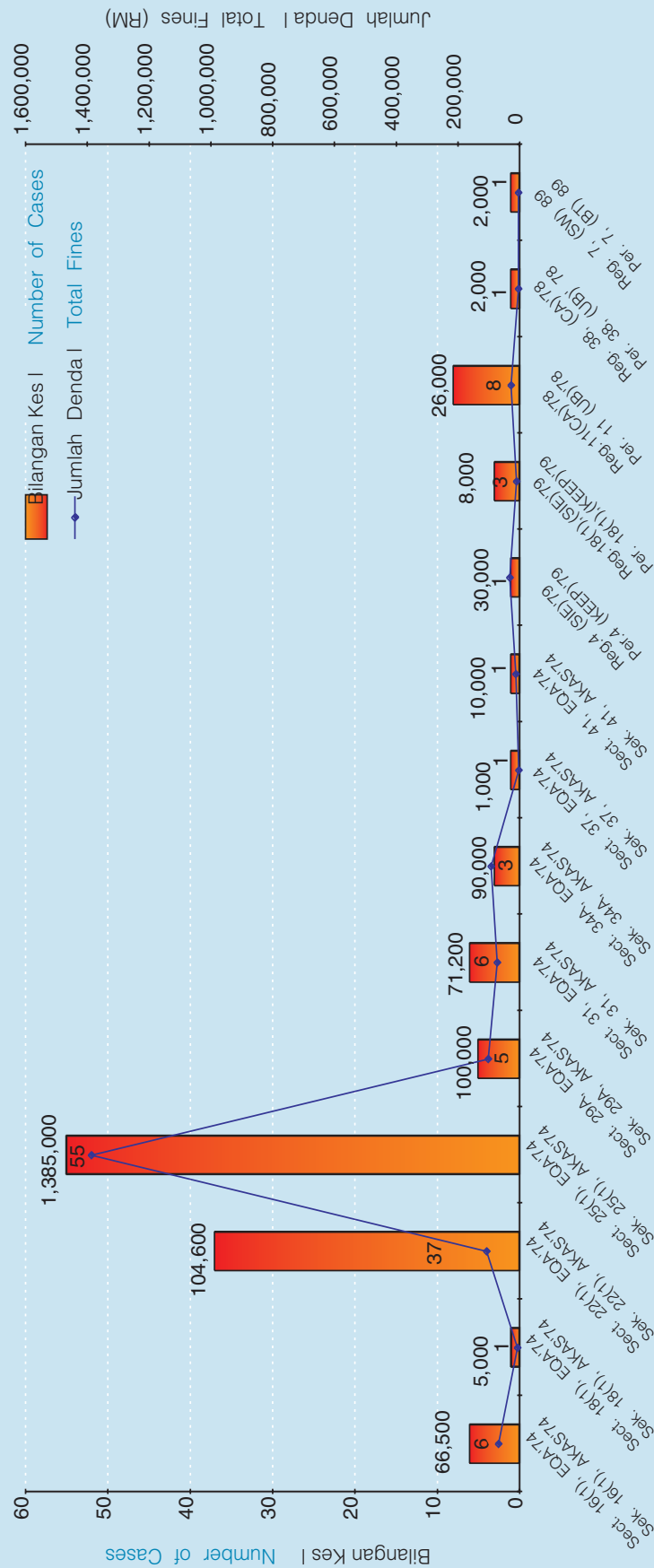
A total of 3,502 compounds were issued in 2003 to premises and companies for various offences under the Environmental Quality Act (EQA), 1974. Out of this total, 2,320 (66%) were offences under the Environmental Quality (Control of Emission from Diesel Engines) Regulations 1996; 450 (13%) were offences under Environmental Quality (Schedules Wastes) Regulations 1989; 384 (11%) for offences under Section 29A of the Environmental Quality Act (EQA) 1974; and the remaining 348 (10%) were offences under the Environmental Quality (Clean Air) Regulations 1978 (Figure 5.21 and 5.22).

Prohibition Order

A Prohibition Order would be issued only as a last resort after other means of enforcement action such as directives, notices, compounds and court prosecution had been taken on the premises or companies. In 2003, no prohibition order was issued against any premises.

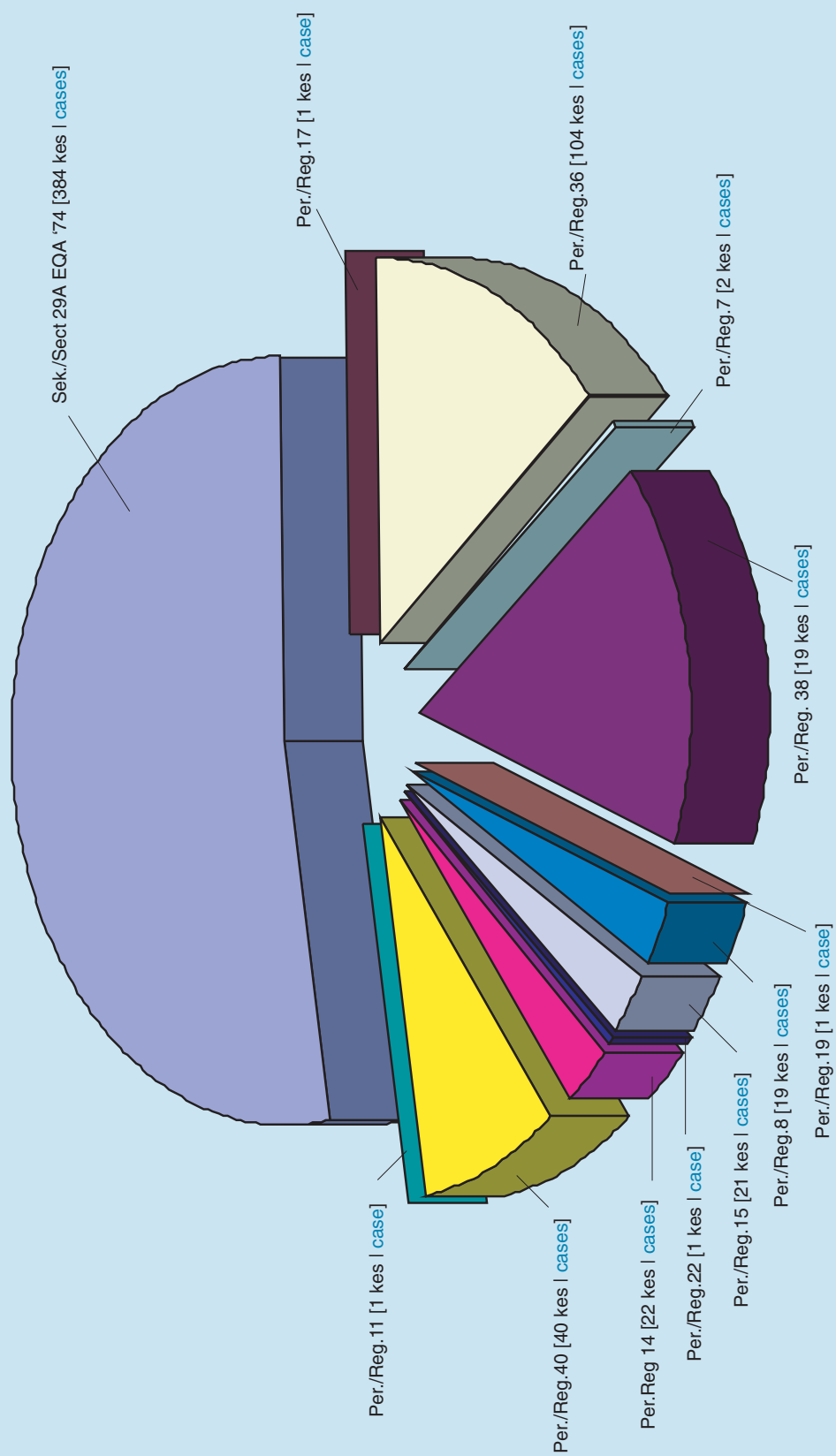


Rajah 5.19 Jabatan Alam Sekitar: Bilangan Kes Mahkamah, 1993-2003
Figure 5.19 Department of Environment: Number of Court Cases, 1993-2003

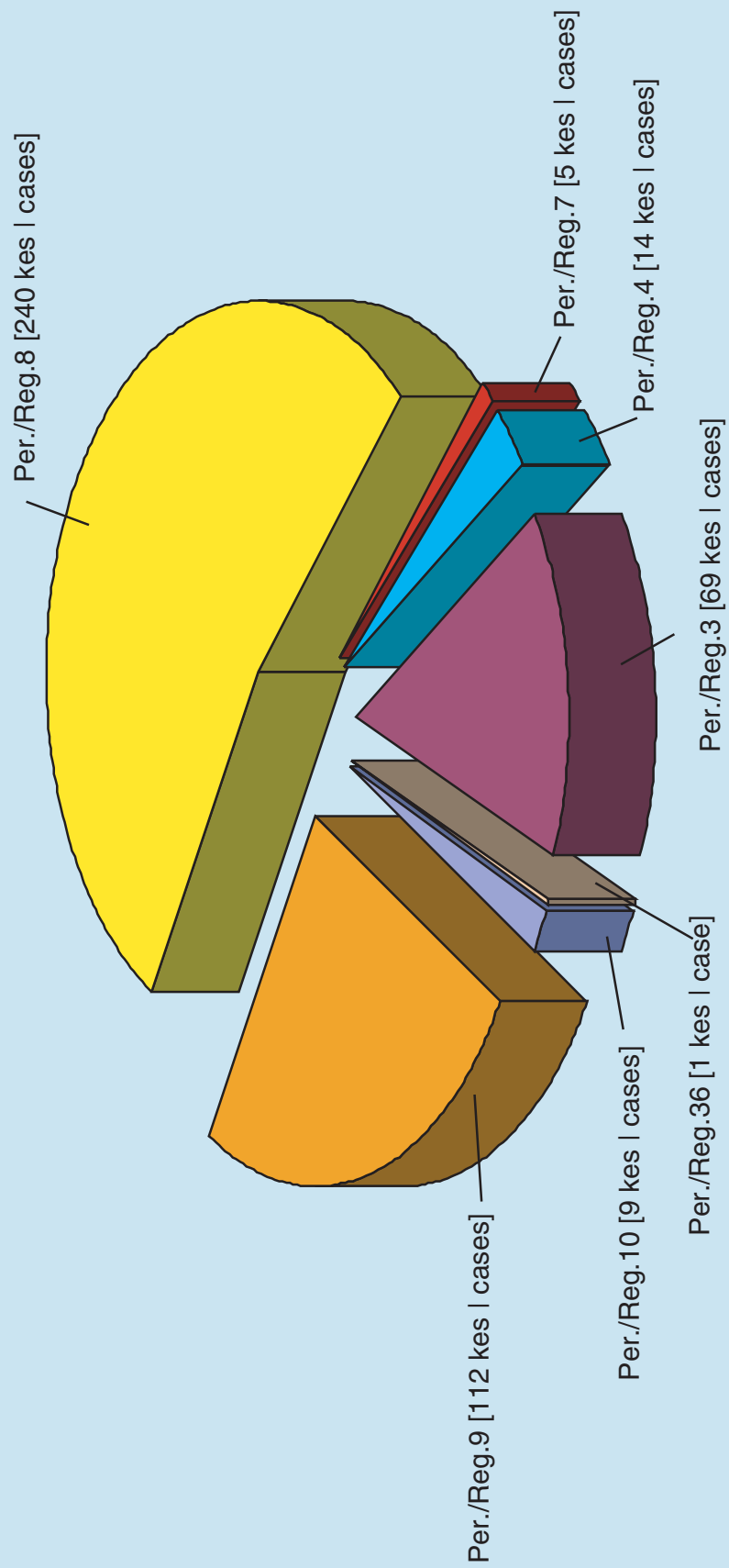


Rajah 5.20 Jabatan Alam Sekitar: Bilangan Kes Mahkamah dan Jumlah Denda, 2003

Figure 5.20 Department of Environment: Number of Court Cases and Fines Collected, 2003



Rajah 5.21 Jabatan Alam Sekitar 2003: Kompaun dibawah Peraturan Kualiti Alam Sekeliling (Udara Bersih) 1978 dan Seksyen 29A AKAS 1974,
Figure 5.21 Department of Environment 2003: Compounds under Environmental Quality (Clean Air) Regulations 1978 and Section 29A EQA 1974,



Rajah 5.22 Jabatan Alam Sekitar, 2003: Kompaun di bawah Peraturan Kualiti Alam Sekeliling (Buangan Terjadual) 1989
Figure 5.22 Department of Environment, 2003: Compounds under Environmental Quality (Scheduled Wastes) Regulations 1989

PENGADUAN AWAM

Pada tahun 2003, sejumlah 2,324 aduan pencemaran alam sekitar telah diterima oleh Jabatan Alam Sekitar, iaitu peningkatan sebanyak 120 (52%) aduan berbanding dengan tahun 2002 (Rajah 5.23). Daripada jumlah keseluruhan aduan, sebanyak 1,784 kes aduan telah disiasat dan tindakan telah diambil di bawah peruntukan Akta Kualiti Alam Sekitar (AKAS) 1974 dan peraturan-peraturan yang berkaitan oleh Pejabat Jabatan Alam Sekitar Negeri. Sementara itu, 540 kes aduan telah dirujuk untuk tindakan agensi lain yang berkaitan.

Pada tahun 2003, Wilayah Persekutuan Kuala Lumpur terus menerima aduan yang tertinggi iaitu sebanyak 374 (16%) kes; diikuti oleh Selangor sebanyak 314 (14%) kes; dan Pulau Pinang sebanyak 262 (11%) kes. Wilayah Persekutuan Labuan menerima aduan yang paling sedikit iaitu sebanyak 21 (1%) kes (Rajah 5.24).

Seperti tahun-tahun yang sebelumnya, bilangan aduan pencemaran yang tertinggi adalah berkaitan pencemaran udara sebanyak 1,641 (71%) kes; 281 (12%) kes berkaitan pencemaran air; 123 (5%) kes berkaitan pencemaran bunyi; dan 80 (3%) kes berkaitan pelupusan haram buangan terjadual (Rajah 5.25).



Gambarfoto 5.13 : Siasatan Aduan Pencemaran bersama Y.B Menteri Sains, Teknologi dan Alam Sekitar

Photo 5.13 : Investigation of Public Complaint together with the Minister of Science, Technology and the Environment

PUBLIC COMPLAINTS

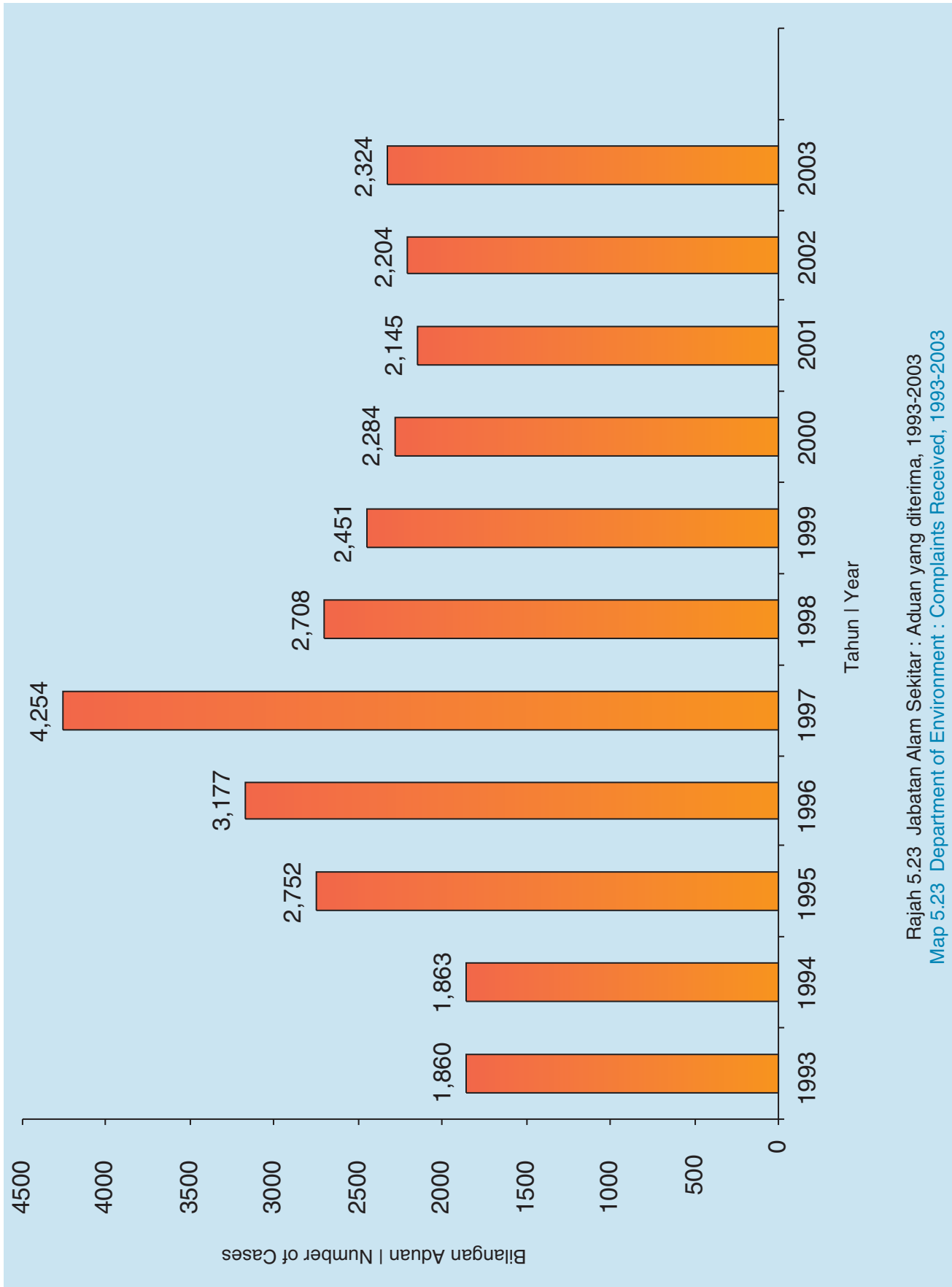
The Department of Environment received 2,324 environmental pollution complaints in 2003, an increase of 120 complaints (52%) compared to 2002 (Figure 5.23). Out of the total number of complaints received, 1,784 cases were handled by the Department of Environment State Offices, while the other 540 cases were referred to other relevant agencies.

In 2003, the Federal Territory of Kuala Lumpur recorded the highest number of complaints 374 (16%); followed by Selangor 314 (14%); and Penang 262 (11%) cases. The Federal Territory of Labuan recorded the least number of complaints with 21(1%) cases (Figure 5.24).

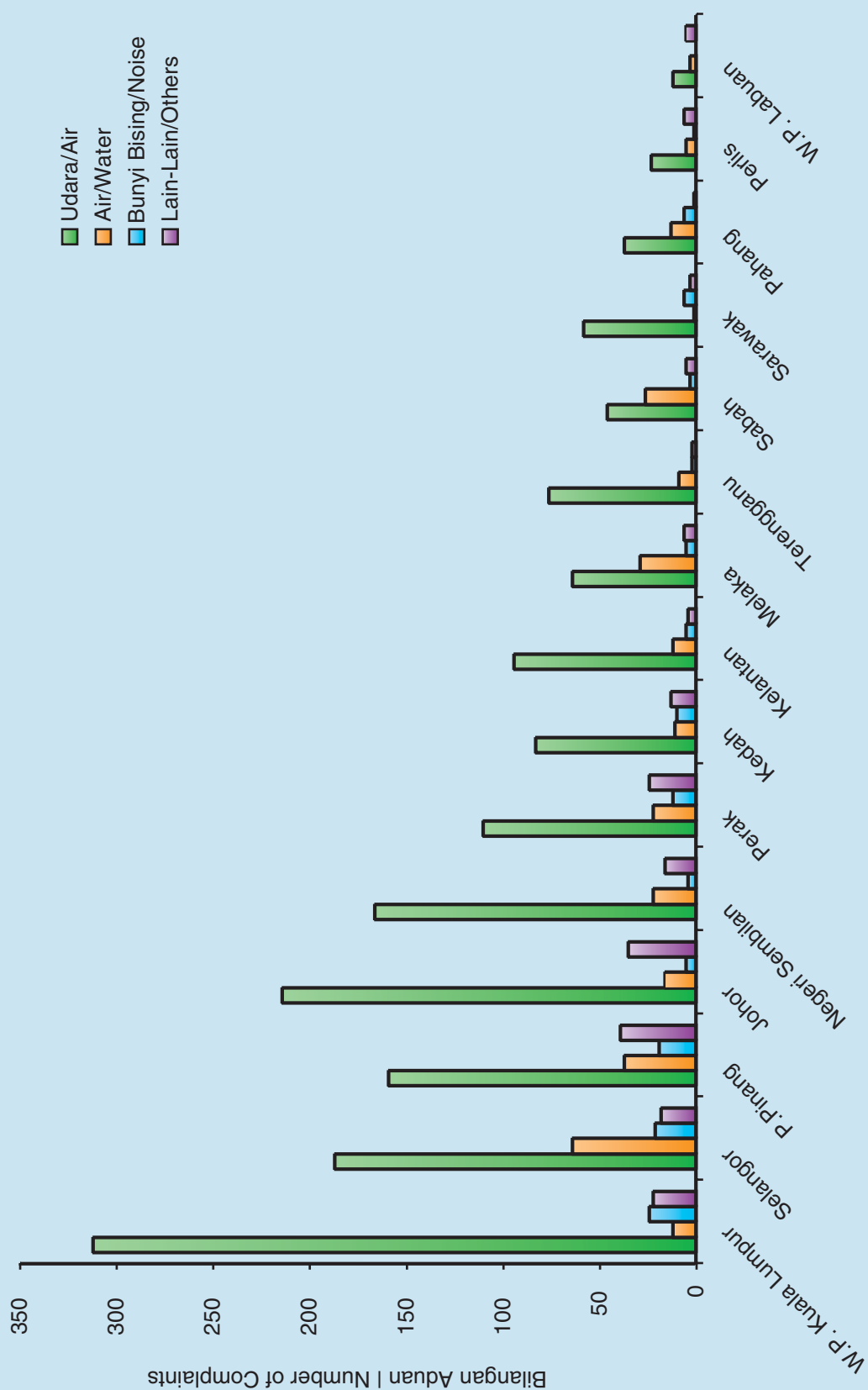
As in previous years, the number of air pollution complaints far exceeded other types of pollution complaints with 1,641 (71%) cases; 281 (12%) water pollution; 123 (5%) noise pollution; and 80 (3%) illegal dumping of scheduled or toxic wastes (Figure 5.25).



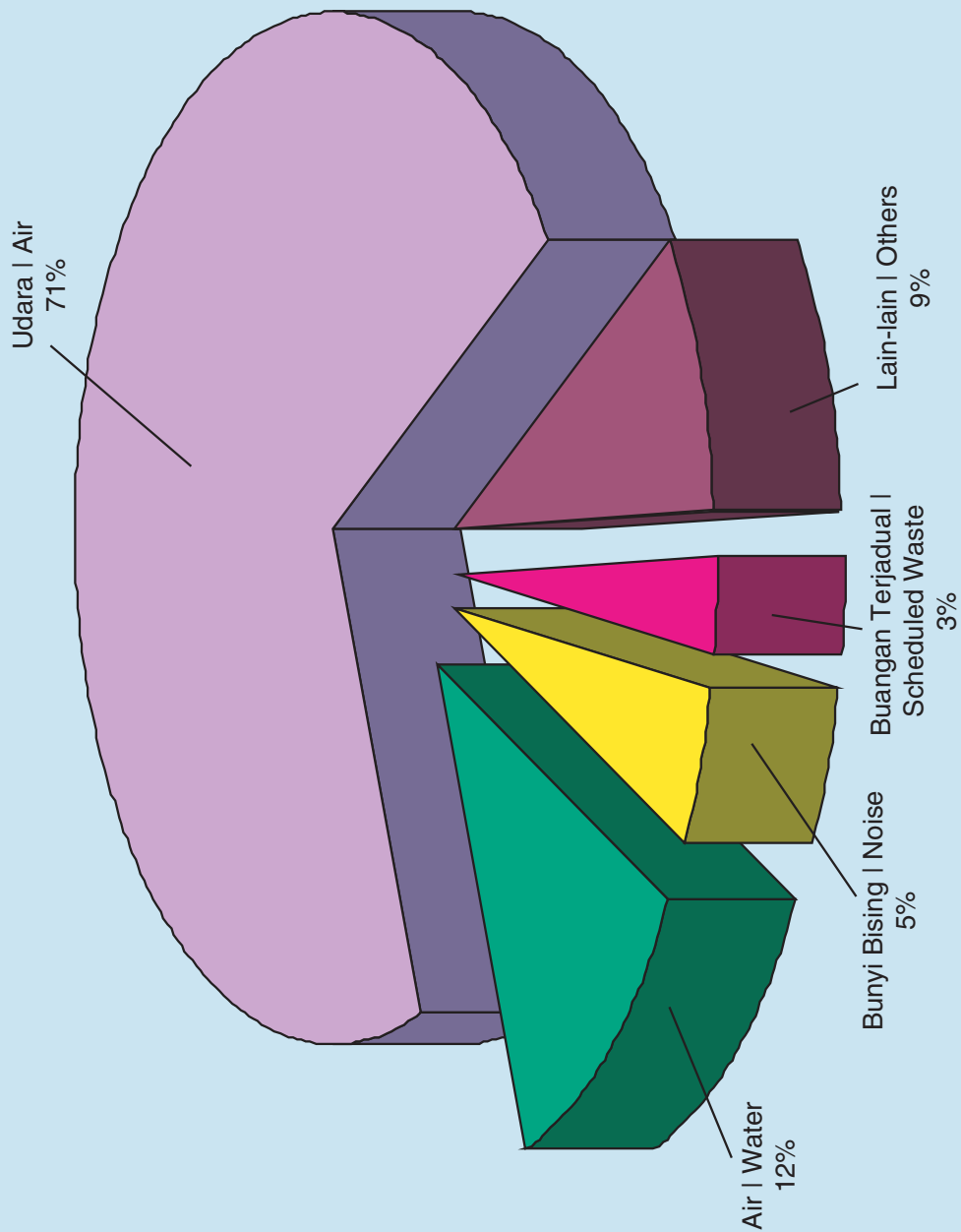
Gambarfoto 5.14 : Persampelan Rasmi Pelepasan Effluen Kilang
Photo 5.14 : Formal Sampling of Factory Effluent Discharges



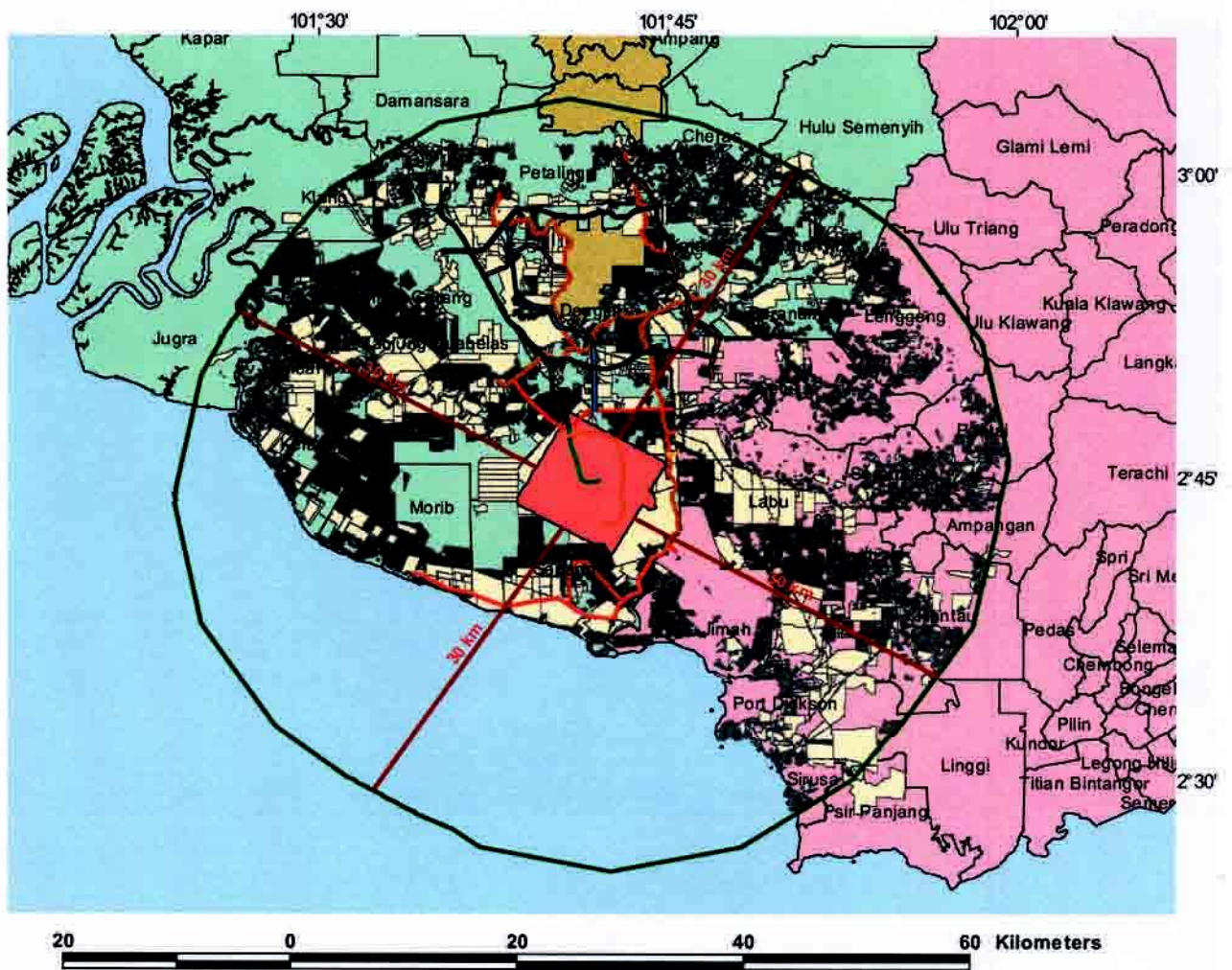
Rajah 5.23 Jabatan Alam Sekitar : Aduan yang diterima, 1993-2003
Map 5.23 Department of Environment : Complaints Received, 1993-2003



Rajah 5.24 Jabatan Alam Sekitar: Bilangan dan Jenis Aduan Mengikut Negeri, 2003
Figure 5.24 Department of Environment: Number and Type of Complaints by State, 2003



Rajah 5.25 Jabatan Alam Sekitar: Jenis Aduan Pencemaran, 2003
Figure 5.25 Department of Environment: Type of Pollution Complaints, 2003



Petunjuk | Legend

- | | | | |
|--|---|--|---|
| | Lingkungan 30km Within 30km | | KLIA |
| | Lebuhraya Tertuju Khas Dedicated Highway | | Lot Tanah Dalam Lingkungan 30km |
| | Lebuhraya B20 Highway B20 | | Lot Within 30km |
| | Lebuhraya Cyberjaya-Putrajaya Highway Cyberjaya-Putrajaya | | Negeri Sembilan |
| | Lebuhraya KL-Seremban (PLUS) Highway KL-Seremban (PLUS) | | Selangor |
| | Lebuhraya SKVE Highway SKVE | | Wilayah Persekutuan Federal Territory |
| | Lebuhraya ELITE Highway ELITE | | |
| | Jalan KLIA 1 KLIA 1 Road | | |
| | Jalan KLIA-Nilai KLIA-Nilai Road | | |
| | Jalan Kuarters KLIA Kuarters KLIA Road | | |
| | Jalan Negeri State Road | | |
| | Jalan Pekeliling Pekeliling Road | | |
| | Jalan Persekutuan Federal Road | | |
| | Lebuhraya Bandar Putrajaya Putrajaya Urban Motorway | | |



Rajah 5.26: Kawasan Larangan Pembakaran Terbuka (30km jejari) di Sekitar Lapangan Terbang Antarabangsa Kuala Lumpur (KLIA) di bawah Seksyen 29A, AKAS, 1974

Figure 5.26: Prohibited Open Burning Zone (30km radius) Surrounding Kuala Lumpur International Airport, under Section 29A, EQA, 1974

Jabatan
Alam Sekitar



BAB / CHAPTER 6



Department of
Environment



KOMUNIKASI STRATEGIK

PROMOSI KESEDARAN ALAM SEKITAR (SEKOLAH)

Sekolah Lestari - Anugerah Alam Sekitar

Jabatan Alam Sekitar dengan kerjasama LESTARI, UKM telah mengadakan satu bengkel pada 13-14 Januari 2003 yang dihadiri oleh 60 peserta untuk memurnikan draf Garis Panduan Ke Arah Pembentukan Sekolah Lestari dengan mengambilkira pandangan daripada pelbagai pihak seperti agensi-agensi Kerajaan, swasta dan Badan Bukan Kerajaan.

Hasil daripada beberapa siri perundingan pada tahun 2003, dokumen Program Sekolah Lestari bertajuk Asas Pembentukan Sekolah Lestari telah diterbitkan. Dokumen ini bertujuan untuk membantu sekolah memperkukuhkan proses pelaksanaan program dan aktiviti pendidikan alam sekitar yang sedia ada. Melalui program ini, pengetahuan, pembangunan kemahiran dan nilai murni alam sekitar dapat diterapkan dalam empat komponen program iaitu Pengurusan, Kurikulum, Kokurikulum dan Penghijauan yang melibatkan pengurusan sekolah, guru-guru, staf am dan pelajar-pelajar sekolah.

Projek Wira Alam

Projek Wira Alam (PWA) yang telah dilancarkan pada 5 Jun 1998 adalah program JAS dengan kerjasama Persatuan Pencinta Alam Malaysia (MNS) dan Kementerian Pendidikan Malaysia. Projek ini dibahagikan kepada tiga (3) tahap iaitu Tahap 1 (Wira Diri); Tahap 2 (Wira Komuniti) dan Tahap 3 (Wira Alam). Setiap pelajar perlu menyelesaikan tugas yang ditetapkan di dalam buku aktiviti Projek Wira Alam setiap tahap sebelum ke peringkat seterusnya.

STRATEGIC COMMUNICATIONS

PROMOTION OF ENVIRONMENTAL AWARENESS (SCHOOLS)

Sustainable School - Environment Award

The Department of Environment with the cooperation of LESTARI, UKM held a workshop on 13-14 January 2003 which was attended by sixty participants to fine-tune the Draft 'Guidelines for the Establishment of Sustainable Schools', taking into account the views and inputs from various parties such as Government agencies, the private sector and Non-Governmental Organizations.

After a number of consultative meetings in 2003, a document entitled "Basis for the Establishment of Sustainable School" was published. The document aims to assist schools in strengthening the implementation of environmental education programmes and activities. Knowledge, skill development and positive environmental values are infused into the four components of the program namely Management, Curriculum, Co-curriculum and Greening activities which will involve the school management, the teaching and general staff as well as the school children.

Wira Alam Project

Launched on 5 Jun 1998, the 'Wira Alam' Project is a DOE initiated programme with the cooperation of the Malaysian Nature Society (MNS) and the Ministry of Education (MoE). The project is divided into three (3) stages namely, Level 1 (Wira Diri); Level 2 (Wira Komuniti) and (Level 3 Wira Alam). Each participating student must complete the tasks provided in the activity book at each level before advancing to the next.

Pada akhir tahun 2003, seramai 8,780 pelajar telah menyertai Tahap 1 (Wira Diri); sejumlah 1,019 pelajar menyertai Tahap 2 (Wira Komuniti) dan 182 pelajar mencapai Tahap 3 (Wira Alam). Kumpulan pertama yang terdiri daripada 21 pelajar dari tiga (3) buah sekolah telah menyempurnakan peringkat Tahap 3 (Wira Alam) dan dianugerahkan sebagai WIRAALAM dalam satu majlis yang dirasmikan oleh Dato' Seri Law Hieng Ding, Menteri Sains, Teknologi dan Alam Sekitar.

By the end of 2003, a total of 8,780 students had participated at Level 1 (Wira Diri); 1,019 student at Level 2 (Wira Komuniti) and 182 students reached Level 3 (Wira Alam). The pioneer group of 21 students from three schools completed Level 3 and were recognised as WIRA ALAM (Environmental Heroes) in a ceremony officiated by the Minister of Science, Technology and Environment, Dato' Seri Law Hieng Ding.

Nama Name	Sekolah School	Guru Penasihat Advisory Teachers
Ahmad Muzani b. Mat Yoong Fei Yian Norismahita bt. Ismail Noor Ain bt. Roslan Khairul Nizam b. Abdullah Fawzli b. Muhammad Salim	Sek. Men. Keb. Bandar Baru Bangi, Selangor	Pn. Che Maimon
Chung Sze Meang Chung Sze Hui	Sek. Men. Keb. Batu Kawa, Sarawak	En. Arrick Bantin
M. Sabah b. Jumain Hairuddin b. Achmad Rugaya bt. Ali Juriani bt. Mohammad Kasma b. Hj. Habba Siti Hasnawati bt. Amir Suriati bt. Biru Hashim b. Abdul Rahim Salnah bt Arsah Arnoldus Sanga Bayene Taufik b. Hj. AbdulLatif Syarnizi b. Wahadi Haslina bt. Labo	Sek. Men. Keb. Agaseh Lahad Datu, Sabah	En. Suharpi Lasuddung

Satu Bengkel Projek Wira Alam untuk 80 guru-guru penasihat Kelab Pencinta Alam juga telah dianjurkan pada 25- 27 Ogos 2003 di Taman Rimba Templer, Selangor. Bengkel anjuran bersama JAS dan Persatuan Pencinta Alam Malaysia (MNS) bertujuan untuk melatih guru berkenaan dengan pelaksanaan aktiviti alam sekitar di bawah Projek Wira Alam di sekolah.

A Wira Alam workshop for 80 advisory teachers from the School Nature Clubs was held on 25-27 August 2003 at Templer Park, Selangor. The workshop was organized by DOE and MNS to assist teachers to be familiarized with the implementation of activities for the Wira Alam Program in schools.



Gambarfoto 6.1 : Majlis Anugerah Wira Alam 2003
Photo 6.1 : Wira Alam 2003 Award Ceremony

Projek Riadah Alam Sekitar (PRIAS)

Program tahunan ini yang bermula sejak 1992 merupakan kerjasama antara Jabatan Alam Sekitar, Persatuan Sains Malaysia (MSA), Tetra Pak (M) Sdn. Bhd. dan Kementerian Pendidikan Malaysia. Projek ini memerlukan pelajar membuat kajian berdasarkan tema alam sekitar yang dipilih bagi tahun tertentu dan pelajar adalah dikehendaki membuat kajian terhadap perkara tersebut.

Tema PRIAS untuk 2003 ialah 'Kitar Semula Kertas' dan pemenangnya ialah:

Tempat Pertama : Sek. Men (P) Sri Aman,
Petaling Jaya, Selangor
Pelajar : i. Phoong Yoke Xi
ii. Teo Yoke Teng
iii. Lim Yuet Chern
iv. Nor Dalilah Ismail

Hadiah Wang Tunai RM2,500.00, Sijil & Lawatan ke Kilang Tetra Pak di Singapura.

Tempat Kedua : SM Sains Tengku
Muhammad Faris Petra,
Pengkalan Chepa, Kelantan
Pelajar : i. Mohd Rifhan Syahmi B.
Mohd Rusdi
ii. Mohd Aiman Izzat B.
Muhamad



Gambarfoto 6.2 : Model Projek PRIAS bertajuk 'Sisa Pepejal'
Photo 6.2 : PRIAS Project - Solid Waste

Riadah Alam Sekitar (PRIAS) Project

This annual program started since 1992 is a joint environmental initiative between DOE, the Malaysian Scientific Association (MSA), Tetra Pak (M) Sdn. Bhd. and the Ministry of Education (MoE). A specific environmental theme would be selected for the year and participating students would be expected to undertake "research" on the subject.

The theme for PRIAS 2003 was 'Paper Recycling' and the winning entries were from:

1st Place : Sek. Men (P) Sri Aman, Petaling
Jaya, Selangor
Students : i. Phoong Yoke Xi
ii. Teo Yoke Teng
iii. Lim Yuet Chern
iv. Nor Dalilah Ismail

Cash prize of RM2,500.00, Certificates and a visit to the Tetra Pak Factory in Singapore.

2nd Place : SM Sains Tengku Muhammad
Faris Petra, Pengkalan Chepa,
Kelantan
Students : i. Mohd Rifhan Syahmi B.
Mohd Rusdi
ii. Mohd Aiman Izzat B.
Muhamad

- iii. Khairolhida Bt. Ibrahim
- iv. Nurul Nadirah Bt. Ahmad Najmee

Hadiah Wang Tunai RM 1,250.00, Sijil dan Lawatan ke Kilang Tetra Pak di Malaysia

- Tempat Ketiga : SMK Seri Keramat, Lembah Keramat, Kuala Lumpur
- Pelajar : i. Fatimah Zahirah Bt. Mohd Damanhuri
- ii. Hidayatul Asyiqin Bt. Mohd Yusof
- iii. Nadia Salmi Bt. Zakaria
- iv. Siti Janatul Adeni Bt. Ab. Latif

Hadiah Wang Tunai RM750.00 dan Sijil

- Tempat Ketiga : SMK Tarcisian Convent, Ipoh, Perak
- Pelajar : i. Hajjariah Bt. Jaapar
- ii. Manpreet Kaur Sandhu a/p Sahib Singh
- iii. Sin Hui Ling
- iv. Thenmoli a/p Palaniyappan

Hadiah Wang Tunai RM750.00 dan Sijil

10 Hadiah Saguhati bernilai RM100.00 setiap satu dan Sijil:

- i. SMK Dato Permaisuri, Miri, Sarawak
- ii. Kolej DPAH Abdillah, Petrajaya, Kuching, Sarawak
- iii. SMK Lutong, Miri, Sarawak
- iv. SMK Lutong, Miri, Sarawak
- v. SM Sung Siew (CF), Sandakan, Sabah
- vi. SM Sains Pokok Sena, Pokok Sena, Kedah
- vii. SMK Jalan Damai, Bukit Mertajam, Pulau Pinang
- viii. SMK Convent Teluk Intan, Perak
- ix. SMK Beserah, Kuantan, Pahang
- x. SM Sains Dungun, Dungun, Terengganu

- iii. Khairolhida Bt. Ibrahim
- iv. Nurul Nadirah Bt. Ahmad Najmee

Cash prize of RM 1,250.00, Certificates and Visit to the Tetra Pak factory in Malaysia.

- 3rd Place : SMK Seri Keramat, Lembah Keramat, Kuala Lumpur
- Students : i. Fatimah Zahirah Bt. Mohd Damanhuri
- ii. Hidayatul Asyiqin Bt. Mohd Yusof
- iii. Nadia Salmi Bt. Zakaria
- iv. Siti Janatul Adeni Bt. Ab. Latif

Cash prize of RM750.00 and Certificates

- 3rd Place : SMK Tarcisian Convent, Ipoh, Perak
- Students : i. Hajjariah Bt. Jaapar
- ii. Manpreet Kaur Sandhu a/p Sahib Singh
- iii. Sin Hui Ling
- iv. Thenmoli a/p Palaniyappan

Cash prize of RM750.00 and Certificates

10 Consolation Prizes of RM 100.00 each and Certificates were presented to :

- i. SMK Dato Permaisuri, Miri, Sarawak
- ii. Kolej DPAH Abdillah, Petrajaya, Kuching, Sarawak
- iii. SMK Lutong, Miri, Sarawak
- iv. SMK Lutong, Miri, Sarawak
- v. SM Sung Siew (CF), Sandakan, Sabah
- vi. SM Sains Pokok Sena, Pokok Sena, Kedah
- vii. SMK Jalan Damai, Bukit Mertajam, Pulau Pinang
- viii. SMK Convent Teluk Intan, Perak
- ix. SMK Beserah, Kuantan, Pahang
- x. SM Sains Dungun, Dungun, Terengganu

Kem Kesedaran Alam Sekitar (KeKAS)

Pada tahun 2003, seramai lebih kurang 485 guru sekolah rendah dan menengah di seluruh Malaysia telah menghadiri 12 Bengkel Fasilitator Kem Kesedaran Alam Sekitar (KeKAS) dengan menggunakan modul KeKAS iaitu Ekosistem Marin, Hutan, Tanah Tinggi, Sungai, Perbandaran, Pertanian Organik dan Perladangan. Manakala 4,477 pelajar sekolah telah menghadiri 81 KeKAS yang dilaksanakan oleh JAS Negeri di seluruh Malaysia dengan kerjasama Jabatan Pendidikan Negeri dan agensi-agensi lain.

Pertandingan Debat Alam Sekitar Antara Institusi Pengajian Tinggi (IPT)

Pertandingan kali ke 13 ini adalah anjuran bersama Jabatan Alam Sekitar dengan Majlis Debat Universiti-Universiti Malaysia (MADUM), Dewan Bahasa dan Pustaka, dan Kementerian Pendidikan Malaysia. Sejumlah 19 Institusi Pengajian Tinggi Malaysia telah mengambil bahagian dalam pertandingan ini yang diadakan pada 27-31 Julai 2003 di Universiti Putra Malaysia iaitu:

- Universiti Pertanian Malaysia (UPM)
- Universiti Kebangsaan Malaysia (UKM)
- Universiti Malaya (UM)
- Universiti Islam Antarabangsa (UIA)
- Universiti Teknologi Malaysia (UTM)
- Universiti Sains Malaysia (USM)
- Universiti Utara Malaysia (UUM)
- Universiti Teknologi Mara (UiTM)
- Universiti Malaysia Sarawak (UNIMAS)
- Universiti Malaysia Sabah (UMS)
- Universiti Pendidikan Sultan Idris (UPSI)
- Kolej Universiti Islam Malaysia (KUIM)
- Kolej Universiti Teknologi Tun Hussien Onn (KUiTTHO)
- Kolej Universiti Sains dan Teknologi Malaysia (KUSTEM)
- Kolej Universiti Teknikal Kebangsaan Malaysia (KUTKM)

Environmental Awareness Camp (KeKAS)

In 2003, 12 Facilitator Workshops for 485 primary and secondary school teachers throughout Malaysia were organised based on seven Ecosystem Modules namely Marine, Forest, Highland, River, Urban, Organic Farming and Plantation Ecosystems. A total of 4,477 students attended 81 KeKAS organised by State DOE Offices throughout Malaysia with the cooperation of the State Education Departments and other agencies.

Inter-Varsity Environmental Debate Among Institutions Of Higher Learning (IPT)

In collaboration with the Malaysian Universities Debating Council (MADUM), Dewan Bahasa dan Pustaka and the Ministry of Education, the Department of Environment organised the 13th Intervarsity Environmental Debate at Universiti Putra Malaysia (UPM), Serdang, Selangor from 27-31 July 2003. A total of 19 teams from Institutions of Higher Learning in Malaysia participated namely:

- Universiti Pertanian Malaysia (UPM)
- Universiti Kebangsaan Malaysia (UKM)
- Universiti Malaya (UM)
- Universiti Islam Antarabangsa (UIA)
- Universiti Teknologi Malaysia (UTM)
- Universiti Sains Malaysia (USM)
- Universiti Utara Malaysia (UUM)
- Universiti Teknologi Mara (UiTM)
- Universiti Malaysia Sarawak (UNIMAS)
- Universiti Malaysia Sabah (UMS)
- Universiti Pendidikan Sultan Idris (UPSI)
- Kolej Universiti Islam Malaysia (KUIM)
- Kolej Universiti Teknologi Tun Hussien Onn (KUiTTHO)
- Kolej Universiti Sains dan Teknologi Malaysia (KUSTEM)
- Kolej Universiti Teknikal Kebangsaan Malaysia (KUTKM)

- Kolej Universiti Kejuruteraan Utara Malaysia (KUKUM)
- Kolej Universiti Kejuruteraan dan Teknologi Malaysia (KUKTM)
- Universiti Tenaga Nasional (UNITEN)
- Universiti Multimedia (MMU)

Pertandingan Peringkat Awal melibatkan enam pusingan dan lapan pasukan terbaik akan dipilih untuk ke peringkat suku akhir dan empat pasukan yang berjaya akan ke separuh akhir dan akhirnya dua pasukan terbaik akan bertanding di peringkat akhir.

- Kolej Universiti Kejuruteraan Utara Malaysia (KUKUM)
- Kolej Universiti Kejuruteraan dan Teknologi Malaysia (KUKTM)
- Universiti Tenaga Nasional (UNITEN)
- Universiti Multimedia (MMU)

Six preliminary rounds were held and eight highest ranking teams were selected to compete in the quarterfinals after which four successful teams qualified for the semi-finals, and eventually two teams entered the Final.



Gambarfoto 6.3 : Debat Alam Sekitar Antara IPT 2003 : Pasukan Pemenang : UIA
Photo 6.3 : Intervarsity Debate 2003 : UIA The Champion Team

**PERINGKAT AWAL
PRELIMINARY ROUNDS****Pusingan Pertama | First Round:**

Isu Alam Sekitar di Malaysia Sengaja Dibesarkan

Pusingan Kedua | Second Round:

Dasar Alam Sekitar Negara: Indah Khabar Daripada Rupa

Pusingan Ketiga | Third Round:

E.I.A Alat Perancang Yang Relevan

Pusingan Keempat | Fourth Round:

Demi Alam Sekitar, Elok Juga Petrol Naik Harga

Pusingan Kelima | Fifth Round:

Pendidikan Alam Sekitar Di Malaysia Tidak Efektif

Pusingan Keenam | Sixth Round:

Demi Kesejahteraan, Insinerator Diperlukan

PERINGKAT SUKU AKHIR | QUARTER FINALS :
Kerajaan Penentu Kelestarian Alam Sekitar**UIAM** lwn **UUM**UiTM lwn **USM****UM** lwn **UNIMAS****UPSI** lwn **UNITEN****PERINGKAT SEPARUH AKHIR | SEMI-FINALS :**
Masyarakat Malaysia Tidak Serius Dalam Menangani Isu Alam Sekitar**UIAM** lwn **UNITEN****USM** lwn **UM****PERINGKAT AKHIR | FINALS :**
Kegagalan Sidang Alam Sekitar Di Peringkat Antarabangsa, Petanda Kehancuran Dunia**UIAM** lwn **USM**

Pertandingan Akhir Debat Alam Sekitar 2003 diadakan di Dewan Besar, Pusat Kebudayaan dan Kesenian Sultan Salahuddin Abdul Aziz Shah, Universiti Putra Malaysia di antara Universiti Islam Antarabangsa Malaysia (UIAM) dan Universiti Sains Malaysia (USM). UIAM Mohd Faizi Che Abu, A.Akhiruddin@Boy Acho, Noorsyakina Simin dan pendebat simpanan, Habiburrahman Johari. USM diwakili Mohd Shahrizal Abd. Rahim, Mohd Tramizi Hussin, Ridwan Ali dan pendebat simpanan, Abdul Hadi Abdul Apet.

UIAM berjaya bergelar johan pertandingan Debat Alam Sekitar 2003 menerima Piala Pusingan Menteri Sains, Teknologi dan Alam Sekitar serta wang tunai RM8,000.00. Manakala USM, sebagai naib johan menerima wang tunai RM 5,000.00. Dua pasukan yang layak ke separuh akhir iaitu Universiti Malaya (UM) dan Universiti Tenaga Nasional (UNITEN), masing-masing menerima wang tunai RM1,000.00 dan hadiah iringan. Pendebat UIAM, Noorsyakina Simin muncul Pendebat Terbaik dan menerima Piala Ketua Pengarah Alam Sekitar, wang tunai RM1,500.00. Hadiah disampaikan oleh Y.B. Datuk Hj. Zainal bin Dahalan, Timbalan Menteri Sains, Teknologi dan Alam Sekitar.

The finals of the 2003 Environmental Debate Competition held at the Grand Hall of the Sultan Salahuddin Abdul Aziz Shah Centre for Culture and Arts, Universiti Putra Malaysia was between International Islamic University of Malaysia (UIAM) and Universiti Sains Malaysia (USM). UIAM was represented by Mohd Faizi One Abu, A.Akhiruddin @ Boy Acho, Noorsyakina Simin and Habiburrahman Johari as reserve. USM was represented by Mohd Shahrizal Abd Rahim, Mohd Tarmizi Hussin, Ridwan Ali and Abdul Hadi Abdul Apet as the reserve.

UIAM emerged the winner of the 2003 Environmental Debate and received the Minister of Science, Technology and Environment Trophy together with a cash prize of RM8,000.00 and certificates of participation. The runners-up, USM received a cash prize of RM6,000.00 and certificates of participation. The two teams which qualified for the semi-finals, namely University of Malaya (UM) and Universiti Tenaga Nasional (UNITEN) each received cash prizes of RM1,000.00 and certificates of participation. Ms. Noorsyakina Simin from UIAM was the Best Debater and received the Director General of Environment Trophy, together with a cash prize of RM1,500.00. The prize giving ceremony was graced by Y.B. Datuk Hj Zainal bin Dahalan, the Deputy Minister of Science, Technology and the Environment.

Bandar Lestari - Anugerah Alam Sekitar

Bandar Lestari - Environment Award



Logo : Bandar Lestari - Anugerah Alam Sekitar
Logo : Bandar Lestari - Environment Award

Bandar Lestari - Anugerah Alam Sekitar telah diwujudkan dalam tahun 2003 oleh Jabatan Alam Sekitar, dengan kerjasama beberapa Agensi Kerajaan seperti Jabatan Kerajaan Tempatan di bawah Kementerian Perumahan dan Kerajaan Tempatan dan organisasi yang berteraskan masyarakat. Anugerah ini bertujuan untuk mengiktiraf pusat-pusat bandar yang telah menerapkan dimensi alam sekitar di dalam perancangan, pentadbiran dan pelaksanaan program-program, projek-projek dan aktiviti-aktiviti mereka.

Objektif utama anugerah ini :

- mengiktiraf usaha dan sumbangan oleh badan pentadbiran bandaraya dan bandar untuk mencapai kelestarian alam sekitar melalui polisi dan tindakan
- meningkatkan kesedaran berkaitan kelestarian alam sekitar dengan mendapat sokongan masyarakat tempatan
- menggalakkan pendekatan inovatif dan amalan-amalan baik ke arah kelestarian alam sekitar.

Anugerah ini, yang dikenali sebagai 'Bandar Lestari - Anugerah Alam Sekitar' ini adalah dinilai berasaskan lima kategori yang berkaitan alam sekitar iaitu alam sekitar fizikal, inisiatif ekologi, perkhidmatan perbandaran, pentadbiran alam sekitar, dan pendidikan dan kesedaran alam sekitar.

Majlis pelancaran Bandar Lestari - Anugerah Alam Sekitar telah dirasmikan oleh Y.B. Dato' Seri Law Hieng Ding, Menteri Sains, Teknologi dan Alam Sekitar bersempena Hari Alam Sekitar Sedunia pada 5 Jun 2003.

Persidangan Alam Sekitar dan Peranan Kaum Wanita

Pada 19 Ogos 2003, Jabatan Alam Sekitar, dengan kerjasama *Mothers for Mothers Network/e-Homemakers* dan Nestle (Malaysia) Bhd telah mengambil inisiatif menganjurkan satu persidangan bertajuk '*Environment: The Role of Women*'. Majlis telah dirasmikan oleh Y.Bhg. Datin Seri Ngui Soon Leng, isteri Y.B. Menteri Sains, Teknologi dan Alam Sekitar. Antara objektif persidangan ini adalah:

The Bandar Lestari - Environment Award was initiated in 2003 by the Department of Environment, in collaboration with relevant government agencies in particular, the Local Government Department of the Ministry of Housing and Local Government and community-based organizations to give recognition to local authorities in urban centres that have incorporated the environmental dimension in the planning, administration and implementation of their programmes, projects and activities.

The primary objectives are :

- to recognise the work of local authorities in urban centres with regard to their environmental sustainability efforts.
- to raise awareness regarding environmental sustainability at the local level and mobilize support from communities
- to promote and disseminate information on innovative approaches and examples of good practices towards environmental sustainability

The Award, to be known as the 'Sustainable City-Environment Award' will be based on achievements in five environment-related categories namely, physical environment, ecological initiatives, urban services, environmental governance, education and awareness.

The Bandar Lestari - Environment Award was launched by Y.B. Dato' Seri Law Hieng Ding, the Honourable Minister of Science, Technology and the Environment on 5 June 2003 in conjunction with World Environment Day.

Environment and The Role of Women Conference

On 19 August 2003, the Department of Environment, in collaboration with Mothers for Mothers Network/e-Homemakers and Nestle (Malaysia) Bhd. organised a conference on "Environment and the Role of Women" which was officiated by Y. Bhg. Datin Seri Ngui Soon Leng, the wife of the Honourable Minister of Science, Technology and the Environment. The strategic objectives of the conference were:

- untuk mengembangkan lagi peranan dan penglibatan wanita dalam aktiviti-aktiviti pemeliharaan dan pemuliharaan alam sekitar
- menyediakan platform untuk suri rumahtangga mengadakan perbincangan, pertukaran idea
- merangka kesedaran ke arah mencapai alam sekitar yang bersih dan sihat.
- to enhance the role and involvement of women in environmental protection and conservation activities
- to provide a platform for homemakers for discussion, exchange of ideas and experiences towards a clean and healthy environment
- to create awareness and encourage environmental-friendly practices at home.

Persidangan Alam Sekitar dan Peranan Wanita yang julung-julung kali diadakan ini telah berjaya menarik lebih 300 orang peserta tempatan dan juga luar negara. Dua orang penceramah luar negara, iaitu Ms. Janet McNeill, pencinta alam sekitar dari Ontario, Canada dan Dr. Susanna Brida-Hofher, seorang doktor veterinar dari Austria serta enam orang penceramah wanita Malaysia yang terkenal telah hadir untuk bersama-sama berkongsi pengalaman di samping memberi inspirasi ke arah cara hidup yang lebih mesra alam sekitar.

Acara menarik sempena dengan persidangan ini adalah satu pameran bertema '*Home-made Environmental Products*' oleh 20 usahawan termasuk mereka yang beroperasi dari rumah. Pameran ini berjaya mempamerkan bagaimana barangan buangan domestik boleh dihasilkan semula menjadi produk-produk yang berguna.

Minggu Alam Sekitar Malaysia (MASM) 2003

Minggu Alam Sekitar adalah acara tahunan Jabatan Alam Sekitar yang disambut dengan objektif untuk menyemai dan meningkatkan kesedaran alam sekitar di kalangan masyarakat Malaysia. Sambutan Minggu Alam Sekitar Malaysia Peringkat Kebangsaan 2003 telah diadakan di Dataran Gunung Lambak, Kluang, Johor Darul Ta'zim pada 18-24 Oktober 2003. Majlis ini telah dirasmikan oleh Y.A.B. Dato' Haji Abdul Ghani bin Othman, Menteri Besar Johor. Ucapan alu-aluan telah disampaikan oleh Y.B. Dato' Haji Zainal bin Dahalan, Timbalan Menteri Sains, Teknologi dan Alam Sekitar bagi pihak Y.B. Menteri Sains, Teknologi dan Alam Sekitar. Di antara dif-dif kehormat yang hadir ialah Ketua Setiausaha MOSTE, Setiausaha Kerajaan

This first ever conference successfully attracted more than 300 participants, both local and international. Two international speakers, namely Ms. Janet McNeill, an environmentalist from Ontario, Canada and Dr. Susanna Brida-Hofherr, a veterinarian from Austria, presented their views during the plenary session and six distinguished Malaysian women shared their experiences and provided the inspiration for action on green living.

The highlight of the conference was the Home-made Environmental Products Exhibition which was participated by over 20 local homemakers and entrepreneurs. The 20 exhibition booths showcased how household throwaways could be reused and converted into useful items.

Malaysia Environment Week (MASM) 2003

The Malaysia Environment Week is an annual event organised by the Department of Environment, primarily to inculcate and enhance environmental awareness among Malaysians. The National Malaysia Environment Week 2003 celebration was held on 18-24 October 2003 at Dataran Gunung Lambak, Kluang, Johor Darul Ta'zim. The ceremony was launched by the Chief Minister of the State of Johor, the Rt. Honourable Dato' Haji Abdul Ghani bin Othman. The Honourable Dato' Haji Zainal bin Dahalan, the Deputy Minister of Science, Technology and the Environment delivered the welcome speech on behalf of the Honourable Minister of Science, Technology and the Environment (MOSTE). Among the dignitaries present



Gambarfoto 6.4 : Majlis Pelancaran MASM Peringkat Kebangsaan 2003, Kluang, Johor.

Photo 6.4 : Launching of National MASM 2003, Kluang, Johor.



Gambarfoto 6.5 : MASM 2003 - J-Robik
Photo 6.5 : MASM 2003 - J-Robik

Negeri Johor dan Ahli-Ahli EXCO yang bertanggungjawab ke atas Alam Sekitar. Tema yang telah dipilih bagi tahun 2003 ialah 'Alam Sekitar Bersih Untuk Kehidupan Sejahtera'.

Seramai 2500 orang telah hadir memeriahkan majlis pelancaran di kaki Gunung Lambak, Kluang. Antara aktiviti-aktiviti yang telah dilaksanakan sepanjang sambutan minggu MASM tersebut adalah cabaran 4x4 *Enviro Challenge*; Pembersihan dan Mencantikkan Sungai Mengkibol, Kluang; Seminar Pengurusan Alam Sekitar, Pameran Alam Sekitar, Konsert Muzikal Alam yang mengetengahkan artis-artis popular tanah air seperti saudara Zainal Abidin dan *Eco- trip* ke Taman Negara Endau Rompin.

were the Secretary-General of MOSTE, the Johor State Secretary and State EXCO Members responsible for Environmental Matters. The theme for 2003 was 'A Clean Environment for Healthy Living'.

A large turnout of 2500 people were present at the Launching Ceremony at the foothills of Gunung Lambak, Kluang. Among the highlights during the MASM week were the 4x4 *Enviro-Challenge*; Clean-up and Beautification of Sungai Mengkibol, Kluang; Environmental Management Seminar; Environmental Exhibition; an Environmental Concert featuring top local artistes such as singer Zainal Abidin and an *Eco-trip* to the Endau Rompin National Park.



Gambarfoto 6.6 : 'Eco-Trip ke Taman Negara Endau Rompin, Johor
Photo 6.6 : Eco-Trip to Endau Rompin National Park, Johor

Anugerah Langkawi

Anugerah Langkawi bagi tahun 2003 telah dimenangi oleh Puan Khadijah Abdul Rahman, Pengarah Yayasan Anak Warisan Alam (YAWA) yang juga merupakan seorang ahli pengasas Yayasan tersebut. Pemenang wanita yang pertama ini telah dipilih berdasarkan usaha-usaha gigih dan komitmen beliau dalam menanam dan memupuk semangat cintakan dan menghargai alam sekitar di kalangan kanak-kanak dan remaja.

Anugerah Langkawi menyediakan hadiah berupa wang tunai berjumlah RM10,000.00, sebuah plak penghargaan dan sijil penghargaan yang ditandatangani oleh D.Y.M.M. Seri Paduka Baginda Yang di-Pertuan Agong Tuanku Syed Sirajuddin Putra Jamalullail.

Pameran Bertemakan Alam Sekitar

Pada tahun 2003, Jabatan Alam Sekitar telah menyertai 11 pameran utama sebagai salah satu usaha kebangsaan untuk mempromosi dan meningkatkan kesedaran alam sekitar.

- Lawatan Duli Yang Maha Mulia Seri Paduka Baginda Yang di-Pertuan Agong ke Kementerian Sains, Teknologi dan Alam Sekitar pada 17 Mac 2003, Putrajaya.
- Kempen Minggu Keselamatan DRB HICOM pada 28-30 April, Shah Alam, Selangor.
- Pesta Sains Semulajadi pada 30 Mei-9 Jun 2003, Pusat Sains Negara, Bukit Kiara, Kuala Lumpur.
- Hari Bersama Pelanggan Jabatan Alam Sekitar pada 12 Julai 2003, Putrajaya.
- EXPO S&T pada 7-9 Ogos 2003, PWTC, Kuala Lumpur.
- "Conference: The Role of Women", pada 19 Ogos 2003, Selangor.

Langkawi Award

The 2003 Langkawi Award was presented to Puan Khadijah Abdul Rahman, the Founder Member and Director of the Children's Environmental Heritage Foundation (YAWA). As the first women recipient, she was chosen for her commitment and tireless effort to instill love and appreciation for nature and environment among young children and youth.

The Langkawi Award 2003 consisted of a cash prize of RM10,000.00, a Plaque and a Certificate signed by D.Y.M.M. Seri Paduka Baginda Yang di-Pertuan Agong Tuanku Syed Sirajuddin Putra Jamalullail.

Environmental Exhibitions

In 2003, DOE was invited to take part in 11 major exhibitions as part of the overall national effort to promote and inculcate greater environmental awareness.

- Exhibition in conjunction with the official visit of D.Y.M.M. Seri Paduka Baginda Yang di-Pertuan Agong to the Ministry of Science, Technology and the Environment, Putrajaya, 17 March 2003.
- DRB HICOM Safety Week Campaign on 28-30 April, Shah Alam, Selangor.
- Natural Science Festival, 30 May-9 June 2003 at Pusat Sains Negara, Bukit Kiara, Kuala Lumpur.
- DOE's Client Day, 12 July 2003 at Putrajaya.
- EXPO S&T, 7-9 August 2003 at PWTC Kuala Lumpur.
- Conference: The Role of Women, 19 August 2003 at Selangor.

- Hari Bersama Pelanggan Jabatan Alam Sekitar pada 13 September 2003, Putrajaya.
- DOE's Client Day, 13 September 2003 at Putrajaya.
- Bulan Sains dan Teknologi pada 24-28 September 2003, Plaza Angsana, Johor Baharu, Johor.
- Science and Technology Month, 24-28 September 2003 at Plaza Angsana, Johor Bahru, Johor.
- Hari Bersama Pelanggan MOSTE pada 11 Oktober 2003, Lembaga Perlesenan Tenaga Atom, Selangor.
- MOSTE Client Day, 11 October 2003 at the Atomic Energy Licensing Board, Selangor.
- Minggu Alam Sekitar Malaysia 2003 pada 18-24 Oktober 2003, Kluang, Johor.
- Malaysian Environment Week 2003, 18-24 October 2003 at Kluang, Johor.
- East Asian Seas Congress 2003 pada 6-13 Disember 2003, Putrajaya.
- East Asian Seas Congress 2003, 6-13 December 2003 at Putrajaya.

Kuiz Kesedaran Alam Sekitar

Jabatan Alam Sekitar dengan kerjasama Radio 1 dan Radio Muzik RTM telah mengadakan Program Kuiz Kesedaran Alam Sekitar. Kuiz untuk pendengar Radio 1 diadakan pada jam 3.30-4.00 setiap petang Khamis manakala kuiz melalui sistem pesanan ringkas (SMS) untuk pendengar Radio Muzik diadakan lima (5) kali seminggu iaitu dari hari Isnin hingga Jumaat. Setiap minggu satu topik alam sekitar khusus akan dibincangkan.

Environmental Awareness Quiz

In collaboration with RTM Radio 1 and Radio Music, the Department of Environment, organised a Radio Environmental Awareness Quiz Programme for listeners every Thursday, between 3.30 p.m-4.00 p.m on Radio 1. Each week a specific environmental topic of public interest would be discussed. On Radio Music, Short Messaging System (SMS) contests were organised every Monday to Friday.



Gambarfoto 6.8 : Permainan 'Keep Recyclables in Mind'
Photo 6.8 : 'Keep Recyclables in Mind' Game



Gambarfoto 6.9 : Kempen Kitar Semula Bateri Telefon
Bimbit Terpakai
Photo 6.9 : Awareness Campaign: Recycling

Pertandingan Kad Kreatif Alam Sekitar

Jabatan Alam Sekitar dengan kerjasama Stesen Radio Muzik telah meneruskan penganjuran pertandingan kad-kad ucapan berbentuk kad kreatif yang bertemakan alam sekitar. Pemenang pertama menerima wang tunai sebanyak RM500.00, kedua sebanyak RM300.00, ketiga RM200.00. Sepuluh hadiah saguhati bernilai RM100.00 setiapnya turut disediakan.

Maklumat Alam Sekitar

Terdapat peningkatan sebanyak 32% dalam jumlah bahan-bahan bercetak pada tahun 2003 selaras dengan peningkatan usaha-usaha kesedaran alam sekitar. Sejumlah 446,000 naskhah bahan-bahan bacaan alam sekitar seperti Laporan Kualiti Alam Sekeliling 2002, Laporan Tahunan Jabatan Alam Sekitar 2002, buku kecil, Majalah ERA Hijau dan IMPAK, brosur dan laporan telah diterbitkan.

Environmental Creative Card Competition

The Department of Environment and Radio Music Station jointly organised a Creative Card Competition for radio listeners involving the creative designing of greeting cards with environmental messages which were read out over the air. The first prize winner received a prize of RM500.00, the second RM300.00 and the third RM200.00. Ten consolation prizes of RM100.00 each were also awarded.

Dissemination of Environmental Information

The demand for printed environmental information increased by 32% in 2003, as more efforts were expended to raise environmental awareness. A total of 446,000 copies of environmental reading materials were generated such as the Environmental Quality Report 2002, the 2002 Department of Environment Annual Report, Handbooks, ERA Hijau magazines, IMPAK magazines, brochures, leaflets and reports.

Bahan-bahan bercetak tersebut diedarkan kepada pelbagai agensi Kerajaan, perpustakaan-perpustakaan, pusat rujukan, institusi pendidikan, persatuan bukan kerajaan, individu yang termasuk dalam senarai mel Jabatan dan pelawat-pelawat serta pelajar-pelajar institut pengajian tinggi. (Rajah 6.1)

Maklumbalas-Pertanyaan

Jabatan Alam Sekitar telah menerima sebanyak 1,421 pertanyaan pada tahun 2003 melalui pos, e-mel utama JAS dan pengguna-pengguna perpustakaan (Rajah 6.2). Pada tahun yang sama juga terdapat peningkatan dalam jumlah pertanyaan sebanyak 10% jika dibandingkan dengan tahun sebelumnya. Jenis-jenis maklumat yang dipohon adalah mengenai status kualiti air dan udara, pembakaran terbuka, garis panduan penilaian impak alam sekitar, aduan tentang pencemaran udara, pelupusan bahan terjadual, tumpahan minyak, bau busuk, marin, pelupusan haram, penipisan lapisan ozon, ISO 14001, status air bawah tanah, pelabelan-eko dan maklumat umum tentang kualiti alam sekitar.

Perkhidmatan Perpustakaan-Enviro

Perpustakaan-Enviro yang terletak di Ibu Pejabat Jabatan Alam Sekitar berfungsi sebagai pusat rujukan bukan sahaja kepada kakitangan Jabatan tetapi juga kepada orang awam dan para pelajar yang berdaftar sebagai pengguna.

Sehingga 31 Disember 2003, koleksi bahan rujukan adalah sebanyak 25,224. Bilangan pengguna perpustakaan telah meningkat kepada 1,240 (27%) orang berbanding dengan 973 orang pada tahun sebelumnya (Rajah 6.3). 84% daripada pengguna perpustakaan adalah pelajar-pelajar, sama seperti tahun sebelumnya (Rajah 6.4).

The printed materials were distributed to various government agencies, libraries and reference centres, educational institutions, non-governmental organizations, individuals as listed in DOE's mailing list and to visitors and students from Institutions of Higher Learning. (Figure 6.1).

Query-Response

The Department of Environment received a total of 1,421 queries in 2003 through the post, e-mail and from library users, an increase of 10% compared to 2002 (Figure 6.2). The type of information sought after were those pertaining to air and water quality status of specific locations, clarification on open burning, environmental impact assessment guidelines, public complaints, guidelines and assistance for disposal of scheduled wastes, oil spill incidents, noise and odour control, marine pollution, illegal dumping of wastes, ozone depletion substances, ISO 14001 procedure, groundwater quality, eco-labeling and general information on the state of the environment.

Enviro-Library Services

The Enviro-Library located at the Department of Environment Head Office served as a Reference Centre for not only the staff of the Department of Environment but also the public and students who are registered users.

As of 31 December 2003, the entire collection of reference materials totalled 25,224. The number of library users increased 27% to 1,240 compared to 973 in 2002 (Figure 6.3); 84% of library users in 2003 were students, similar to that of previous years (Figure 6.4).



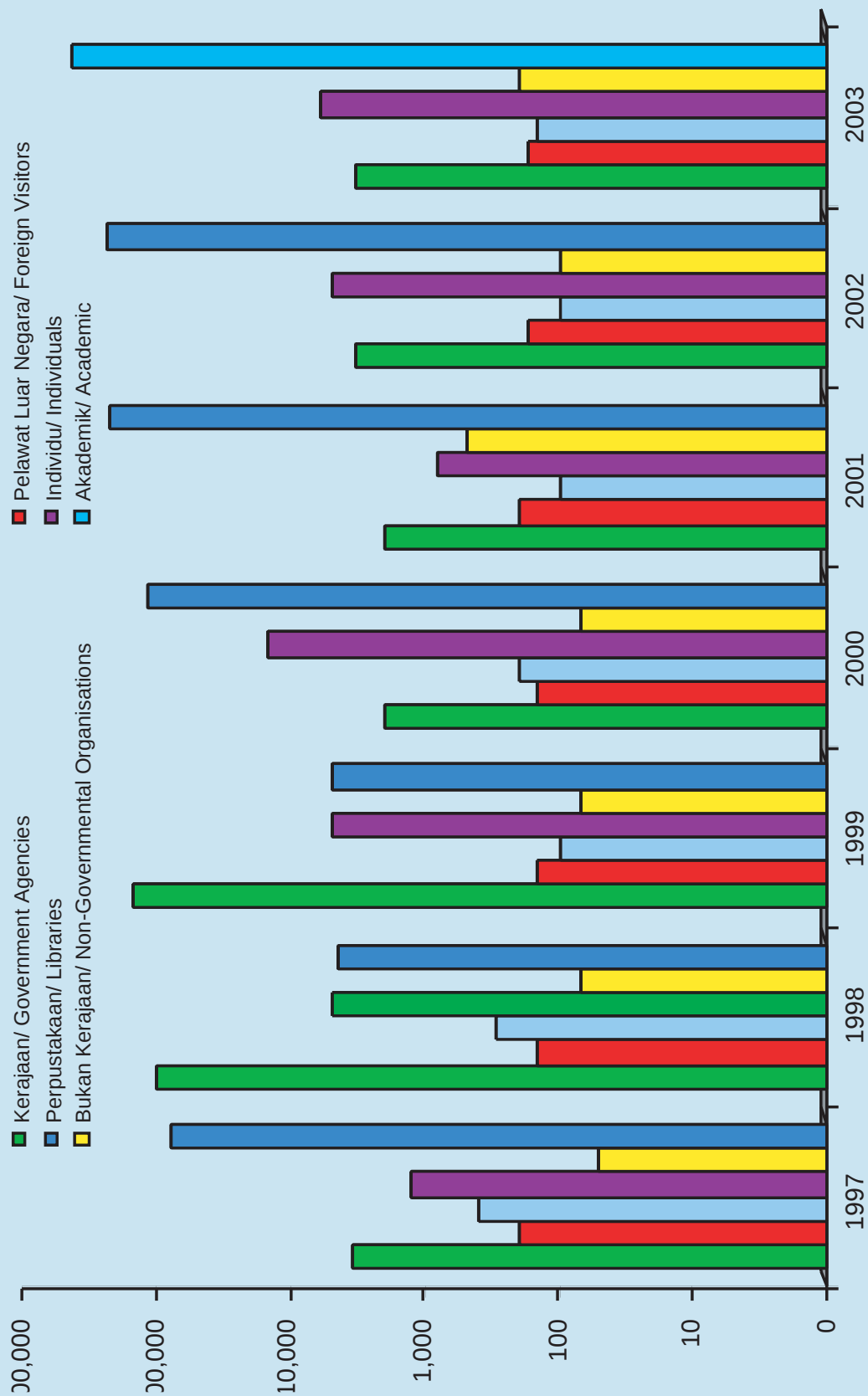
Gambarfoto 6.10 : Aktiviti Kem Alam Sekitar : Denai Buta
Photo 6.10 : Env. Camp Activity : Blind Trail



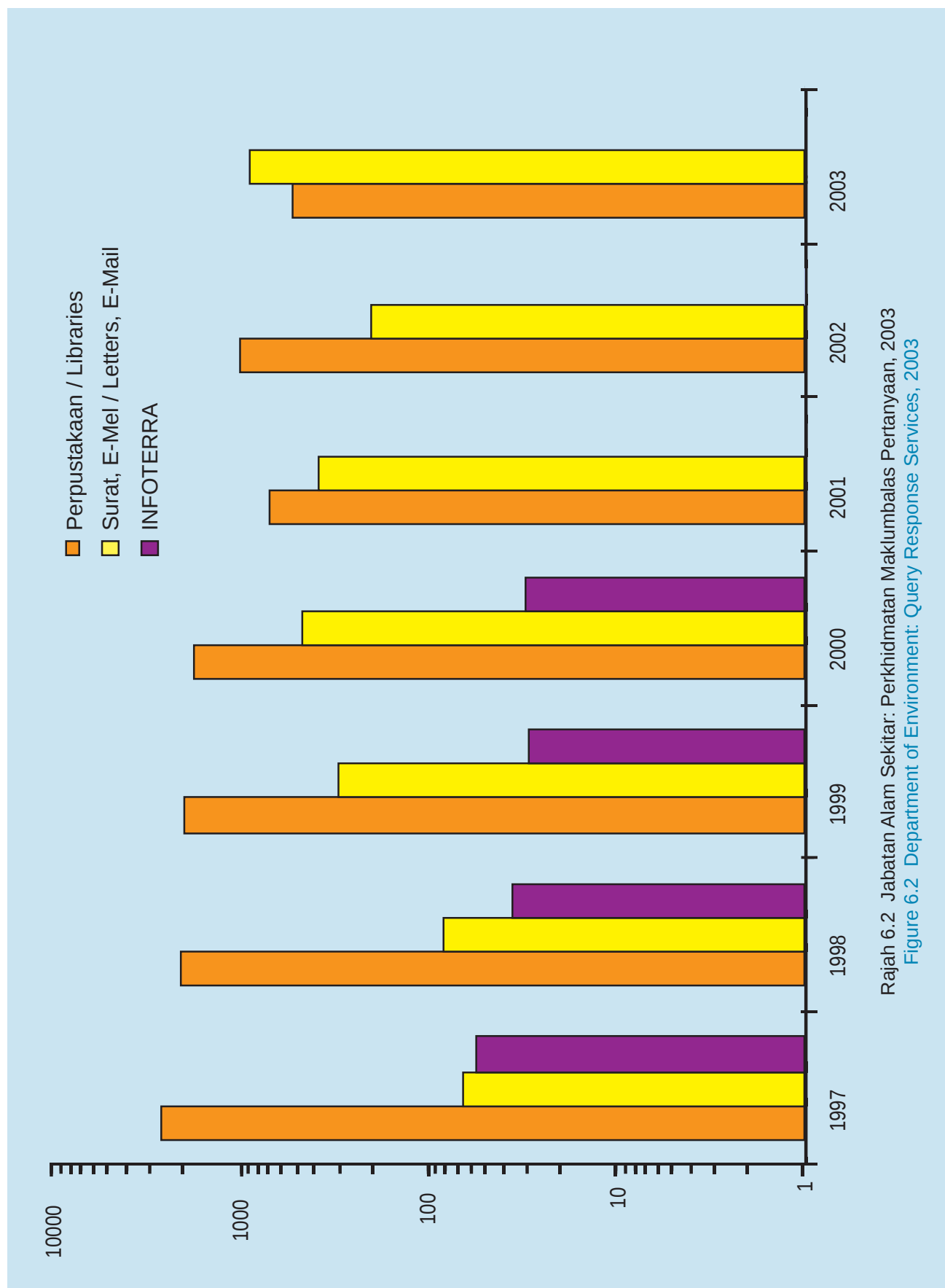
Gambarfoto 6.11 : Aktiviti Kem Alam Sekitar : Kajian Hutan
Photo 6.11 : Env. Camp Activity : Forest/Nature Study



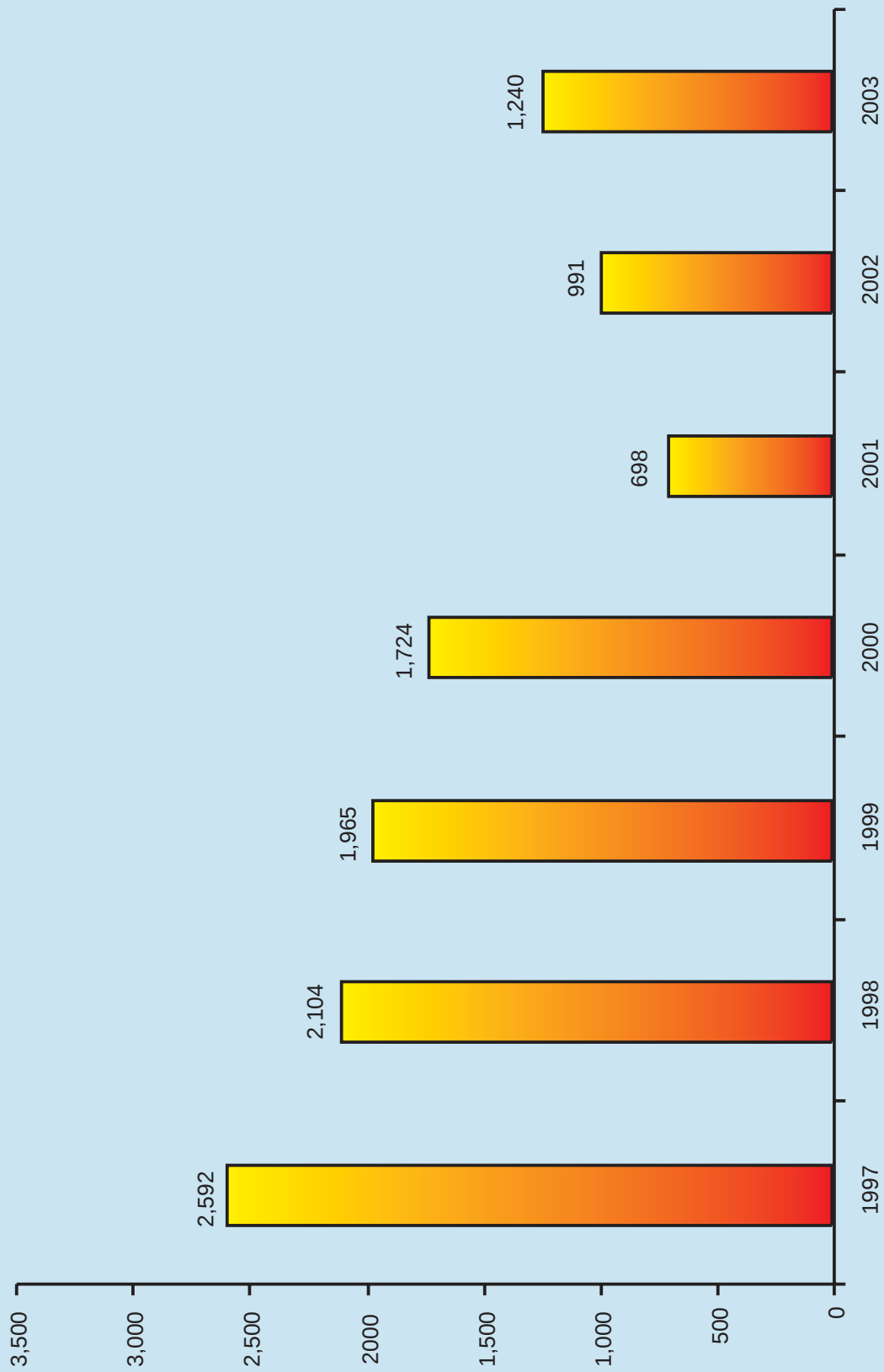
Gambarfoto 6.12 : MASM 2003 : Alam Semulajadi di Taman Negara Endau-Rompin
Photo 6.12 : MASM 2003 :Pristine Endau-Rompin National Park



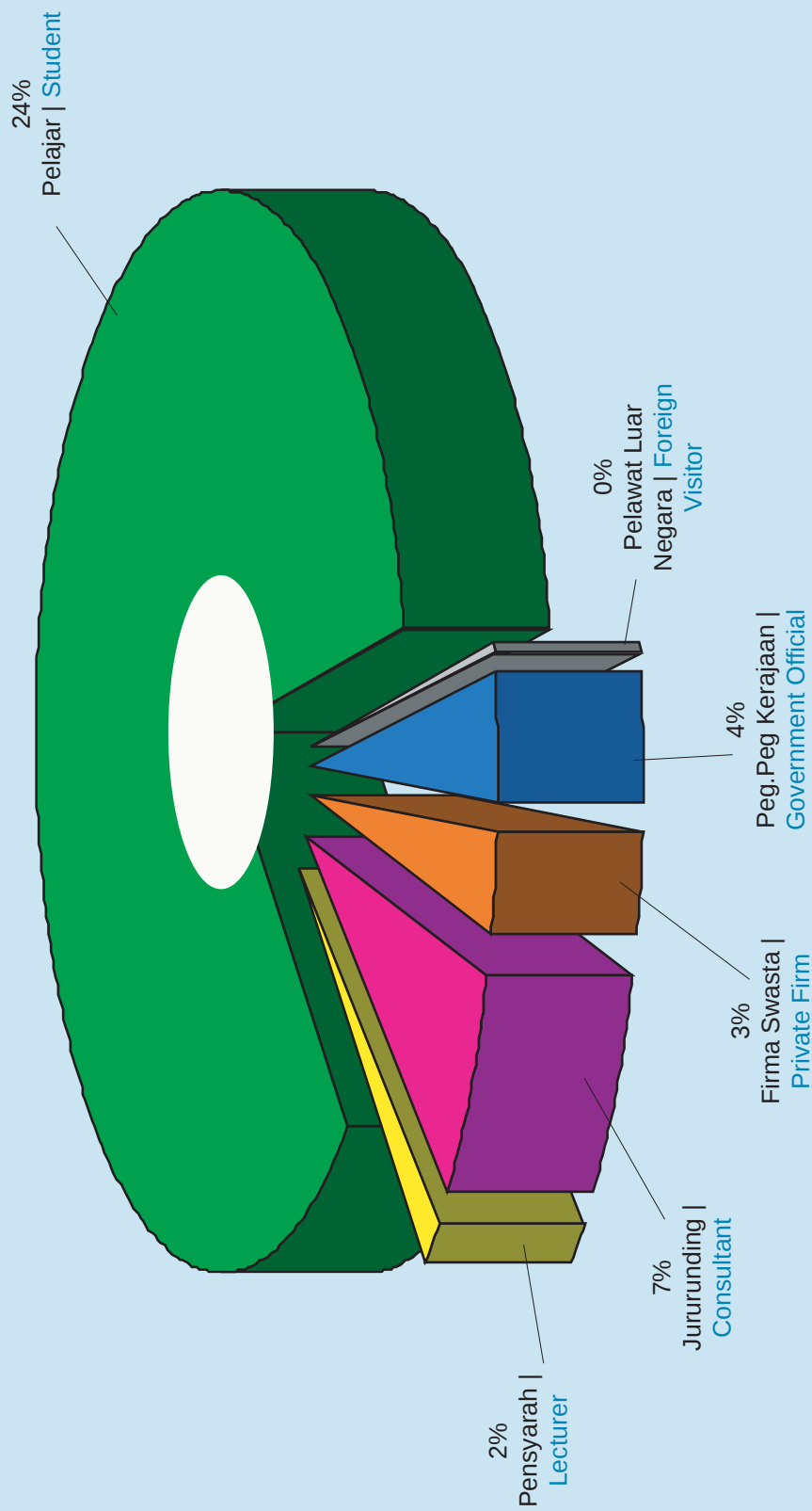
Rajah 6.1 Jabatan Alam Sekitar : Kategori Penerima Terbitan-Terbitan Alam Sekitar, 2003
Figure 6.1 Department of Environment : Category of Recipients of Environmental Information, 2003



Rajah 6.2 Jabatan Alam Sekitar: Perkhidmatan Maklumbalas Pertanyaan, 2003
Figure 6.2 Department of Environment: Query Response Services, 2003



Rajah 6.3 Jabatan Alam Sekitar: Bilangan Pengguna Perpustakaan, 2003
Figure 6.3 Department of Environment: Number of Library Users, 2003



Rajah 6.4 Jabatan Alam Sekitar: Pengguna-Pengguna Perpustakaan Jabatan Alam Sekitar Mengikut Kategori 2003
Figure 6.4 Department of Environment: Category of Library Users, 2003

Jabatan
Alam Sekitar



BAB / CHAPTER 7



Department of
Environment



HAL EHWAL ANTARABANGSA

KERJASAMA SERANTAU

Mesyuarat Kumpulan Kerja ASEAN mengenai Sub-Regional Fire Fighting Arrangements (SRFAs) untuk Sumatera dan Borneo

Mesyuarat ke-13 Kumpulan Kerja ASEAN mengenai SRFAs telah diadakan di Jambi, Sumatera, Indonesia pada 31 Julai 2003 -1 Ogos 2003 dan telah dihadiri oleh wakil-wakil dari Brunei Darussalam, Indonesia, Malaysia dan juga wakil dari Sekretariat ASEAN, Projek *SEA-Fire Danger Rating System*, *EU-Forest Liaison Bureau*, *Projek EU-South Sumatera Forest Fire Management*, *Global Environment Centre (GEC)*, *Projek JICA Forest Fire Prevention Management*, *Haze Prevention Group* dan *Program Wetlands International-Indonesia*.

Laporan mengenai Kejadian Kebakaran dan Jerebu dan Ramalan Kajicuaca oleh *ASEAN Specialised Meteorological Centre (ASMC)* di Singapura dan Langkah-Langkah Pencegahan dan Persediaan Musim Kering telah dibentangkan oleh wakil negara SRFAs terbabit. Perbincangan mengenai tindakan susulan Mesyuarat ke-20 Kumpulan Tindakan Teknikal Jerebu (HTTF) dan Mesyuarat Menteri-Menteri ASEAN mengenai Jerebu yang ke-10 telah juga diadakan. Sekretariat ASEAN telah melaporkan mengenai projek kerjasama ASEAN berkaitan Jerebu Merentasi Sempadan dan Simulasi Latihan Bencana Kebakaran dan Jerebu yang pertama (*SRFA Fire and Haze Disaster Simulation Exercise*) yang telah diadakan di Jakarta sebelum mesyuarat di Jambi.

Mesyuarat juga telah meluluskan rangka kerja Bengkel Garispanduan Pelaksanaan Polisi ASEAN mengenai Pembakaran Sifar. Bengkel tersebut telah dipersetujui diadakan di Malaysia pada tahun 2004. Deraf Garis Panduan Pelaksanaan Amalan Pembakaran Terkawal oleh Indonesia telah

INTERNATIONAL ENVIRONMENT AFFAIRS

REGIONAL COOPERATION

ASEAN Working Groups on Sub-Regional Fire Fighting Arrangements (SRFAs) for Sumatera and Borneo

The 13th SRFA Meeting was held in Jambi, Sumatera, Indonesia on 31 July 2003-1 August 2003 and was attended by delegates from Brunei Darussalam, Indonesia, Malaysia and representatives from the ASEAN Secretariat, the SEA-Fire Danger Rating System Project, the EU-Forest Liaison Bureau, EU-South Sumatera Forest Fire Management Project, Global Environment Centre (GEC), JICA Forest Fire Prevention Management Project, the Haze Prevention Group and Wetlands International-Indonesia Programme.

Reports of Fire and Haze Occurrence and Meteorological forecast by the ASEAN Specialised Meteorological Centre (ASMC) in Singapore and Preventive Measures and Readiness for the Dry Season were presented by the respective SRFA members. Discussion on follow-up actions arising from the 20th Haze Technical Task Force (HTTF) Meeting and the 10th Asean Ministerial Meeting on Haze (AMMH) also took place. The ASEAN Secretariat reported on the status of ASEAN Cooperative Projects on Transboundary Haze and SRFA Fire and Haze Disaster Simulation Exercise which was carried out in Jakarta prior to the Jambi meeting.

The meeting also endorsed the outline for the conduct of a Workshop on Guidelines for the Implementation of the ASEAN Policy on Zero Burning which was to be conducted in Malaysia. The draft Guidelines for Implementation of Controlled Burning Practices by Indonesia was also presented at the meeting. It was

dibentangkan pada mesyuarat tersebut. Mesyuarat juga bersetuju untuk mengadakan mesyuarat ke-14 di Malaysia pada tahun 2004.

SRFA Fire And Haze Disaster Table-top Exercise

Simulasi *SRFA Fire and Haze Disaster Table-top Exercise* yang pertama telah diadakan pada 29 Julai 2003 di Kementerian Alam Sekitar Indonesia, Jakarta. Latihan tersebut telah dihadiri oleh wakil-wakil Brunei Darussalam, Indonesia, Malaysia dan Singapura. Wakil dari Sekretariat ASEAN dan UN-OCHA turut mengambil bahagian. Latihan diadakan bertujuan untuk menguji keberkesanan mekanisme penyelarasan dan komunikasi di kalangan negara ahli SRFA. Ia merangkumi sesi latihan untuk komunikasi, penyelarasan dan rangkaian arahan yang merupakan komponen utama dalam maklumbalas kecemasan di bawah Perjanjian ASEAN mengenai Pencemaran Jerebu yang Merentasi Sempadan. Ia juga merupakan mekanisme yang telah digariskan dalam *SRFA Standard Operating Procedure (SOP)*. sebelum simulasi latihan. Latihan tersebut telah menguji keberkesanan SOP dan telah memberi peluang kepada para peserta untuk memperbaiki kelemahan dalam SOP.

agreed that the 14th SRFA of Meeting be held in Malaysia in 2004.

SRFA Fire And Haze Disaster Table-top Exercise

The first *SRFA Fire and Haze Disaster Table-top Exercise* was held on 29 July 2003 at the Ministry of Environment, Indonesia in Jakarta. The exercise was attended by representatives from Brunei Darussalam, Indonesia, Malaysia and Singapore. Representatives from the ASEAN Secretariat and UN-OCHA also participated in the exercise. The exercise was designed to test the coordination and communication mechanism among SRFA member countries. It included hands-on sessions for communication, coordination and chain of command which were vital components for Joint Emergency Response under the ASEAN Agreement on Transboundary Haze Pollution as well as the mechanism outlined in the *SRFA Standard Operating Procedure (SOP)*. The exercise tested the effectiveness of the SOP and provided participating countries an opportunity to further refine any weaknesses in the SOP. The second Table-top Exercise would be conducted in Malaysia in 2004.



Gambarfoto 7.1 : Kongres *East Asian Seas*: Pembukaan Rasmi Oleh Y.B Menteri Sains, Teknologi dan Alam Sekitar

Photo 7.1 : *East Asian Seas Congress*: Opening Ceremony by the Hon. Minister of Science, Technology and the Environment



Gambarfoto 7.2 : Perasmian Pameran Persidangan PEMSEA 2003 Oleh Tetamu Kehormat

Photo 7.2 : Dignitaries Launching PEMSEA Exhibition during EAS Conference 2003

KERJASAMA DUA HALA

Malaysia-Thailand

1. Mesyuarat Pegawai Tinggi Malaysia-Thailand mengenai Sains, Teknologi dan Alam Sekitar (SOMSTE)

Mesyuarat keenam SOMSTE telah diadakan pada 16-17 Julai 2003 di Bangkok, Thailand merangkumi kawasan yang berpotensi untuk kerjasama dua hala :

- Bioteknologi
- Bioteknologi dan Alam Sekitar
- Metrologi
- *Advanced Materials*
- *Remote Sensing* dan Teknologi Maklumat
- Sains dan Teknologi Pertahanan.

Mengenai isu yang berkaitan alam sekitar, SOMSTE mempertimbangkan :

- Isu alam sekitar yang membabitkan Malaysia dan Thailand yang memerlukan usaha bersama untuk menanganinya;
- Perancangan dan pelaksanaan program bersama yang memberi faedah kepada kedua pihak dalam mengurangkan pencemaran dan memperbaiki kualiti alam sekitar;
- Kerjasama dua hala dalam pengurusan pencemaran merentasi sempadan seperti jerebu dan pembuangan bahan bahaya;
- Menjalankan program latihan bersama, pertukaran maklumat dan perkongsian pengalaman mengenai pengurusan alam sekitar.

BILATERAL COOPERATION

Malaysia-Thailand

1. Malaysia-Thailand Senior Officials Meeting on Science, Technology and the Environment (SOMSTE)

The Sixth Malaysia-Thailand SOMSTE Meeting was held on 16-17 July 2003 in Bangkok, Thailand and discussed the following potential areas for bilateral cooperation :

- Biotechnology
- Environment and Biotechnology
- Metrology
- Advanced Materials
- Remote Sensing and Information Technology
- Defence Science and Technology.

On the subject of Environment, SOMSTE deliberated on the following :

- Collaborative efforts to deal with environmental issues of concern to both Malaysia and Thailand;
- Planning and execution of collaborative programmes of mutual benefit to reduce pollution and enhance the quality of the environment;
- Bilateral cooperation in managing transboundary pollution such as haze and illegal trafficking of hazardous wastes;
- Conducting joint training programmes, exchange of information and sharing of experience on environmental management relevant to both countries.

Tiga (3) kertas kerja yang telah dibentangkan oleh waki JAS ialah:

- Laporan Program Kualiti Sungai Golok;
- Pengawalan Pencemaran Udara; dan
- Projek Saluran Paip LPG Trans Thailand-Malaysia - Perspektif Alam Sekitar.

Susulan dari SOMSTE, satu mesyuarat dua hala telah diadakan antara Y.B. Menteri Sains, Teknologi dan Alam Sekitar Malaysia dengan Menteri Sains, Teknologi dan Alam Sekitar Thailand.

2. Lawatan Siswazah Sarjana Prince of Songkla University, HatYai, Thailand

Seramai 12 orang siswazah sarjana dari Jabatan Kesihatan Alam Sekitar, Universiti Prince of Songkla, Hatyai telah melawat Jabatan Alam Sekitar pada 8 Ogos 2003. Delegasi telah diberi taklimat mengenai aspek polisi alam sekitar, perancangan dan pentadbiran, pengurusan alam sekitar termasuk pengurusan bahan berbahaya, air dan udara dan EIA. Delegasi juga telah melawat Kualiti Alam Sdn. Bhd., di Bukit Nanas, Negeri Sembilan.

Malaysia-Denmark

Seramai 40 orang siswazah dari Malaysia dan Denmark telah melawat Jabatab Alam Sekitar pada 22 Januari 2003. Para pelajar dari Kursus Bersama MUCED-DUCED telah diberi taklimat mengenai penglibatan awam dalam Polisi Alam Sekitar.

Malaysia-Vietnam

Lapan (8) orang pegawai tinggi Vietnam termasuk Timbalan Menteri Pertanian dan Pembangunan Desa telah melawat JAS pada 3 Julai 2003. Tujuan lawatan ialah untuk mempelajari mengenai pengurusan kebakaran hutan dan pencemaran udara merentasi sempadan. Pegawai dari Jabatan Bomba dan Penyelamat turut memberi taklimat.

Three (3) papers were presented by the DOE representatives at the meeting:

- Report on Golok River Water Quality Monitoring Programme;
- Air Pollution Control;
- The Trans Thailand-Malaysia LPG Pipelines Project - Environmental Perspective.

Pursuant to the SOMSTE, a bilateral meeting was held between H.E. Minister of Science, Technology and Environment of Malaysia and H.E. Minister of Science, Technology and Environment of Thailand.

2. Visit of Graduate Students from Prince of Songkla University, HatYai, Thailand

A group of 12 graduate students from the Department of Environmental Health, University of Prince Songkla, Hatyai visited Department of Environment on 8 August 2003. The delegation was briefed on the National Environmental Policy, Environment Planning and Management which included hazardous wastes management, water and air management, and EIA. The group visited Kualiti Alam Sdn. Bhd., at Bukit Nanas, Negeri Sembilan.

Malaysia-Denmark

A group of 40 graduate students from Malaysia and Denmark visited the Department of Environemt on 22 January 2003 under the auspices of MUCED-DUCED Joint Training Project.

Malaysia-Vietnam

Eight senior officials including the Deputy Minister of Agriculture and Rural Development of Vietnam visited DOE on 3 July 2003. The purpose of the visit was to learn more about forest fire management and transboundary haze pollution. A representative from the Fire and Rescue Department gave a briefing on forest fire management in Malaysia.

Malaysia-Taiwan

Satu delegasi seramai 35 orang dari Pusat Alam Sekitar, Teknologi Pembangunan Keselamatan dan Kesihatan dan Penyelidikan Teknologi Industri Taiwan telah melawat Jabatan Alam Sekitar pada 29 September 2003. Delegasi telah diberi taklimat mengenai peruntukan dan keperluan alam sekitar untuk pelabur luar negara di Malaysia.

KERJASAMA ANTARABANGSA**Senior Government Officials' Meeting (SGOM) on the Sustainable Development Strategy for the Seas of East Asia**

Mesyuarat berkenaan telah diadakan pada 4-5 Ogos 2003 di Pattaya, Thailand. Mesyuarat telah membincangkan serta membuat ulasan terhadap draf *Sustainable Development Strategy for the Seas of East Asia* (SDS-SEA) dan Deklarasi Putrajaya. Dokumen-dokumen ini akan dibentangkan untuk persetujuan Menteri-menteri dari 12 buah Negara (Brunei, Kemboja, Indonesia, Malaysia, Filipina, Singapura, Taiwan, Vietnam, China, Jepun, Korea Selatan dan Korea Utara) pada Ministerial Forum ketika East Asian Seas Congress 2003 pada 8-12 Disember 2003 di Putrajaya, Malaysia.

9th Programme Steering Committee (PSC) Meeting for the GEF/UNDP/IMO Regional Programme on the East Asian Seas

Mesyuarat berkenaan telah diadakan pada 6-9 Ogos 2003 di Pattaya, Thailand. Negara terlibat telah melaporkan tentang Laporan Kemajuan Kebangsaan berkenaan *Integrated Coastal Management* (ICM). Turut dibincangkan ialah strategi dan pendekatan bagi pelaksanaan *East Asian Sea Congress* 2003 di Malaysia.

Malaysia-Taiwan

A delegation of 35 members from the Centre for Environment, Safety and Health Technology Development and Industrial Technology Research Institute of Taiwan (CESH/ITRI) paid a one day visit to the Department of Environment on 29 September 2003. The delegates were briefed on the environmental requirements for investors in Malaysia.

INTERNATIONAL COOPERATION**Senior Government Officials' Meeting (SGOM) on the Sustainable Development Strategy for the Seas of East Asia**

The Meeting was held on 4-5 August 2003 in Pattaya, Thailand. The Meeting discussed and reviewed the draft Sustainable Development Strategy for the Seas of East Asia (SDS-SEA) and the Putrajaya Declaration to be presented for the approval of the Ministers from 12 participating countries (Brunei, Cambodia, Indonesia, Malaysia, Philippines, Singapore, Thailand, Vietnam, China, Japan, South Korea and North Korea) at the Ministerial Forum during the East Asian Seas Congress on 8-12 December 2003 in Putrajaya, Malaysia.

9th Programme Steering Committee (PSC) Meeting for the GEF/UNDP/IMO Regional Programme on the East Asian Seas

The Meeting was held on 6-9 August 2003 in Pattaya, Thailand. Participating countries presented their National Progress Report on Integrated Coastal Management (ICM). The meeting also discussed the preparation for The East Asian Seas Congress to be held in Malaysia in 2003.

Kongres Laut Asia Timur 2003: Pelaksanaan Serantau Komitmen WSSD untuk Laut Timur Asia, 8-12 Disember 2003, Putrajaya, Malaysia

Kongres Laut Asia Timur 2003 yang dianjurkan bersama IMO/PEMSEA dan Pertubuhan-pertubuhan Antarabangsa serta bantuan logistik dari Jabatan Alam Sekitar Malaysia telah diadakan pada 8-12 Disember 2003. Seramai 429 peserta mengambil bahagian, 115 adalah dari Malaysia sementara yang lainnya dari 32 negara luar. Kongres merangkumi :

- Forum Peringkat Menteri mengenai Pembangunan Mapan Laut Timur Asia (12 Disember).
- Persidangan Antarabangsa mengenai Pembangunan Mapan Laut Timur Asia : Ke arah Era Baru Kerjasama dan Perkongsian Serantau (8-11 Disember).
- Acara Sampingan:
 - Forum Ketiga Rangkaian Serantau Kerajaan Serantau dalam Melaksana Pengurusan Pantai Bersepadu.
 - Forum Media mengenai Perkongsian Dalam Komunikasi Alam Sekitar.
 - Mesyuarat Kumpulan Pakar Pelbagai Disiplin.
 - Mesyuarat Meja Bulat Pelaburan Alam Sekitar.

Objektif Forum Peringkat Menteri mengenai Pembangunan Mapan Laut Timur Asia (12 Disember) ialah:

- Untuk mengumpulkan pembuat dasar peringkat atasan bagi membincang keadaan alam sekitar serantau dan sumber asli.
- Untuk mengadakan dialog mengenai pembangunan mapan pantai dan laut.
- Untuk mendapat persetujuan ke atas rangka kerja tindakan bersama bagi Laut Asia.

The East Asian Seas Congress 2003: "Regional Implementation of the WSSD Commitments for the Seas of East Asia", 8-12 December 2003, Putrajaya

The East Asian Seas Congress 2003 organised by IMO/PEMSEA and international organisations and with local logistic support from the Department of Environment Malaysia was held on 8-12 December 2003. A total of 429 participants took part of which 115 were Malaysians while the rest of the participants were from 32 other nations. The Congress featured;

- The Ministerial Forum on the Sustainable Development of the Seas of East Asia (12 December 2003).
- The International Conference on the Sustainable Development of the East Asian Seas: Towards a New Era of Regional Collaboration and Partnerships (8-11 December 2003).
- Side Events:
 - The 3rd Forum of the Regional Network of Local Governments (RNLG) Implementing Integrated Coastal Management.
 - Media Forum on Partnerships in Environmental Communication.
 - Multidisciplinary Experts' Group (MEG) Meeting.
 - Environmental Investments Round Table.

The objectives of The Ministerial Forum on the Sustainable Development of the Seas of East Asia were:

- To bring together East Asia's top level policymakers to discuss the state of the region's environment and natural resources.
- To have dialogue on the sustainable development of coasts and ocean.
- To agree on a common framework of actions for the East Asian Seas.

12 orang Menteri dari negara Pantai Laut Asia Timur telah menandatangani Deklarasi Putrajaya mengenai Kerjasama Serantau untuk Pembangunan Mapan Laut Timur Asia. Para Menteri tersebut adalah dari Negara Brunei Darussalam, Kemboja, Republik Rakyat China, DPR Korea, Indonesia, Japan, Malaysia, Filipina, Republik Korea, Singapura, Thailand dan Vietnam.

Persidangan Antarabangsa telah diadakan pada 8-11 Disember. Objektifnya ialah untuk menemukan pihak yang berkepentingan, pembuat dasar, ahli ekonomi, wakil Pertubuhan Bukan Kerajaan, wakil media, ahli akademik, sektor awam dan swasta- bagi membincangkan cara untuk memperkukuhkan kerjasama serantau dan berusaha ke arah mencapai pembangunan mapan pantai dan laut Laut Timur Asia.

Persidangan menumpukan kepada dua tema:

- Mengkaji semula Usaha Kebangsaan dan Antarabangsa Ke arah Menangani Masalah Utama Yang Berkaitan Laut Asia Timur.
- Pendekatan Merentasi Sektor yang Utama Ke arah Mencapai Pembangunan Mapan.

Lapan (8) bengkel telah diadakan secara serentak. Penceramah tempatan dan luar negara turut membentangkan kertas kerja pada bengkel-bengkel tersebut. Pameran bertemakan: 'Kerjasama dan Perkongsian Serantau untuk Pembangunan Mapan Laut dan Pantai, telah diadakan sempena persidangan.

Twelve Ministers from coastal States of the East Asian region signed the Putrajaya Declaration for Regional Cooperation for the Sustainable Development of the Seas of East Asia. The Ministers were from Brunei Darussalam, Cambodia, PR China, DPR Korea, Indonesia, Japan, Malaysia, Philippines, RO Korea, Singapore, Thailand and Vietnam.

The International Conference was held on 8-11 December 2003. The primary objective was to bring together stakeholders, policy-makers, economists, environmental and natural resource managers, Non-Governmental Organisations' representatives, media, practitioners, academicians, civil society and the private sector to discuss ways to strengthen regional collaboration and work towards achieving sustainable coastal and ocean development for the Seas of East Asia.

The Conference focussed on two themes:

- Review of International and National Efforts Towards Addressing the Main Sectoral Concerns Regarding the Seas of East Asia.
- Essential Cross-Sectoral Approaches Towards Achieving Sustainable Development.

Eight (8) concurrent workshop sessions were organised. International and local speakers presented papers during the workshops. Exhibits on the theme: 'Regional Collaboration and Partnerships for the Sustainable Development of Coasts and Oceans' were also set up during the Conference.

Menteri Sains, Teknologi dan Alam Sekitar telah menjadi tuan rumah persidangan. Jabatan Alam Sekitar juga telah menyediakan kemudahan logistik. Penganjur bersama persidangan adalah: *Global Environmental Facility*, Program Pembangunan Bangsa-bangsa Bersatu, Pertubuhan Maritim Antarabangsa, Program Pembangunan Bangsa-bangsa Bersatu-*Global Programme of Action for the Protection of Marine Environment from Land Based Activities*, *Ship and Ocean Foundation* dan *WorldFish Centre*.

The Conference was hosted by the Ministry of Science, Technology and the Environment. Logistic support was provided by the Department of Environment, Malaysia. Co-organisers of the Conference included the Global Environmental Facility; the United Nations Development Programme; the International Maritime Organisation; the United Nations Development Programme-Global Programme of Action for the Protection of Marine Environment from Land-Based Activities; Ship and Ocean Foundation and WorldFish Centre.



Gambarfoto 7.3 : Majlis Menandatangani deklarasi Putrajaya Mengenai 'Sustainable Development for the Seas of East Asia'
Photo 7.3 : The Signing Ceremony of the Putrajaya Declaration on Sustainable Development for the Seas of East Asia

Jabatan
Alam Sekitar



BAB / CHAPTER 8



Department of
Environment



BAHAGIAN TEKNOLOGI MAKLUMAT

Bahagian Teknologi Maklumat (BTM) selaku titik fokus di dalam mengendalikan pembangunan ICT untuk keseluruhan Jabatan Alam Sekitar (JAS) bertanggungjawab dalam melaksanakan perolehan, membangunkan sistem aplikasi, meningkatkan perkhidmatan talian internet dan latihan pengguna sebagai pemangkin di dalam mencapai wawasan untukserta misi keseluruhan Jabatan Alam Sekitar.

Bahagian Sistem Maklumat telah ditukar nama menjadi Bahagian Teknologi Maklumat mulai September 2002. (Jadual 8.1 dan Rajah 8.1).

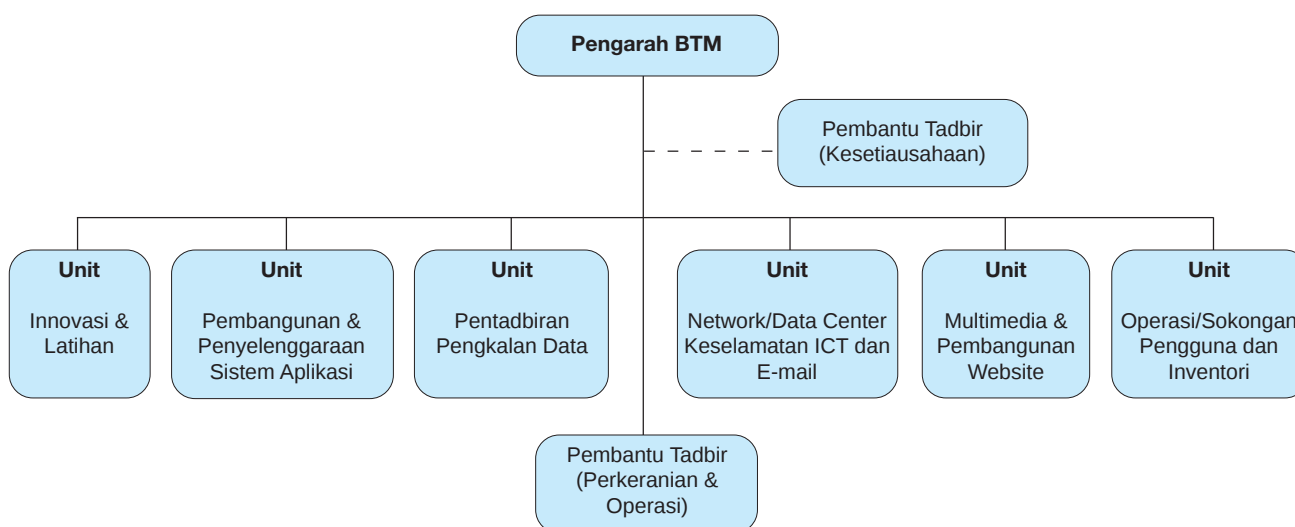
INFORMATION TECHNOLOGY DIVISION

The Information Technology Division (ITD) as a focal point for ICT development activities of DOE is responsible for the procurement, application systems development, improvement of the level of internet service and end-user training to achieve the overall vision and mission of the Department of Environment.

The Information System Division was renamed the Information Technology Division in September 2002. (Table 8.1 and Figure 8.1).

Jadual 8.1 Jabatan Alam Sekitar: Personel Bahagian Teknologi Maklumat, JAS
Table 8.1 Department of Environment: Staffing of DOE Information Technology Division

PERJAWATAN POST		IBUPEJABAT HEAD OFFICE	NEGERI STATE	EiMAS	JUMLAH TOTAL
PSM	F48	1	-	-	1
	F41	6	-	1	7
PPSM	F32	2	-	-	2
	F29	11	12	1	24
JK	FT17	2	-	-	2
OMPD	F14	1	-	-	1
	F11	7	28	2	37
JUMLAH TOTAL		30	40	4	74



Rajah 8.1 Jabatan Alam Sekitar: Carta Organisasi Bahagian Teknologi Maklumat (September 2002)
Figure 8.1 Department of Environment: Organisation Chart of Information Technology Division (September 2002)

Perolehan Perkakasan dan Perisian ICT

Perolehan perkakasan ICT adalah bertujuan untuk mewujudkan suasana kerja ICT yang cemerlang melalui teknologi ICT yang terkini yang dapat memenuhi keperluan semua pegawai dan kakitangan Jabatan Alam Sekitar. (Jadual 8.2).

Procurement of ICT Hardware and Software

The primary objective of ICT hardware procurement is to create a conducive ICT working environment through state-of-the art technology and to render professional ICT support to meet the requirements of DOE's officers. (Table 8.2).

Jadual 8.2 Jabatan Alam Sekitar: Perkakasan ICT
Table 8.2 Department of Environment: Hardware ICT

PERKAKASAN HARDWARE	1999		2000		2001		2002		2003		BILANGAN NUMBER
	M	S	M	S	M	S	M	S	M	S	
Server	22	-	4	-	5	-	1	-	-	-	32
Komputer Computer	31	-	82	-	25	-	190	-	40	50	418
Pencetak Printer	30	-	31	-	9	-	20	-	-	30	120
Switches/Hub	15	-	-	-	15	-	-	-	5	-	30
Pengimbas Scanner	-	-	-	-	23	-	-	-	-	-	23
Notebooks	1	-	33	-	12	-	18	-	-	-	64
Firewalls	-	-	1	-	1	-	-	-	-	-	2

Bagi menjamin prestasi perkakasan yang optima, pelbagai jenis sistem perisian dan aplikasi telah digunakan dalam operasi harian Bahagian Teknologi Maklumat, Jabatan Alam Sekitar (Jadual 8.3).

In order to ensure optimal performance of hardware, several commercial software applications that are rated highly in the ICT market had been deployed to enhance the daily operations of DOE's Information Technology Division (Table 8.3).

Jadual 8.3 Jabatan Alam Sekitar: Perisian Komersial Yang Digunakan
Table 8.3 Department of Environment: Commercial Software Used

Bil. NO	JENIS TYPE
1	Crystal Report
2	Oracle 9i Internet APP Unlimited User (Ent.Edition)
3	Oracle 9i Internet APP wireless Edition Unlimited User (Ent.Edition)
4	MS-Exchange Server Ent 2000
5	MS-Exchange 2000 CAL All Language
6	MS-Windows 2000 Advanced Server for Dual Processor
7	MS- Windows 2000 CAL English
8	Arcview 8.1 and ArcView Spatial Analyst Ext.
9	PC-DUO Enterprise
10	Veritas Backup Exec for Win NT and Win 2000
11	Veritas NetBackup Professional
12	Zone Alarm Pro
13	Antivirus Trend Micro Netsuite
14	Norton antivirus for MS Exchange
15	Antivirus Norton System Work Professional 2002
16	Microsoft Content Management Server

UNIT PENGURUSAN ICT DAN KESELAMATAN

Secara ringkas, unit ini bertanggungjawab untuk memberi perkhidmatan sokongan kepada kakitangan Jabatan Alam Sekitar bagi menyelesaikan permasalahan dalam penggunaan perkakasan, perisian, sistem aplikasi serta memastikan keselamatan integriti sistem rangkaian ICT.

Selain itu, unit ini juga bertanggungjawab dalam memberi kesedaran tentang penggunaan ICT serta memberi latihan pengenalan asas penggunaan sistem operasi dan perisian berciri "*office automation*" kepada kakitangan JAS.

Pelbagai aduan yang diterima daripada pengguna direkod dan disimpan untuk tujuan pemulihan meningkatkan keupayaan Bahagian Teknologi Maklumat.

Penggunaan E-mel Di Jabatan Alam Sekitar

Terdapat peningkatan yang positif dalam penggunaan e-mel rasmi Jabatan iaitu sebanyak 1,112 akaun. Penggunaan e-mel adalah penting dalam tugas-tugas harian kerana ia mampu menyebarkan maklumat dengan pantas dan cekap.

Pengurusan Virus Di Rangkaian JAS-Net

Tahun 2003 merupakan tahun yang banyak sekali menghadapi cabaran dalam penyenggaraan keselamatan ICT Bahagian Teknologi Maklumat. Virus cecacing *Blaster* dan *Sobig* yang telah mengejutkan pengguna IT di seluruh dunia telah turut menyerang rangkaian JAS-Net pada bulan Ogos 2003. Bahagian Teknologi Maklumat telah mengambil langkah-langkah pemulihan yang segera untuk menyelesaikan masalah ini dengan mengemaskini sistem operasi dan antivirus di setiap komputer di JAS.

ICT MANAGEMENT AND SECURITY UNIT

This unit is basically responsible to provide supporting services to DOE staff such as solving problems associated with malfunctioning of hardware and software application systems. It is also responsible for security and system integrity.

Apart from the above, it is also responsible to ensure the use of ICT technology and provide basic user training on application systems for office automation.

Client complaints were recorded and reviewed periodically to ensure remedial action and improve the ICT division's credibility.

E-mail Usage of Department of Environment

The number of e-mail users of DOE increased tremendously to 1112 accounts in 2003. The use of e-mail in daily work was important to deliver information accurately and speedily.

Virus Management in JAS-Net Network

In 2003, the ICT world was traumatised by virus threats from sources such as the Blaster and Sobig worms. The DOE network was also attacked by these viruses and immediate action was taken to overcome these problems.

SISTEM EKAS III (Sistem Kawalan Alam Sekitar)

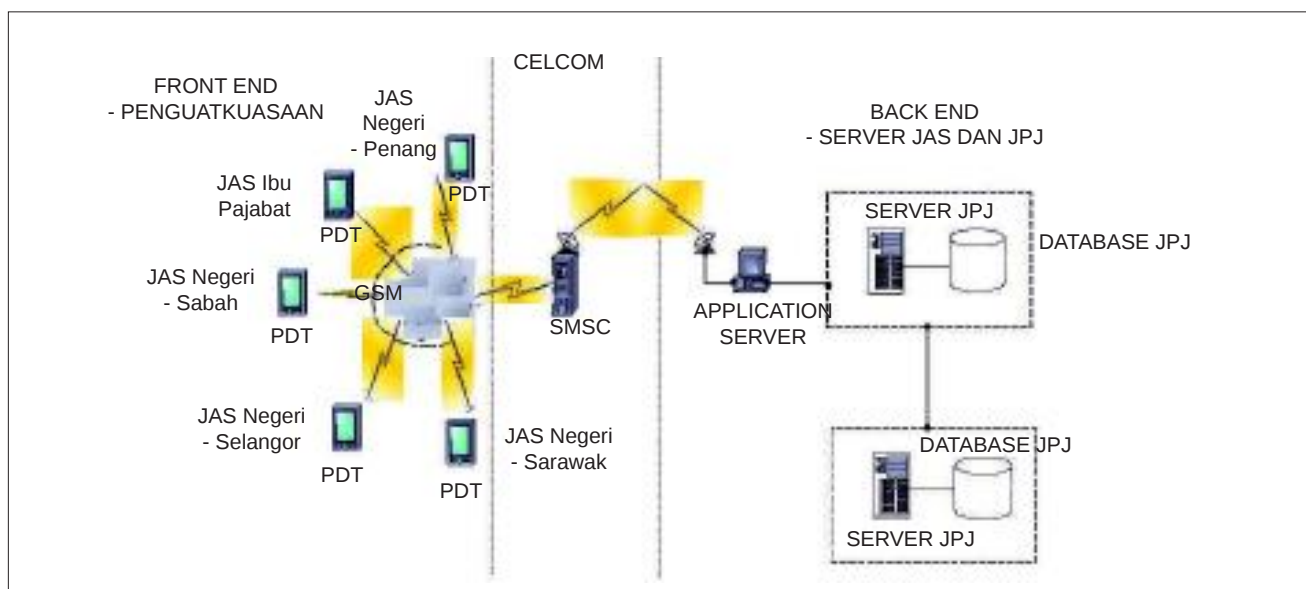
Terdapat dua sistem di bawah EKAS III iaitu Sistem VEMIS dan Sistem Inventori.

- Sistem VEMIS (*Vehicle Emission Monitoring Information System*); dan
- Sistem VEMIS yang dibangunkan bagi penguatkuasaan tahap asap dan bunyi kenderaan. Sistem tersebut kini di peringkat 70% pembangunan. Senibina rangkaian adalah seperti di Rajah 8.2.

EKAS III System

There are two main systems under EKAS III, namely VEMIS System and Inventory System.

- VEMIS System(*Vehicle Emission Monitoring Information System*)
- The VEMIS system is dedicated for the enforcement of smoky and noisy vehicles. The development of this system reached 70% completion in 2003. The system network architecture is shown in Figure 8.2.



Rajah 8.2 Jabatan Alam Sekitar: Senibina Rangkaian VEMIS
Figure 8.3 Department of Environment: VEMIS Network Architecture

Sistem Inventori

Sistem Inventori adalah bertujuan untuk mengawal selia segala peralatan dan hartamilik kepunyaan Jabatan Alam sekitar iaitu Harta Modal, Aset dan Stok Gunahabis. Sistem ini kini di peringkat 80% pembangunan.

Inventory System

The inventory system is focused on the control of inventory and DOE's ICT assets. In 2003, the system's development reached 80% completion and its status was monitored regularly.

Sistem Perpustakaan Satelit (SPS)

Sistem ini adalah perluasan daripada Sistem ILMU yang digunakan oleh JAS. Menerusi SPS, semua JAS negeri diberi kemudahan untuk merekod bahan rujukan, menjalankan proses penkatalogan dan daftar keahlian di negeri masing-masing. Sistem ini telah digunakan sejak Disember 2003.

Portal Jabatan Alam Sekitar

Jabatan Alam Sekitar (JAS) telah membangunkan laman web rasmi sebagai satu kaedah untuk menyalurkan maklumat yang berkaitan dengan alam sekitar kepada orang ramai. Laman web JAS ini yang telah dibangunkan dengan menggunakan perisian pengurusan maklumat atau *content management server* telah dilancarkan pada bulan Mac, 1999.

Portal Jabatan Alam Sekitar dibangunkan dengan memberi penekanan kepada aplikasi, pangkalan data dan sistem. Ia mempunyai ciri single window access di mana Portal JAS bertindak sebagai *gateway* yang menghubungkan sistem-sistem lain di Jabatan Alam Sekitar seperti EKAS, Sistem Perpustakaan, LAW Net dan sebagainya. Kemudahan sistem yang *user friendly* menggalakkan warga JAS menggunakan portal ini.

Pembangunan Portal Jabatan Alam Sekitar adalah berdasarkan kepada beberapa modul aplikasi seperti dalam Rajah 8.3. Antara modul aplikasi ini adalah profil Jabatan, Akta Kualiti Alam Sekeliling 1974, kajian pengguna, laman web JAS Negeri, buletin dan penerbitan JAS, tempahan bilik-bilik mesyuarat, borang-borang alam sekitar, audio/video dan sebagainya.

Satelite Library System(SPS)

The SPS is an enhancement package of System ILMU currently used by DOE. This web based system allows DOE's State users to update book reference, cataloging and membership registration. The SPS system had been in use since December 2003.

Department of Environment Portal

The Department of Environment official portal was developed as a channel to provide environmental information to the public. The web base which was developed using Content Management Server was launched since March 1999.

The Department of Environment portal had been developed with emphasis on its application, database and system capabilities. It had a unique feature of a single window access and a gateway connecting it to other systems such as EKAS, the Library System, Law Net etc.

The content of the DOE portal was developed based on several modules as shown in Figure 8.3 below. Some of the application modules were: the Organisational Profile of Department of Environment; Environment Quality Act 1974; User's Utilization Monitoring; State Department of Environment websites; Department of Environment Bulletin and Publications; meeting rooms' reservations and related environmental forms, audio/visuals etc.



Rajah 8.3 Jabatan Alam Sekitar: Kandungan Portal
Figure 8.3 Department of Environment: Content of Portal

Portal JAS juga mempunyai kemudahan-kemudahan lain seperti *web mail*, profil personel yang dikemaskini, *knowledge management*, *search engine*, maklumat Penilaian Tahap Kecekapan dan pautan ke laman web lain yang berkaitan.

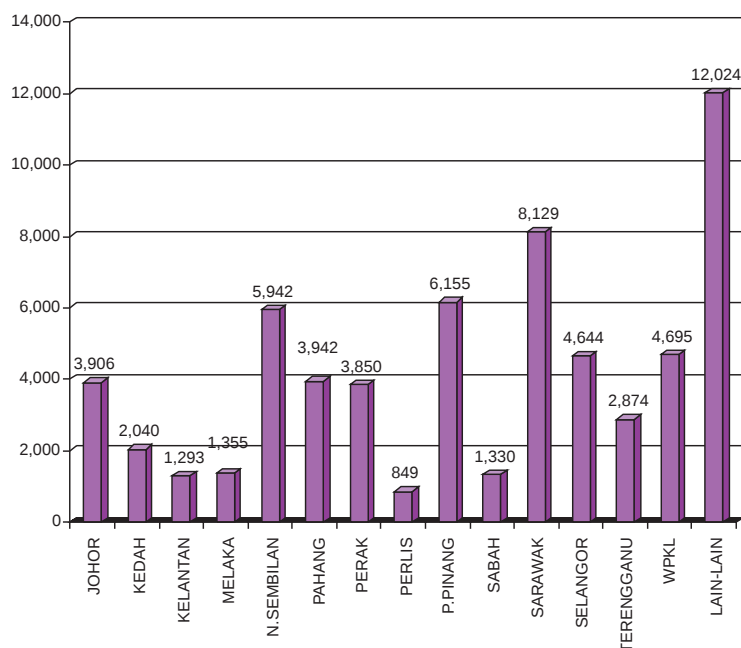
DOE's Portal also had facilities such as web mail, updated personnel profile, knowledge management, search engine, competency evaluating related information and links to other related websites.

Portal JAS telah dilancarkan secara *soft launch* pada 15 Ogos 2003 dan boleh dicapai melalui URL: <http://www.jas.sains.my> (Rajah 8.4). Dari 2 September 2003 sehingga 31 Disember 2003, jumlah pelawat yang telah mengunjungi Portal JAS telah melebihi 63,000 pelawat. (Rajah 8.5).

The soft launch of DOE's Portal was on 15 August 2003, at URL: <http://www.jas.sains.my> (Figure 8.4). From 2 September 2003 until 31 December 2003, more than 63,000 hits were recorded. (Figure 8.5).



Rajah 8.4 Jabatan Alam Sekitar: Portal Jabatan Alam Sekitar (Muka Depan)
Figure 8.4 Department of Environment: DOE Portal (Front Page)



Rajah 8.5 Jabatan Alam Sekitar: Statistik Pelawat Portal JAS
Figure 8.5 Department of Environment: DOE Portal Visitors' Statistics

Senarai Program

Latihan IT dalaman adalah seperti ditunjukkan di Jadual 8.4.

Kolokium ICT

Dua jenis program latihan yang melibatkan pegawai dan kakitangan Ibu Pejabat JAS, MOSTE dan Jabatan Standard telah diadakan. Tajuk kolokium adalah “Self-guarding Your Desktop Computer” dan “Protect Your PC”.

Training Programme

In-House IT Training Program is as shown in Table 8.4.

ICT Colloquium

Two in-house training programs were held for the staff of DOE (Head Office), MOSTE and the Department of Standard. The colloquium topics included “Self Guarding Your Desktop Computer” and “Protect Your PC”.

Jadual 8.4 Jabatan Alam Sekitar: Program Latihan IT Dalaman
Table 8.4 Department of Environment: In-House IT Training Program

Bil. NO	KURSUS COURSES	PESERTA PARTICIPANTS
1	Kursus E-kawalan Alam Sekitar I (E-KAS I)	PPSM Negeri
2	Kursus Content Management Server	PSM & PPSM
3	Kursus E-Kawalan Alam Sekitar II (E-KAS II) - Sistem Filing / Sistem Kontigensi	PSM, PPSM & PK
4	Kursus Crystal Report	PSM & PPSM
5	Kursus Satelite Library	Pegawai mengendalikan perpustakaan

Mesyuarat Pembangunan ICT

Mesyuarat Pembangunan ICT telah berjaya diadakan sebanyak tiga (3) kali dalam tahun 2003. Tujuan mesyuarat ini adalah untuk membincangkan masalah-masalah yang berkaitan dengan pembangunan ICT di JAS Negeri dan Ibu Pejabat serta membincangkan segala tindakan dan keputusan yang diambil bagi setiap JAS negeri ke arah memantapkan lagi pengurusan ICT di JAS seluruh Malaysia.

Seminar Pembangunan ICT

Seminar Pembangunan ICT telah diadakan di Langkawi pada tahun 2003 untuk membincangkan pelaksanaan ICT dan isu-isu yang berkaitan dengan pembangunan ICT di seluruh Pejabat-Pejabat Jabatan Alam Sekitar.

ICT Development Meeting

The meeting was held thrice in 2003. The main objective of the meeting was to discuss problems and actions taken in the area of ICT development activities for State DOE offices as well as the Head Office.

ICT Development Seminar

An ICT Development Seminar was held in Langkawi in 2003 to discuss implementation issues pertaining to ICT development activities.

Jabatan
Alam Sekitar



BAB / CHAPTER 9



Department of
Environment



INSTITUT ALAM SEKITAR MALAYSIA (EiMAS)

Program latihan 2003 merangkumi sebahagian besarnya kursus-kursus dalam perkhidmatan yang bertujuan untuk meningkatkan kecekapan dan kompetensi kakitangan tentang kerja mereka. Buat pertama kalinya juga, kursus Induksi Khusus untuk pegawai-pegawai baru yang bertujuan memberi pendedahan kepada aspek etika dalam perkhidmatan awam, bidang tugas dan tanggungjawab Jabatan Alam Sekitar telah dilaksanakan di EiMAS.

Program Latihan Dalam Jabatan

Bagi tahun 2003, Seksyen Pembangunan Kurikulum EiMAS membahagikan kursus-kursus yang dilaksanakan kepada lapan kategori utama iaitu:

- i. Pengurusan Alam Sekitar Dan Penilaian Impak Persekitaran;
- ii. Prinsip Rekabentuk Dan Fungsi Sistem Kawalan Pencemaran;
- iii. Penguatkuasaan dan Undang-Undang Alam Sekitar;
- iv. Pengawasan Kualiti Alam Sekitar;
- v. Pengurusan Am, Pentadbiran Dan Kewangan;
- vi. Teknologi Maklumat Dan Komunikasi;
- vii. Peningkatan Pencapaian Diri;
- viii. Penilaian Tahap Kecekapan Di bawah SSM.

Sebanyak 55 program latihan telah berjaya dilaksanakan oleh Seksyen Pembangunan Kurikulum EiMAS yang melibatkan keseluruhan 271 hari dalam tahun 2003.

ENVIRONMENT INSTITUTE OF MALAYSIA (EiMAS)

EiMAS training programme included mainly in-service training courses to upgrade the skill and competency level of Department of Environment's officers and staff. In 2003, for the first time, EiMAS conducted induction courses for newly-appointed officers covering work ethics in public service and the roles and responsibilities of the department.

In House Training Programme

In 2003, the Curriculum Development Section of EiMAS categorised training courses into eight main categories :

- i. Environmental Management And Impact Assessment;
- ii. Design Principles And Pollution Control System;
- iii. Environmental Legislations And Enforcement;
- iv. Environmental Quality Monitoring;
- v. Management, Administration And Finance;
- vi. Information And Communication Tecnology;
- vii. Self Improvement;
- viii. Competency Level Assessment Under SSM.

Fifty five (55) training courses were successfully carried out by the Curriculum Development Section of EiMAS which took up 271 training days in the year 2003.

Program latihan ini merangkumi program latihan yang dirancang serta secara ad-hoc iaitu atas pandangan pihak pengurusan terdapat keperluan segera untuk diadakan program latihan tersebut.

Jumlah keseluruhan peserta dari Jabatan Alam Sekitar yang telah mengikuti program latihan yang dianjurkan oleh EiMAS adalah seramai 1,326 orang. EiMAS juga telah menganjurkan kursus Penilaian Tahap Kecekapan Di bawah SSM iaitu PTK 4 dan PTK 6 yang melibatkan peserta dari agensi lain terutamanya agensi dari Kementerian Sains, Teknologi dan Alam Sekitar iaitu seramai 102 orang peserta.

Pada dasarnya, kumpulan sasaran bagi pelaksanaan program kursus yang dirancang adalah untuk pegawai-pegawai dari Jabatan Alam Sekitar, agensi-agensi berkaitan dan juga pihak industri. (Jadual 9.1).

Selain daripada kursus tersebut yang telah dilaksanakan, Seksyen Pembangunan Kurikulum EiMAS juga telah mengadakan beberapa siri ceramah/kolokium yang bertujuan mempertingkatkan pengetahuan pegawai JAS dalam bidang pengurusan alam sekitar, keselamatan, penguatkuasaan, teknologi bersih dan budaya membaca. (Jadual 9.2).

Dalam melaksanakan program latihan ini pelbagai pendekatan telah diambil bagi memastikan program latihan yang dirancang dapat dilaksanakan selaras dengan objektifnya bagi setiap kursus yang hendak diadakan. Selain daripada menggunakan kemahiran dan kepakaran yang ada dikalangan anggota Jabatan Alam Sekitar, terdapat juga program yang dilaksanakan secara kerjasama dengan beberapa agensi yang lain yang diketahui mempunyai kepakaran serta kemahiran yang diperlukan dalam subjek tersebut. Antara agensi Kerajaan yang

These courses conducted were inclusive of planned courses as well as courses identified by the management as urgently needed.

The overall number of DOE participants who attended such courses at EiMAS was 1,326. EiMAS also organised the Competency Level Assessment Courses Under SSM for Grade 54 (PTK 6) and Grade 48 (PTK 4) officers which involved 102 participants from other government agencies especially from the Ministry of Science, Technology and the Environment.

Basically, the planned training programme target groups were DOE officers, related agencies and also from the industries. (Table 9.1).

Apart from the courses that had been conducted, the Curriculum Development Section of EiMAS also organised a series of talks/colloquiums to upgrade and enhance the knowledge of DOE's officers on environmental management, safety, enforcement, cleaner technology and reading culture. (Table 9.2).

Various approaches were identified to ensure that the planned training programmes were conducted in line with the objective of each course. Apart from engaging senior and experienced Department of Environment officers to give lectures in these courses, some courses were conducted with the cooperation of other agencies that had expertise and skills needed in certain subjects. Other government agencies that were invited to provide training in specific subjects were the Institut Latihan Kehakiman dan Perundangan (ILKAP), Pejabat Keselamatan Jabatan Perdana

membantu dalam menjayakan program latihan ini adalah seperti Institut Latihan Kehakiman dan Perundangan (ILKAP), Pejabat Keselamatan Jabatan Perdana Menteri, Jabatan Perkhidmatan Awam, Kementerian Kewangan dan pejabat Jabatan Alam Sekitar Negeri.

Program Latihan Luar Jabatan

Sepanjang tahun 2003, EiMAS telah menyelaraskan penyertaan 19 orang pegawai dalam lima (5) program latihan anjuran lain-lain agensi dalam negara seperti dalam Jadual 9.3. Selain itu, hanya empat (4) orang pegawai telah menghadiri tiga (3) program latihan di luar negara (Jadual 9.4).

Program Kerjasama Dengan Pakar-pakar Tempatan

Dalam tahun 2003, kursus asas sains dan kejuruteraan telah dianjurkan dengan kerjasama UKM yang melibatkan 45 orang pegawai Jabatan Alam Sekitar yang layak untuk kenaikan pangkat dan menggalakkan mereka meningkatkan profesionalisme masing-masing.

Menteri, the Public Services Department, the Ministry of Finance and the Department of Environment State Offices.

External Training Programme

Throughout 2003, EiMAS facilitated the participation of 19 DOE officers in 12 local training courses organised by other agencies (Table 9.3). Four (4) officers attended three (3) overseas training courses (Table 9.4).

Collaboration With Local Expertise

In 2003, a two week course on basic science and engineering was conducted with the cooperation of Universiti Kebangsaan Malaysia for 45 DOE officers due for promotion as well as to upgrade their professionalism and competency.

Jadual 9.1 Jabatan Alam Sekitar: Kursus Latihan Dalaman, 2003
Table 9.1 Department of Environment: In-House Training Courses, 2003

KATEGORI KURSUS COURSES CATEGORY	BIL. KURSUS NO. OF COURSES	PESERTA JAS DOE PARTICIPANTS	PESERTA LUAR EXTERNAL PARTICIPANTS	BIL. HARI LATIHAN TRAINING DAYS
Pengurusan Alam Sekitar dan Penilaian Impak Persekitaran Environmental Management And Impact Assessment	15	289	-	40
Prinsip Rekabentuk dan Fungsi Sistem Kawalan Pencemaran Design Principles And Pollution Control System Functions	9	265	3	36

Jadual 9.1 Jabatan Alam Sekitar: Kursus Latihan Dalaman, 2003 (samb)
 Table 9.1 Department of Environment: In-House Training Courses, 2003 (cont)

KATEGORI KURSUS COURSES CATEGORY	BIL. KURSUS NO. OF COURSES	PESERTA JAS DOE PARTICIPANTS	PESERTA LUAR EXTERNAL PARTICIPANTS	BIL. HARI LATIHAN TRAINING DAYS
Penguatkuasaan dan Undang-Undang Alam Sekitar Environmental Legislation And Enforcement	7	157	-	30
Pengawasan Kualiti Alam Sekitar Environmental Monitoring	3	102	4	10
Pengurusan Am, Pentadbiran dan Kewangan Management, Administration And Finance	9	291	-	79
Teknologi Maklumat dan Komunikasi Information And Communication Technology	6	125	-	22
Peningkatan Pencapaian Diri Self Improvement	4	73	-	14
Penilaian Tahap Kecekapan Di bawah SSM Competency Level Assessment Under SSM	2	24	102	40
JUMLAH TOTAL	55	1,326	109	271

Jadual 9.2 Jabatan Alam Sekitar: Senarai Kolokium, 2003
Table 9.2 Department of Environment: List of Colloquiums, 2003

BIL NO.	TAJUK TOPICS	TARIKH DATES	PENCERAMAH SPEAKER
1.	Penguatkuasaan Daripada Perspektif Jabatan Kastam Malaysia Enforcement From The Perspective of Customs Department Malaysia	18 Julai 2003 18 July 2003	Pengarah Jabatan Kastam Negeri Sembilan Director, Custom Department Negeri Sembilan
2.	Budaya Membaca Sempena Bulan Membaca	26 Julai 2003 26 July 2003	Dr. H.M. Tuah Iskandar
3.	Environmental Management Systems And Environmental Audit	30 Ogos 2003 30 August 2003	Dr. Chong Hock Guan, GMP Environmental Consultants
4.	Application Of Yeast Technology On Wastewater Treatment	22 Disember 2003 22 December 2003	Nishihara Environment Technology Sdn. Bhd./ Earthcare Environment Tech. Sdn. Bhd.

Jadual 9.3 Jabatan Alam Sekitar: Kursus Latihan Dalaman yang Dihadiri oleh Pegawai-Pegawai JAS, 2003
Table 9.3 Department of Environment: In-Country External Training Courses Attended by DOE Officers, 2003

BIL NO.	TAJUK TOPICS	BIL. KURSUS YANG DIHADIRI NO. COURSES ATTENDED	PESERTA JAS DOE PARTICIPANTS
1.	Perundangan dan Penguatkuasaan Law and Enforcement	1	1
2.	Pengurusan Alam Sekitar Environmental Management	3	10
3.	Pengurusan Bahan Buangan Waste Management	3	3
4.	Pengurusan Sumber Manusia Human Resources Management	2	2
5.	Keselamatan dan Kesihatan Safety and Health	3	3
JUMLAH TOTAL		12	19

Jadual 9.4 Jabatan Alam Sekitar: Kursus Latihan Luar Negara yang Dihadiri oleh Pegawai-Pegawai JAS, 2003
Table 9.4 Department of Environment: Overseas Training Courses Attended by DOE Officers, 2003

BIL NO.	TAJUK TOPICS	PENGANJUR ORGANISER	TEMPAT VENUE	PESERTA JAS NO. OF DOE PARTICIPANTS
1.	Automobile & Environment	JICA	JAPAN	1
2.	JICA-KOICA Joint Program On Restoration Of Freshwater Environment By Eco-Sound Technology	JICA-KOICA	JAPAN/KOREA	2
3.	Training Workshop On Biodiversity & Natural Resources	UNESCAP/UNEP	THAILAND	1
	JUMLAH TOTAL			4

Jabatan
Alam Sekitar



BAB / CHAPTER 10



Department of
Environment



TEKNOLOGI KAWALAN DAN TEKNOLOGI BERSIH

Pendahuluan

Pada tahun 2003, Unit Pengeluaran Bersih (*Cleaner Production - CP Unit*) adalah terdiri daripada lima (5) orang pegawai iaitu seorang Ketua Penolong Pengarah, dua (2) orang pegawai kawalan, seorang penolong Pegawai Kawalan Kanan dan seorang Penolong Pegawai Kawalan. Dengan pertambahan pegawai-pegawai ini unit pengeluaran bersih dibahagi kepada dua (2) unit kecil iaitu, Unit Promosi dan Unit Audit CP. Penstrukturan semula pegawai-pegawai di Jabatan Alam Sekitar ini membolehkan program/aktiviti pengeluaran bersih ditumpukan kepada sektor industri di Malaysia dengan lebih giat lagi.

Aktiviti-aktiviti utama unit ini adalah seperti berikut:

A. Program Promosi dan Kesedaran Pengeluaran Bersih

Program promosi dan kesedaran pengeluaran bersih terbahagi kepada dua (2) iaitu:

- i. Penganjuran kursus/latihan/seminar/bengkel;
- ii. Penyebaran maklumat berkaitan Teknologi bersih dan pengeluaran melalui ceramah umum/kolokium.

i. **Zero Emission Control Technology (14-19 Mei 2003)**

Kursus "*Zero Emission Control Technology*" disertai oleh 25 peserta (yang terdiri pegawai-pegawai Jabatan Alam Sekitar) telah diadakan di EiMAS pada 14-19 Mei 2003. Kursus ini telah dikendalikan dengan kerjasama penceramah Universiti Teknologi Malaysia. Dalam kursus ini peserta didedahkan dengan konsep pelepasan sifar (*zero emission*) dan pelbagai teknologi

CONTROL TECHNOLOGY AND CLEANER TECHNOLOGY

Introduction

In 2003, the Cleaner Production Unit (CP Unit) consisted of five (5) desk officers, namely one Principal Assistant Director, two (2) Environmental Control Officers, one (1) Senior Assistant Environmental Control Officer and an Assistant Environmental Control Officer. With the new additional officers, the CP Unit was divided into two (2) smaller units namely, Promotion and CP Audit Unit. The restructuring process in the Department of Environment (DOE) had enabled cleaner production programme and activities to be focused more actively on the industrial sector in Malaysia.

The main activities of CP Unit in 2003 were:

A. Cleaner Production Promotion and Awareness Programme

Cleaner Production promotion and awareness programme were divided into two (2) main activities:

- i. Organizing courses/training/seminars/workshops;
- ii. Information dissemination related to cleaner technology/production through public lectures and colloquiums.

i. **Zero Emission Control Technology (14-19 May 2003)**

The Zero Emission Control Technology Course was participated by 25 participants (mainly DOE officers) and was held in EiMAS from 14-19 May 2003. The course was organized in collaboration with lecturers from Universiti Teknologi Malaysia. The participants were exposed to the zero emission concept and various environmental pollution and prevention control technologies.

kawalan dan pencegahan pencemaran alam sekitar. Pihak urusetia telah mengaturkan satu lawatan ke kilang *Malaysian Newsprint Industries* (MNI) iaitu sebuah kilang pemprosesan kertas yang mengamalkan konsep pelepasan sifar dan menggunakan teknologi bersih bagi kawalan pencemaran. Dalam lawatan ini peserta telah diberi penjelasan daripada pihak kilang berkenaan dengan pengendalian operasi pemprosesan dan kaedah rawatan buangan yang dilaksanakan oleh kilang.

ii. *Introduction to Cleaner Production* (18-21 April 2003)

Unit *Cleaner Production* (CP) juga terlibat didalam memberi ceramah mengenai konsep CP sempena dengan Kursus Induksi (Bil. 1/ 2003) pada 18-21 April 2003. Ceramah ini memberi pendedahan asas mengenai faedah dan kaedah perlaksanaan CP.

iii. *Wastewater/Water Pollution Control* (28-30 April 2003)

Seramai 28 peserta yang terdiri daripada pegawai-pegawai Jabatan Alam Sekitar telah menghadiri Kursus Pengenalan *Wastewater/Water Pollution Control* di Air Keroh Country Resort, Melaka merangkumi penerangan berkenaan dengan konsep asas tentang punca-punca pencemaran, implikasi kepada kesihatan, pengurusan dan kawalan air serta air buangan. Satu lawatan telah diadakan ke kilang National Semiconductor Sdn. Bhd. di Kawasan Perindustrian Batu Berendam Melaka untuk melihat dengan jelas konsep *waste water treatment*.

The Secretariat organised a visit to Malaysian Newsprint Industries (MNI), a paper processing factory practising the zero emission concept and clean technology to control pollution. The participants were briefed by the management of the factory on the operational, processing and waste treatment methods during the visit.

ii. *Introduction to Cleaner Production* (18-21 April 2003)

The CP Unit was also involved in giving lecturer on the Concept of Cleaner Production at the Induction Course (Series 1/2003) for DOE Officers in 18-21 April 2003. The lecture provided a basic understanding of the concept and benefits of CP production.

iii. *Wastewater/Pollution Control* (28-30 April 2003)

A group of 28 participants attended the Introduction Course on Wastewater/Pollution Control at Air Keroh Country Resort, Melaka covering basics concepts regarding pollution sources, health implications, water and waste water control management. A plant visit to National Semiconductor Sdn. Bhd. at Batu Berendam Melaka Industrial Area was conducted to introduce participants to the concept of waste water treatment.

iv. Air Pollution Control (5-7 Mei 2003)

Seramai 23 peserta yang terdiri daripada pegawai-pegawai Jabatan Alam Sekitar telah menghadiri Kursus Pengenalan *Air Pollution Control* di Institut Alam Sekitar Malaysia (EiMAS), Bangi meliputi konsep asas antaranya, punca- punca pencemaran, implikasi kepada kesihatan dan pengurusan dan kawalan udara. Bagi menerangkan konsep kawalan pencemaran udara, satu lawatan telah diadakan ke kilang *Lafarge Malayan Cement* di Rawang, Selangor untuk melihat dengan jelas konsep *air pollution control*.

v. Workshop on Cleaner Production Implementation (16-17 September 2003)

Seramai 44 peserta yang terdiri daripada pegawai- pegawai Jabatan Alam Sekitar dan juga agensi berkaitan terlibat dalam bengkel ini. Bengkel ini adalah sebahagian daripada lanjutan kajian pelaksanaan *Cleaner Production* yang sedang dijalankan oleh perunding dari Universiti Teknologi Malaysia. Para peserta diberi penerangan mengenai tujuan, objektif dan juga output kajian yang yang selesai pada 2003.

vi. Kursus Latihan Cleaner Production (8-10 Oktober 2003)

Pada 8-10 Oktober 2003, pihak Institut Alam Sekitar (EiMAS) dengan kerjasama UKM Pakarunding Sdn. Bhd. telah mengendalikan kursus latihan ini selama tiga (3) hari. Kursus ini disertai oleh seramai 27 peserta yang terdiri daripada pegawai-pegawai Jabatan

iv. Air Pollution Control (5 –7 May 2003)

A group of 23 participants from DOE attended the introduction course on “Air Pollution Control” in EiMAS, Bangi covering basic concepts of air pollution, health implications and air pollution control and management. A site visit to Lafarge Malayan Cement Plant at Rawang, Selangor was conducted to further illustrate the principles of air pollution control.

v. Workshop on Cleaner Production Implementation (16-17 September 2003)

A group of 44 participants from DOE and other agencies were involved in this workshop. The workshop was part of the study on Cleaner Production Implementation that was carried out by consultants from Universiti Teknologi Malaysia. The participants were informed of the aim, objectives and output of the study which was completed by December 2003.

vi. Training Course on Cleaner Production (8-10 October 2003)

On 8-10 October 2003, EiMAS in collaboration with UKM Pakarunding organised a three (3) day training course on cleaner production. The course was participated by 27 participants from State DOE Offices. The course covered CP audit,

Alam Sekitar seluruh Malaysia. Peserta diberikan pendedahan asas mengenai langkah-langkah untuk membuat audit CP, *Life Cycle Analysis*, beberapa kes kajian berkaitan CP dan satu lawatan ke kilang *Upha Pharmaceutical Sdn. Bhd.* telah diadakan untuk mendedahkan kaedah rawatan bahan buangan di kilang berkenaan.

vii. Ceramah dan Kolokium

Sebanyak empat (4) kolokium telah dijalankan pada tahun 2003 (Jadual 10.1). Kolokium seperti ini diadakan bertujuan untuk menyampaikan maklumat berkaitan teknologi bersih, kes kajian dan amalan pengeluaran bersih kepada golongan sasaran seperti pihak industri dan pegawai JAS.

B. Program Lawatan Audit Cleaner Production

Unit Cleaner Production telah menjalankan sebanyak 30 lawatan audit *cleaner production* bagi tahun 2003 dengan pemerhatian terhadap tiga (3) sektor pengeluaran utama iaitu sadur elektrik, tekstil dan makanan. Objektif utama lawatan adalah untuk mengenalpasti proses dan opsyen-opsyen *cleaner production* yang telah dilaksanakan oleh pihak kilang. (Jadual 10.2).

Life Cycle Analysis, case studies and a site visit was conducted to Upha Pharmaceutical Sdn. Bhd. to understand its waste treatment disposal method.

vi. Lectures and Colloquiums

There were four (4) colloquiums organised in 2003 (Table 10.1). The objectives of the colloquiums were to disseminate information relating to cleaner technology, case studies and cleaner production practices to specific target groups such as industries as well as DOE officers.

B. Cleaner Production Audit Visit

The CP Audit Unit conducted a total of 30 cleaner production audits in 2003 focusing on three (3) manufacturing sectors, namely electroplating, textiles, food and beverages. The main objective of the visit was to identify processes and cleaner production options that could be implemented (Table 10.2).

C. Kajian “A Study on Promotion and Implementation of Cleaner Production Practices in Malaysian Industry: Development of a National Programme and Action Plan for Promotion of Cleaner Production”

Kajian ini dimulakan pada Ogos 2002 dan selesai pada Disember 2003. Objektif utama kajian ini adalah untuk menyediakan satu pelan tindakan bagi pelaksanaan CP di Malaysia. Antara output kajian adalah seperti berikut:

- i. CP Action Plan
- ii. CP Technology Database and Case Studies
- iii. CP Audit Guidelines
- iv. Economic Incentives

C. “A Study on Promotion and Implementation of Cleaner Production Practices in Malaysian Industry: Development of a National Programme and Action Plan for Promotion of Cleaner Production”

The study was initiated in August 2002 and was completed in December 2003. The main objective of this study was to prepare an action plan for CP implementation in Malaysia. Among the outputs of the study were:

- i. CP Action Plan
- ii. CP Technology Database and Case Studies
- iii. CP Audit Guidelines
- iv. Economic Incentives

Jadual 10.1 Jabatan Alam Sekitar : Kolokium , 2003

Table 10.1 Department of Environment : Colloquium, 2003

BIL NO.	TAJUK TOPICS	TEMPAT VENUE	PESERTA JAS NO. OF DOE PARTICIPANTS
1.	Enhance Mineral Oil For Drilling Purpose	2 Julai 2003 2 July 2003	28
2.	Occupational Safety and Health at Work Place- Strategies and Challenges	9 Ogos 2003 9 August 2003	40
3.	Zero Effluent Discharge for Palm Oil Mill	23 Ogos 2003 23 August 2003	60
4.	Village CP: The Vietnam Urban Environmental Management Exchange Project- A Case Study of Two Vietnamese Village	13 September 2003 13 September 2003	20

Jadual 10.2 Jabatan Alam Sekitar: Program Lawatan Audit Cleaner Production, Januari-Jun 2003
Table 10.2 Department of Environment: Cleaner Production Audit Visit Programme, January-Jun 2003

BIL NO.	NAMA PREMIS PREMISE NAME	JENIS INDUSTRI TYPE OF INDUSTRY	TARIKH DATE
1.	Possehl Electronic (M) Sdn. Bhd. Batu Berendam, MELAKA	Electroplating	26/02/2003
2.	D.O.E Industrial Sdn. Bhd. Kaw. Per. Senawang, Seremban NEGERI SEMBILAN	Electroplating	17/03/2003
3.	Marseiling Electroplating No. 2 Jalan P/5, Kawasan MEIL, Bandar Baru Bangi 43000 BANGI	Electroplating	9/04/003
4.	Applied Component & Tool Manufacturing No 8722, Plot 8, FTZ Batu Berendam, Kaw. Per. Bt. Berendam, MELAKA	Electroplating	28/04/2003
5.	Pacific Food Product Sdn Bhd (MAMEE) Lot 1, Air Keroh Ind.Estate 75450 MELAKA	Makanan Food	30/04/2003
6.	Dewina Food Ind. Sdn. Bhd. Lot 11, Jalan P/9B Kaw.Perusahaan Bangi 43650 Bandar Baru Bangi	Makanan Food	12/05/2003
7.	Polar Ice Cream Sdn. Bhd. Lot 3, Jalan CJ1/2, MEIL Ind.Estate, Batu 11, Jalan Balakong 43200 SELANGOR	Makanan Food	13/05/2003
8.	Prima – Agri Product Sdn. Bhd. No. 16 & 18, Jalan P/13 Kaw. Perindustrian Sg. Chua, KAJANG	Makanan Food	28/05/2003
9.	Plus Eleven Food Manufacturing Sdn. Bhd. No. 11B, Lot PT 14725 Senawang New Ind. Park 70400 SENAWANG	Makanan Food	04/06/2003
10.	Permanis Sdn. Bhd. Lot 5 & 7 Kawasan Perusahaan Bangi 43650 Bandar Baru Bangi	Minuman Beverage	05/06/2003
11.	Kim Fashion Knitwear (M) Sdn. Bhd. 120 & 121, Kaw. Per. Senawang 70450 SEREMBAN	Tekstil Textile	25/06/2003