



										2 He 4.002602 氦 Helium	
					5 B 10.811 硼 Boron	6 C 12.0107 碳 Carbon	7 N 14.00674 氮 Nitrogen	8 O 15.9994 氧 Oxygen	9 F 18.9984032 氟 Fluorine	10 Ne 20.1797 氖 Neon	
					13 Al 26.981538 鋁 Aluminium	14 Si 28.0855 硅 Silicon	15 P 30.973761 磷 Phosphorus	16 S 32.065 硫 Sulphur	17 Cl 35.453 氯 Chlorine	18 Ar 39.948 氬 Argon	
26 Fe 55.845 鐵 Iron	27 Co 58.933200 鈷 Cobalt	28 Ni 58.6934 鎳 Nickel	29 Cu 63.546 銅 Copper	25 Mn 54.938049 錳 Manganese	30 Zn 65.409 鋅 Zinc	31 Ga 69.723 鎵 Gallium	32 Ge 72.64 鍮 Germanium	33 As 74.92160 砷 Arsenic	34 Se 78.96 硒 Selenium	35 Br 79.904 溴 Bromine	36 Kr 83.796 氪 Krypton
43 Tc 98 錳 Technetium	44 Ru 101.07 鈷 Ruthenium	45 Rh 102.90550 銩 Rhodium	46 Pd 106.42 鈀 Palladium	47 Ag 107.8682 銀 Silver	48 Cd 112.411 鎘 Cadmium	49 In 114.818 銦 Indium	50 Sn 118.710 錫 Tin	51 Sb 121.760 銻 Antimony	52 Te 127.60 碲 Tellurium	53 I 126.90447 碘 Iodine	54 Xe 131.293 氙 Xenon
75 Re 186.207 銩 Rhenium	76 Os 190.23 銱 Osmium	77 Ir 192.217 銲 Iridium	78 Pt 195.078 鉑 Platinum	79 Au 196.96655 金 Gold	80 Hg 200.59 汞 Mercury	81 Tl 204.387 鉍 Thallium	82 Pb 207.2 鉛 Lead	83 Bi 208.98038 鉍 Bismuth	84 Po 209 鉷 Polonium	85 At 210 砹 Astatine	86 Rn 222 氡 Radon
107 Bh 264 鰐 Bohrium	108 Hs 269 鏷 Hassium	109 Mt 268 鎊 Meitnerium	110 Ds 271 鐳 Darmstadtium	111 Rg 272 鐳 Roentgenium	112 Uub 285 鐳 Ununbium	113 Uut 284 鐳 Ununtrium	114 Uuq 289 鐳 Ununquadium	115 Uup 288 鐳 Ununpentium	116 Uuh 292 鐳 Ununhexium	117 Uus Unknown 鐳 Ununseptium	118 Uuo Unknown 鐳 Ununoctium
62 Sm 150.36 鈷 Samarium	63 Eu 151.964 鎳 Europium	64 Gd 157.25 釷 Gadolinium	65 Tb 158.92534 釷 Terbium	66 Dy 162.500 釷 Dysprosium	67 Ho 164.93032 釷 Holmium	68 Er 167.257 釷 Erbium	69 Tm 168.9341 釷 Thulium	70 Yb 173.054 釷 Ytterbium	71 Lu 174.967 釷 Lutetium		
94 Pu 244 鈾 Plutonium	95 Am 243 錒 Americium	96 Cm 247 錒 Curium	97 Bk 247 錒 Berkelium	98 Cf 251.0796 錒 Californium	99 Es 252 錒 Einsteinium	100 Fm 257 錒 Fermium	101 Md 258 錒 Mendelevium	102 No 259 錒 Nobelium	103 Lr 262 錒 Lawrencium		

CONTROLLING OFFICER'S  
ENVIRONMENTAL REPORT

2004

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### **Executive Summary**

The Government Laboratory provides a wide range of scientific services to various government departments to support the maintenance of law and order and the implementation of government policies on public health and safety, environmental protection, protection of consumer interests and revenue. The Laboratory is committed to achieving a high standard of environmental performance in its operation to minimize the impact of its operation on the environment. There are established procedures to prevent the release of harmful pollutants to the environment including the atmosphere, land and water. The Laboratory has also taken steps to minimise the amount and toxicity of the waste generated through reengineering and redesigning of operation procedures. Chemical waste generated in the Laboratory has been disposed of in a safe and proper way.

The Laboratory is fully aware of its responsibility and accountability to the public and the Government, in connection with the testing activities undertaken. To maintain a clean environment and be responsible to all the stakeholders of the Laboratory is of fundamental importance in the service provision of the Laboratory.

This report summarises and reviews the Laboratory's environmental performance in the year 2004 and presents the environmental issues that require special attention in the future. The Laboratory will continue to seek opportunities to protect and improve the environment, and maintain a high standard of environmental performance in its operation.

### Controlling Officer's Profile of Key Responsibilities

The Government Chemist discharges statutory duties as referee analyst under various ordinances and regulations. The Government Laboratory provides comprehensive forensic, analytical and advisory services to government departments to support the maintenance of law and order and the implementation of government policies on public health, safety, environmental protection and government revenue. Analytical and advisory services are provided for surveillance programmes on food, drugs, and Chinese medicine to safeguard the health of the public and for environmental protection for the sustainable development of Hong Kong. The Laboratory also provides testing and advisory services related to commodities for health and safety evaluation, and for the protection of consumer interests. The forensic science service provided by the Laboratory seeks to be impartial, accurate and efficient. The service is essential for the Criminal Justice System of Hong Kong. Where appropriate and necessary, the Laboratory will also provide services to public institutions and international organisations.

The actual expenditure of the Government Laboratory for 2004-2005 was \$240 million. As at December 2004, there were 7 directorate-grade, 362 non-directorate-grade and 55 non-Civil Service contract staff members in the Government Laboratory. The programmes for which the Government Chemist is responsible and the associated policy areas are listed in Table 1.

The Government Laboratory is composed of the following divisions:

- Analytical and Advisory Services Division (A&ASD)
- Forensic Science Division (FSD)
- Administration Division (AD)

In addition to the Laboratory headquarters located at Ho Man Tin Government Offices, testing facilities of the Laboratory are also located at the following addresses:

- i) Lai Chi Kok Government Offices, Lai Chi Kok;
- ii) Public Works Central Laboratory Building, Kowloon Bay;
- iii) The Public Health Laboratory Centre, Shek Kip Mei;
- iv) King's Park Meteorological Station, Homantin; and
- v) 2/F, 323 Java Road, North Point.

**Table 1: Programmes for which the Government Chemist is responsible and the Associated Policy Areas**

**Programme (1) Statutory Testing**

This programme contributes to Policy Area 2: Agriculture, Fisheries and Food Safety (Secretary for Health, Welfare and Food) and Policy Area 15: Health (Secretary for Health, Welfare and Food).

**Programme (2) Advisory and Investigative Services**

This programme contributes to Policy Area 9: Internal Security (Secretary for Security), Policy Area 15: Health (Secretary for Health, Welfare and Food), Policy Area 23: Environmental Protection and Conservation (Secretary for the Environment, Transport and Works) and Policy Area 32: Environmental Hygiene (Secretary for Health, Welfare and Food).

**Programme (3) Forensic Science Service**

This programme contributes to Policy Area 9: Internal Security (Secretary for Security).

## **The Environmental Goal and Policy**

The Government Laboratory is committed to achieving a high standard of environmental performance as an ongoing contribution to the sustainable development of Hong Kong. All the operations of the laboratory comply with the regulations and established guidelines on environmental protection. The Laboratory will minimise the environmental impact of its services on the public and seek continual improvement in its environmental performance. The Government Laboratory first introduced and published the Laboratory's Environmental Policy in late 1998. Since then the Laboratory has launched various programmes to meet the principles of the policy and to fulfil its objectives.

### **ENVIRONMENTAL POLICY STATEMENT**

**The Government Laboratory is committed to managing environmental matters as an integral part of its activities. It is our policy to ensure environmental integrity of all processes and facilities at all times and at all places. We do so by adhering to the following principles:**

**1. Compliance**

- We comply with all applicable environmental laws and regulations.
- We implement programmes and procedures to ensure compliance.
- Where existing laws and regulations are not adequate to ensure protection of the environment, we establish and meet our own environmental quality standards.
- Strict compliance with environmental standards is a key ingredient in the training, performance reviews and incentives of all our staff working in the Laboratory.

**2. Prevention**

- We implement management systems and procedures designed to prevent activities and / or conditions that pose a threat to the environment.
- We strive to prevent releases of harmful pollutants to the atmosphere, land or water.
- We minimise the amount and toxicity of waste generated and ensure the safe treatment and disposal of waste.

**3. Continual Improvement**

- We continually seek opportunities to improve our adherence to these principles, and periodically report progress to our clients in the Laboratory's annual report.

**4. Communication**

- We communicate in the Laboratory's annual report our commitment to environmental quality to our staff and clients.
- We solicit their input in meeting our environmental goals and in turn offer assistance to meet their goals.

### **Environmental Objectives, Targets and Milestones**

The activities of the Government Laboratory may have undesirable impacts on the environment if they are not properly controlled, for example, release of harmful pollutants to the atmosphere through chimneys; discharge of chemical wastes through drainage systems; and improper disposal of solid wastes. To ensure that the waste generated is in compliance with regulatory requirements, the Laboratory has implemented a programme to monitor the level of pollutants in the air emitted and effluent discharged from the Laboratory. The Laboratory also monitors the consumption of resources and the generation of various types of waste. To ensure the safe treatment and disposal of waste, and to prevent the accidental release of pollutants to the environment, there are established procedures for managing chemical waste disposal and handling of environmental emergencies. Environmental guidelines are in place to promote energy conservation, save resources and recover waste for recycling / reuse.

All the Sections in the Laboratory have been encouraged to set up environmental objectives and targets relevant to their operations. Sustained efforts have been made to reduce the consumption of chemicals and / or the release of harmful substances to the environment.

The Laboratory has set up objectives, targets and programmes for environmental protection. The environmental objectives and targets achieved in the year 2004 are given in Table 2.

**Table 2: Summary of Environmental Objectives, Targets and Programmes (as at 31 Dec 2004)**

Objectives	Targets	Programme Status
<b>Use of Energy and Resource</b>		
To reduce the consumption of chemicals in the determination of organic pollutants in air samples.	To reduce the consumption of non-halogenated solvents used in the preparation of mobile phase for HPLC analysis.	The programme was completed.
To reduce the consumption of chloroform in a number of analytical methods for environmental samples.	To reduce the consumption of chloroform by 10% in 2004.	The programme was completed.
<b>Pollution Prevention</b>		
To review the feasibility of replacing the use of HCFC-22 in the central cooling system in GL.	To phase out the use of HCFC-22 in the system.	The refrigerant used for the HMTGO A/C system had been replaced by HFC-134a, which is not a scheduled substance listed under the Ozone Layer Protection Ordinance.
To prevent / reduce the accidental discharge of chemicals to drains in case of chemical spills.	To install waste recovery traps with on/off valves.	The efficiency of the installed recovery traps is being evaluated.

Note: Details of the individual environmental management programme for achieving the corresponding environmental objective(s) and target(s) are available on request.



## **Environmental Management and Performance**

### ***Environmental Management Analysis***

#### ***Responsibility and Accountability***

There are designated staff members to look after various environmental aspects of the Laboratory's work.

The Laboratory's Environment, Safety and Security Committee (LESSC) is entrusted with the responsibility of deciding the environmental policy, overseeing its implementation and monitoring environmental performance. The committee is under the direction of a directorate-grade officer and meets quarterly. It comprises officers appointed by the Government Chemist and staff representatives.

Section Heads and the Departmental Secretary are assigned to be the Laboratory's Environment, Safety and Security Inspectors, and are responsible for ensuring the compliance with the established environmental policy, guidelines and measures on environmental matters by all levels of staff.

In the A&ASD, an Environmental Management System Working Group (EMSWG) has been established to look after environmental matters and oversee the implementation of ISO 14001 in the Environmental Chemistry A & B Sections and the Trace Elements Section. The EMSWG is under the leadership of the Environmental Manager of the Division and comprises representatives from the three sections and the Quality Management Section.

#### ***Education and Training***

All new recruits are required to undertake training in safety and environmental operation relevant to their duties. Training in general laboratory safety practices, in the handling of chemicals and equipment, and in the procedures for handling chemical spills will be provided to all scientific staff. For other supporting staff, the training in safety includes basic fire emergency procedures, the use of fire-fighting equipment, etc. In addition to the safety and environmental training programmes, a safety review is organised annually for all scientific staff to refresh them of the procedures and precautions in the handling of equipment and hazardous materials and environmental emergencies.

As an established practice, briefing and drills were conducted regularly in 2004 in emergency handling procedures, which included training in the handling of chemical spills to minimize contamination to the environment.

### *Regular Environmental Audits*

One internal environmental audit was conducted in November 2004 for the Environmental Chemistry A & B Sections and the Trace Elements Section. In addition, the Hong Kong Quality Assurance Agency (HKQAA) conducted an audit for these three Sections in April 2004. These audits served to verify that relevant rules and procedures were properly observed and implemented.

### *Environmental Performance Analysis*

#### *Environmental Management System*

The internal and external audits conducted at the Environmental Chemistry A & B Sections and the Trace Elements Section in April and November 2004 respectively indicated that the implementation of the ISO 14001 EMS in the Sections concerned was satisfactory. No case of non-conformance was identified in these audits.

#### *Environmental Data*

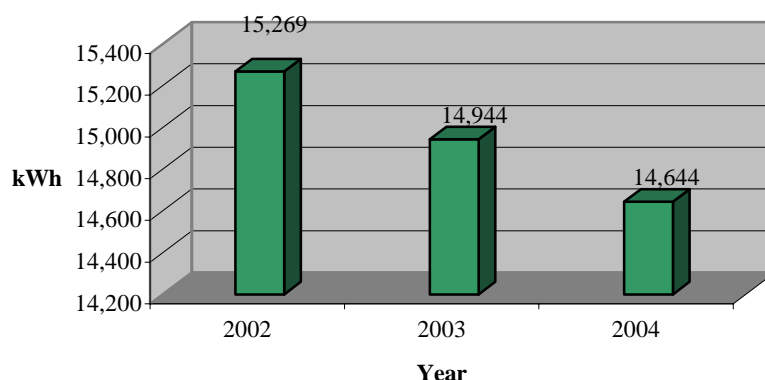
The progress and achievement of the environmental management programmes of the Sections are summarised in Table 2. Other environmental performance indicators established for environmental protection are detailed in the following paragraphs.

### **Trend in Use of Energy and Resource**

- Electricity consumption

Electricity consumption for the whole of the Ho Man Tin Government Offices, which includes the Highways Department and the Government Laboratory, continued to drop this year. A decrease of 2 % for the year 2004 was recorded, which demonstrated the effectiveness of the measures taken to reduce electricity consumption.

#### **Electricity Consumption**

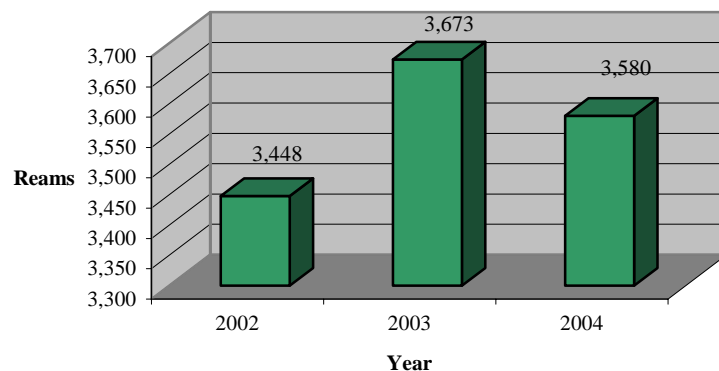


- Paper consumption

Paper consumption\* for the whole Laboratory decreased by 2.5 % in the year 2004

compared with 2003, which is in line with the government policy on reducing the use of paper.

**Paper Consumption**

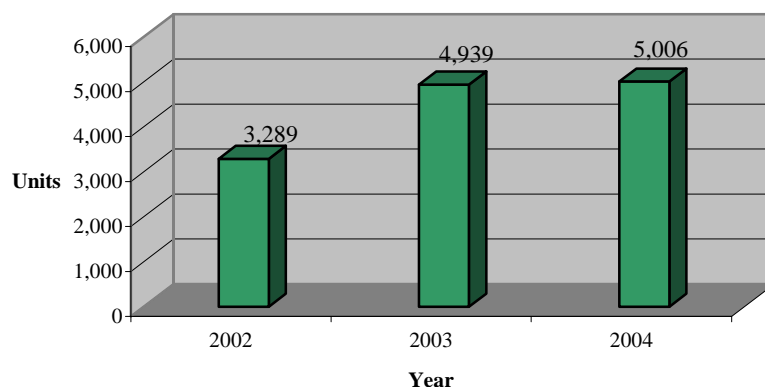


\*The consumption was based on the quantity of photocopying paper used by the Laboratory.

- Envelope consumption

Envelope consumption in the year 2004 was slightly increased by 1.4 % compared with the year 2003. In the year 2004, envelopes were no longer used for unclassified documents.

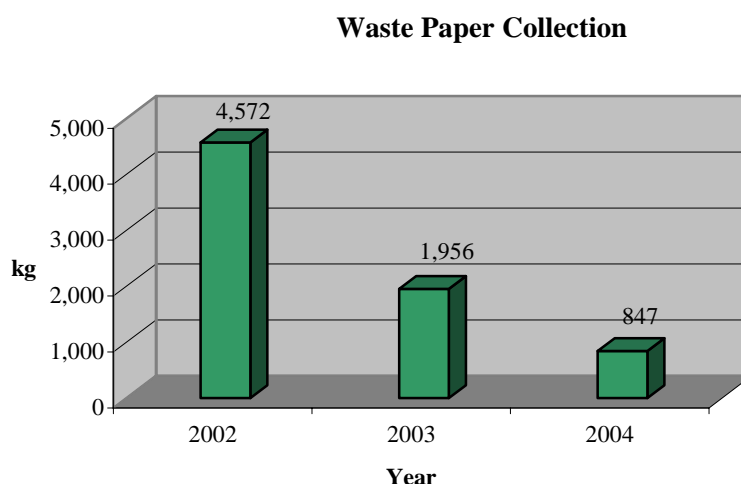
**Envelope Consumption**



## Pollution Prevention

- Waste paper collection

The amount of waste paper collected continued to drop dramatically this year and a decrease of 56.7 % for the year 2004 compared with 2003 was recorded.

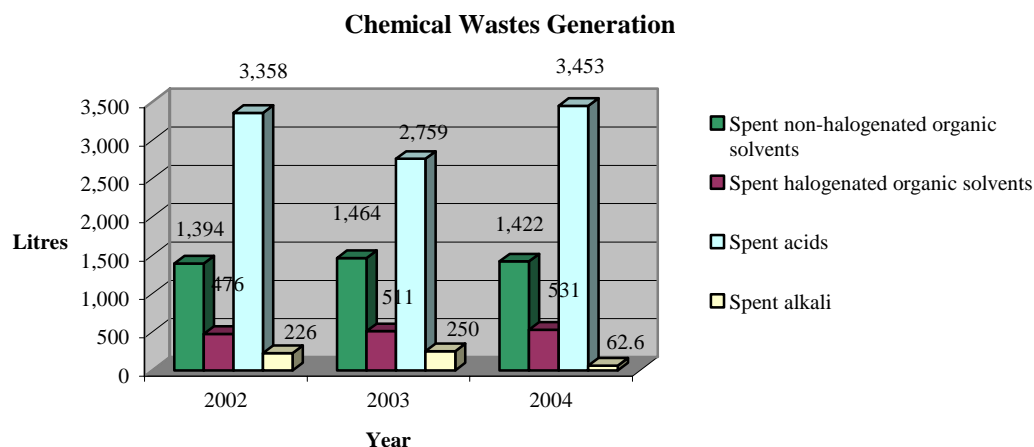


- Effluent discharge and air emission

As in previous years, the levels of pollutants in the effluent discharge and air emission of the Sections certified to the ISO 14001 were found to comply with relevant regulatory limits.

- Chemical wastes generation

In order to reduce the usage of chemical reagents, some analytical procedures had been revised. As a result, the amount of non-halogenated organic solvent waste and alkali waste generated in 2004 were decreased by 2.9 % and 75 % respectively, compared with 2003. However, due to the increase in testing work related to ad hoc projects, the amount of halogenated organic solvents was slightly increased by 3.9% in 2004. Also, because of the large increase in metal analysis for food in 2004, the amount of spent acid generated increased by 25.2%, compared with 2003.



### Management Actions/Initiatives on Environmental Improvement

- Environmental Management System

The number of Sections with ISO 14001 certification was three, the same as the previous year.

- Education and training

- As at the end of year 2004, the cumulative number of trained internal environmental auditors was 59.
- The number of emergency drills organised increased from 17 in 2003 to 23 in 2004, and included all operation sections of the Laboratory.
- 19 staff members attended training in handling environmental emergencies in the year 2004.

- Procurement Management
  - Preferential consideration will be given to products manufactured by certified ISO 14001 manufacturers and suppliers if the offers of the intended material or service from all suppliers are the same.
  - Contractors are requested to minimize the use of packing materials.
  - If the goods offered are to be packed in carton boxes, the carton box packaging must be made from 100% recovered fibre.

### **Environmental Actions Requiring Special Attention**

The Laboratory constantly reviews its operation with a view to further improving its environmental practice and to ensuring that the established environmental guidelines and procedures are followed. A number of measures have been taken to improve environmental performance. .

15 fume cupboards were replaced in 2004. The new fume cupboards, which operate in a constant face velocity mode, satisfy the latest safety and environmental requirements and will create less disruption to the in-house ventilation system and can reduce energy consumption, compared to the old fume cupboards, which operated in constant exhaust volume mode. According to the scope of this project, another 16 fume cupboards will be replaced in 2005.

It is the policy of the Laboratory to conserve energy and save paper. In order to formulate effective energy management programmes, the Laboratory will constantly liaise with the Electrical & Mechanical Services Department and the Architectural Services Department to seek areas of improvement for energy saving. The Laboratory will regularly remind staff members to observe guidelines on reducing the use of photocopying paper and save energy. The Laboratory will also explore the feasibility of dissemination of test results to client departments by electronic means instead of printed copy.

The Laboratory will continue to seek opportunities to improve its environmental performance and maintain a high standard of environmental performance in its operation.

**Feedback and Enquiries**

Please direct any feedback and comments on this Report to the Departmental Secretary of Government Laboratory.

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