2009 Controlling Officer's Environmental Report

Government Laboratory

Table of Contents

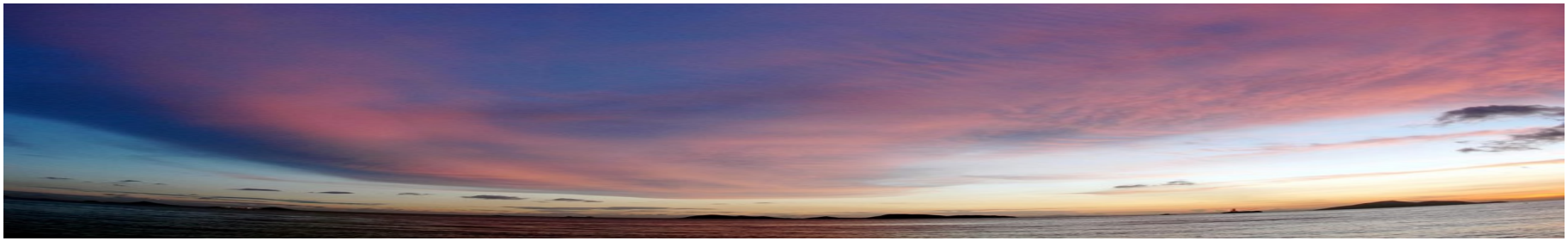
Executive Summary

The Government Laboratory provides a wide range of scientific services to various government departments to support the maintenance of law and order, 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 continual 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 committed to 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 2009 and presents the environmental issues that require special attention in the future. The Laboratory will continue to seek opportunities to enhance environmental integrity of all its processes and facilities, and to sustain 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 various bureaux and departments of the Government of the Hong Kong Special Administrative Region 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 2009–2010 was $319 million. As at March 2010, there were 6 directorate–grade, 417 non–directorate–grade and 25 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, 19, Lai Wan Road, Lai Chi Kok;
ii) Public Works Central Laboratory Building, 2B, Cheung Yip Street, Kowloon Bay;
iii) The Public Health Laboratory Centre, 382, Nam Cheong Street, Shek Kip Mei;
iv) King's Park Meteorological Station, 22, King's Park Road, Homantin;
v) North Point Government Offices, 323, Java Road, North Point ; and
vi) Food Safety Laboratory, 800, Victoria Road, Pokfulam..

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 Food and Health) and Policy Area 15: Health (Secretary for Food and Health).

Programme (2) Advisory and Investigative Services

This programme contributes to Policy Area 2: Agriculture, Fisheries and Food Safety (Secretary for Food and Health), Policy Area 9: Internal Security (Secretary for Security), Policy Area 23: Environmental Protection, Conservation, Power and Sustainable Development (Secretary for the Environment) and Policy Area 32: Environmental Hygiene (Secretary for Food and Health).

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 applicable regulations and established international 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:

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.

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.

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.

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

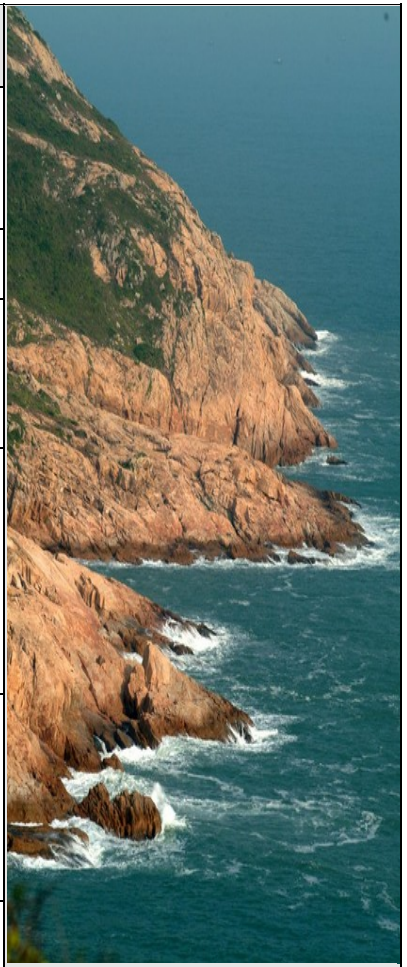
The activities of the Government Laboratory may have undesirable impacts on the environment if they are not properly controlled, for example, release of harmful substances to the atmosphere through its gaseous exhaust; discharge of chemical wastes through drainage systems; and improper disposal of solid wastes. To ensure that the waste generated during its operation 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 that were implemented and in progress in the year 2009-2010 are given in Table 2.

Table 2: Summary of Environmental Objectives, Targets and Programmes (as at 19 March 2010)

Objectives	Targets	Status
To reduce the use of chemicals for the determination of water content of consumer products.	To explore the possibility of replacing the existing Karl Fischer volumetric titration method with GC method for the determination of water content of consumer products. Reduction in generation of chemical waste by saving about 8L of Karl Fischer reagents (iodinated reagent) per year is targeted.	Pending for necessary material
To reduce the use of paper for generation of reports and clients.	To reduce the use of paper in report printing by 30%.	Completed
*To reduce the use of chemicals.	To explore the possibility of reducing the use of dry-ice during the solvent evaporation step carried out by rotary evaporator. Target to reduce 600kg dry-ice usage per year.	In progress
Determination of BOD_5 in wastewater consumes, in addition to a large amount of distilled water needed for initial sample dilution, various chemicals including $FeCl_3$, $CaCl_2$, $MgSO_4$, $KHPO_4$, K_2HPO_4, $NaHPO_4$ and NH_4Cl.	To minimize chemical waste, ECB Section planned to reduce the tested sample waste containing the aforementioned chemicals by about 30% this year.	Completed
*To reduce the use of diclochloromethane (halogenated solvent) in determination of organophosphorus and N-methylcarbamate pesticides in fruit and vegetable samples.	To reduce the use of dichloromethane by 30%.	In progress
*To reduce acid consumption in sample digestion given in GL-TE-52.	To reduce the consumption of HNO_3 and HCl by not less than 50% and 75% respectively. To develop and validate a microwave-assisted and digestion procedure for biota samples which shall reduce consumption.	In progress



*new programme initiated in 2010.

Environmental Management and Performance

(1) Environmental Management

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 international environmental management standard ISO 14001 in the Environmental Chemistry A & B Sections, Residues Sections and the Trace Elements Section. The EMSWG is under the leadership of the Environmental Manager of the Division and comprises representatives from the four 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 is 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, is also provided. In addition to the safety and environmental training programmes, a safety review is conducted annually for all staff to refresh them about the procedures and precautions in the handling of equipment and hazardous materials and environmental emergencies.

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

Regular Environmental Audits

The annual internal audit was conducted in January 2010 for the Environmental Chemistry A & B Sections, the Trace Elements Section and the Residues Section. In addition, the Hong Kong Quality Assurance Agency (HKQAA) conducted external audits for these four Sections in March 2010. These audits served to verify that relevant rules and procedures are properly observed and implemented.

(2) Environmental Performance

Environmental Management System

The internal audit conducted in January 2010 and the external audits conducted in March 2010 for the Environmental Chemistry A & B Sections, the Trace Elements Section and Residues Section indicated that the implementation of the ISO 14001 EMS in these Sections was satisfactory. No case of non-conformance was identified in these audits. As noted in the annual review for 2009, the EMS complies with the applicable legal and other requirements.

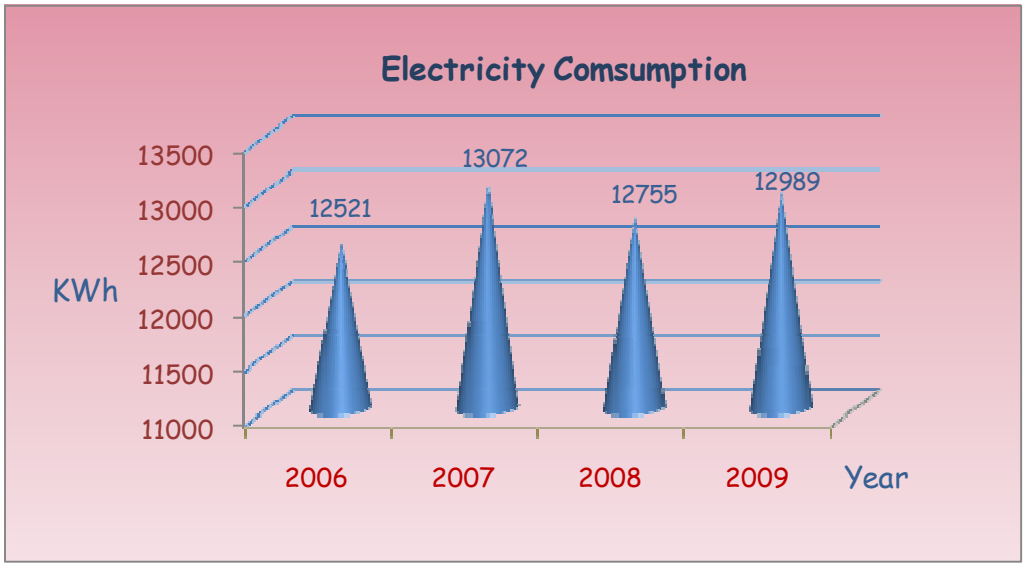
Environmental Data

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

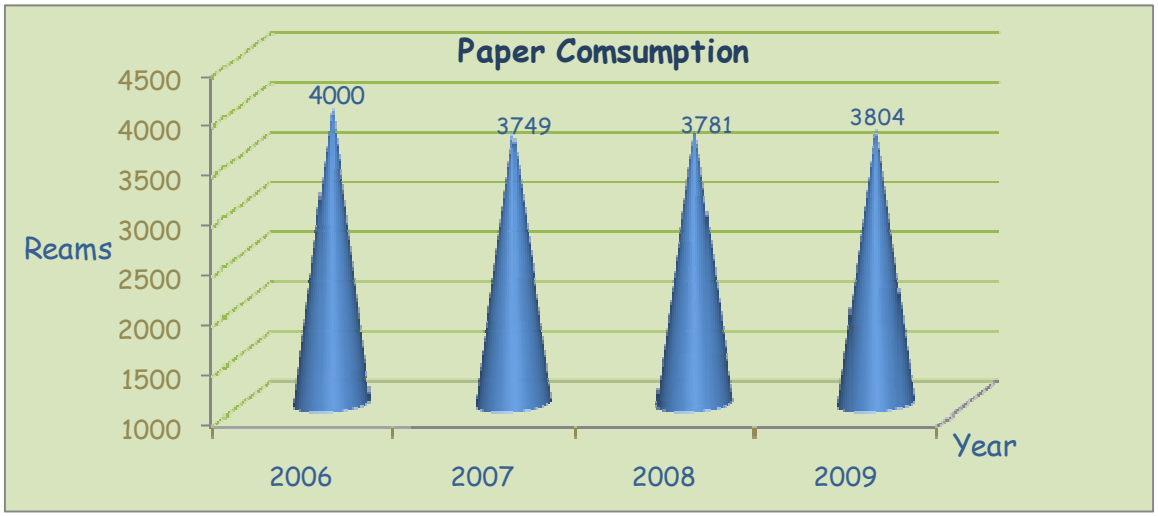
- Electricity consumption

  Electricity consumption for the whole of the Ho Man Tin Government Offices, which includes the Highways Department and the Government Laboratory, increased slightly by 1.8% in the year 2009. This was mainly attributed to the increase in overall laboratory workload of the year. However, well organized work arrangement of analysis helped maintain the increase in electricity consumption to be minimal.



- Paper consumption

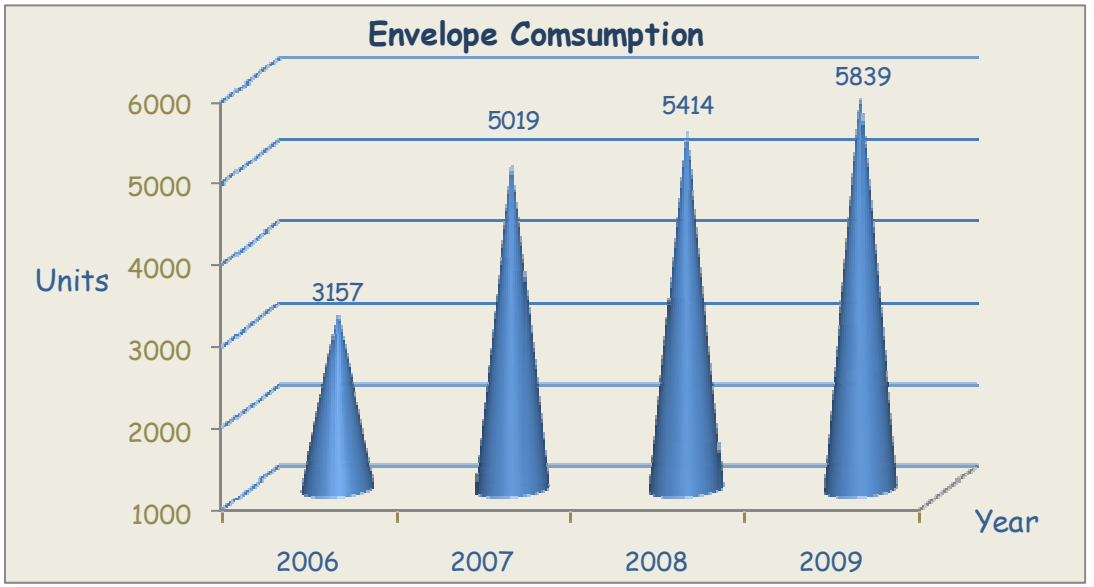
Paper consumption* for the whole Laboratory increased slightly by 0.6% in the year 2009 compared to that of 2008. The figure indicates that increase in paper consumption due to the increasing laboratory activities had been effectively offset by using more re-used paper.



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

- Envelope consumption

The envelope consumption in the year of 2009 increased by 7.9%. However, the rate of increase of consumption in 08-09 remained the same as compared with that of 07-08.



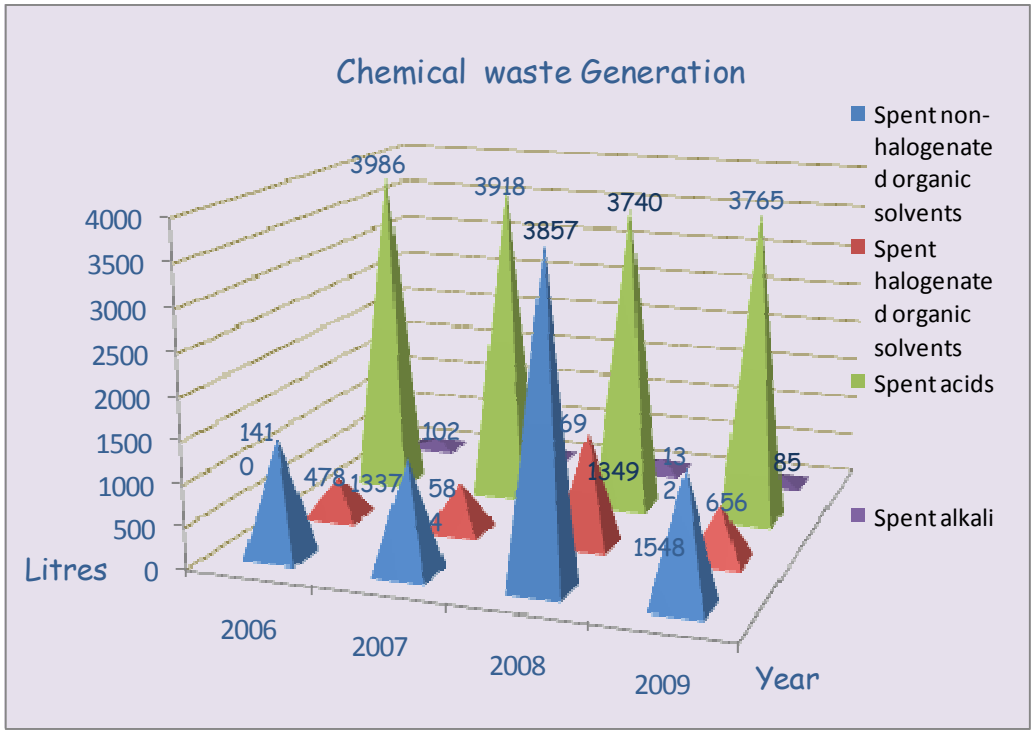
Pollution Prevention

- 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

  The amount of non-halogenated organic solvent, halogenated organic solvent and alkali waste noted an decrease of 60%, 51% and 36% respectively in 2009 as compared with that of 2008. A slightly increase of 0.7% was also recorded in acid waste. The overall significant decrease in chemical waste reflects the effective saving in various chemical and organic solvent.



Management Actions/Initiatives on Environmental Improvement

- Environmental Management System

  The number of Sections with ISO 14001 certification has changed to four after the re-structuring.

- Education and training

  - As at the end of year 2009, the cumulative number of trained internal environmental auditors was 74.

  - In 2009, 39 emergency drills relating to the handling of environmental emergencies were organised covering all Sections of the Laboratory.

- 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

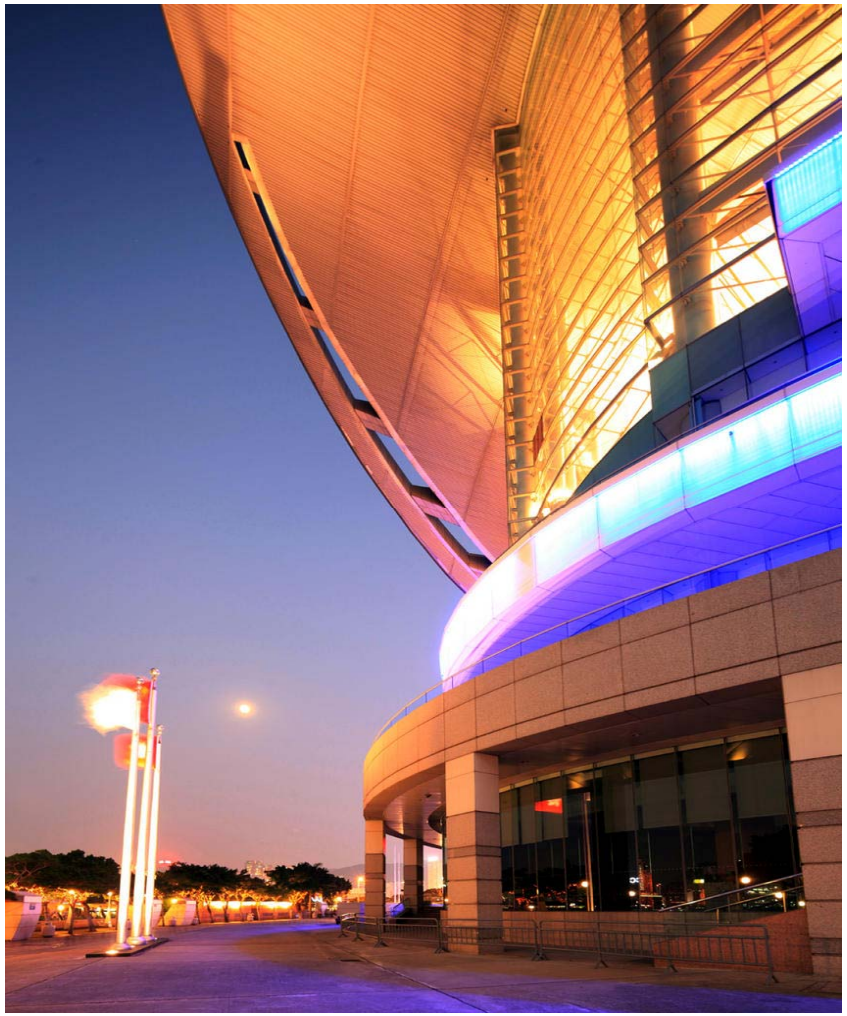
The Laboratory constantly reviews its operation with a view to further improving its environmental practice and to ensuring that the established environmental guidelines and procedures are followed. A number of measures have been taken to improve environmental performance.

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 saving energy. The Laboratory will also explore the feasibility of dissemination of test results to client departments by electronic means instead of printed copy.

The newly installed fume cupboards operated in a constant face velocity mode, posing less disruption to the central ventilation system and could save more energy compared with the old fume cupboards that operated in a constant volume mode. Furthermore, the new fume cupboards also addressed the latest safety and environmental requirements.

Apart from the work areas used as laboratories and instrument rooms housing scientific instruments, other areas in the Laboratory, including its Headquarters at Ho Man Tin Government Offices and satellite laboratories, used as offices should adhere to the energy saving guidelines in maintaining room temperature at 25.5°C, whenever technically feasible, during the summer months.

The Laboratory will continue to seek opportunities to improve its environmental integrity of all its operation at all times and to sustain 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.

Tel: 2762 3708
Fax: 2714 4083
Address: Government Laboratory
7/F, Ho Man Tin Government Offices
88 Chung Hau Street, Homantin
Kowloon, Hong Kong
E-mail: glabinfo@govtlab.gov.hk
Home page: http://www.info.gov.hk/govlab

Dr Chau-ming Lau, JP
Government Chemist
April 2010