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The Government of the Hong Kong Special Administrative Region.
Government Laboratory.
Annual Report 2024.

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Page 3, Vision · Mission · Values

Our vision

To be recognised internationally as a laboratory providing world-class scientific services.

Our mission

To provide our community with quality analytical, forensic, and advisory services, achieved through advancing measurement science and standards by a proud and committed workforce.

Our values

Integrity, we act honestly, ethically and impartially at all times.

Professionalism, we encourage self-improvement and aim for scientific excellence.

Quality Assurance, we ensure that all our work is carried out in accordance with recognised standards.

Teamwork, we recognise the participation, initiative and cooperation of all our staff as being essential to our success.

Client Focus, we strive to recognise and anticipate the needs of clients, working openly and cooperatively in setting work schedules and meeting targets.

Environmental Consciousness, we are committed to conducting all our work within the established guidelines for protection of the environment.

Page 4, Foreword

2024 was a year of continued dedication and progress for the Government Laboratory (GL). Staying true to our mission, we delivered high quality and impartial analytical, advisory and forensic services to various government departments for safeguarding public health, protecting consumer interests, and upholding law and order in the Hong Kong Special Administrative Region (HKSAR). With the devotion of committed staff and contribution of cutting-edge technology, we completed a total of 202,633 tests on food safety, 142,006 tests on drug safety, 59,269 tests on consumer protection, 209,771 tests on environmental protection, and 33,965 cases on forensic testing. Apart from routine testing, we offered round-the-clock emergency services to support crime scene investigations and provide professional advice on the handling of urgent incidents concerning public health or safety.

As the HKSAR Government proactively updated legislation and formulated new regulations and initiatives in different domains to improve people's quality of life, we have made special efforts in capacity-building to meet the demand of new testing services. We undertook a plethora of research and development activities to enhance our capability for the testing of harmful substances in foods, pharmaceuticals, and Chinese herbal medicines. We also extended our ability to detect a wider range of genetically modified foods and additional radionuclides in Japanese food imports. Our testing scope was also expanded to encompass more Persistent Organic Pollutants in environmental samples; additional parameters for monitoring water quality; and the identification of polymers in disposable plastic product to support the regulation of disposable plastic tableware and other plastic products.

As a Designated Institute in the field of metrology in chemistry, we have never lessened our efforts in advancing measurement science and standards. We always stayed committed in the organisation and participation in various regional and international comparison programmes, pilot studies, and proficiency testing (PT) schemes, and continued to make contribution in other metrology related activities. Our persistent pursuit of progress in metrology is reflected in our obtaining four new Calibration and Measurement Capability (CMC) claims in 2024, bringing our total achievement to a record number of 120 CMC claims by the end of the year.

Another notable achievement this year was the expanded accreditation scope of the Forensic Science Division (FSD). The FSD was accredited by Hong Kong Accreditation Service to be a PT Provider meeting the requirements of ISO/IEC

17043:2010. Alongside the Analytical & Advisory Services Division which had already been an accredited PT Provider, the FSD's expanded scope of accreditation aligned both operational divisions as accredited PT Providers, affirming our technical competence and compliance with the requirements for developing and operating PT schemes. In 2024, the FSD organised a PT scheme on the determination of vehicle speed from video footage. Open to forensic laboratories across Asia, this PT scheme fostered valuable exchanges and regional collaboration amongst the forensic community in various Asian countries, and supported the participating laboratories in their accreditation processes.

We also supported critical Government initiatives, one of which was the Inter-departmental Counter Terrorism exercise codenamed "WISDOMLIGHT", organised by the Inter-departmental Counter Terrorism Unit (ICTU) in December 2024. Our colleagues provided full support and assistance to the ICTU, strengthening the Government's overall counter-terrorism capability and preparing us for our role as professional scene investigators in the event of terrorist attacks. In addition, our colleagues actively participated in drills to test the readiness for the grand opening of the Kai Tak Sports Park, the largest sports and mega-event landmark in Hong Kong.

I commend my colleagues for their unwavering dedication and steadfast support over the past year. This report highlights the collaborative efforts of our competent work teams, whose professionalism and commitment made our achievements possible. Looking ahead, we will stay committed to scientific excellence in maintaining a high standard of professional service, ensuring our continual contribution to the well-being of people in Hong Kong.

Dr Wai-on LEE

Government Chemist

October 2025

Page 5, Workforce

The GL houses two operational divisions, namely the Analytical & Advisory Services Division and the Forensic Science Division. These two divisions are further divided into different groups of sections according to the services they provide to client departments.

The Administration Division provides administrative and clerical support to the laboratory.

As at December 2024, we had an establishment of 510 staff, comprising 7 directorate staff, 151 professional staff (119 with PhD degree), 295 technical staff (91 with Master's degree and 120 with Bachelor's degree) and 57 administrative and supporting staff. In addition, a total of 65 staff were under secondment to other departments.

In 2024, 13 staff received the 30 Years' Long and Meritorious Service Awards.

Page 6, Locations

We have been headquartered in Ho Man Tin since 1992. With the continuous growth of our staff establishment and the variety of services provided, we have currently 7 satellite laboratories at different locations in Hong Kong.

Laboratory locations are as follows:

Headquarters: Ho Man Tin Government Offices, Ho Man Tin, Kowloon.

Satellite laboratories include:

- (1) Lai Chi Kok Government Offices, Lai Chi Kok, Kowloon;
- (2) Public Health Laboratory Centre, Shek Kip Mei, Kowloon;
- (3) Science Park, Sha Tin, New Territories;
- (4) Public Works Central Laboratory Building, Kowloon Bay, Kowloon;
- (5) King's Park Meteorological Station, Ho Man Tin, Kowloon;
- (6) Food Safety Laboratory, Pok Fu Lam, Hong Kong; and
- (7) Laboratory at Cheung Sha Wan, Kowloon.

Page 7, Organisation Chart

We have two operational divisions, namely the Analytical & Advisory Services Division and the Forensic Science Division. Administrative and clerical support is provided by the Administration Division.

The Analytical & Advisory Services Division presently consists of two functional Groups, each comprising a number of specialist Sections. The two Groups are: Food Safety & Quality Group and Other Scientific Services Group. The Food Safety & Quality Group comprises the following 7 operational sections: Additives, Contaminants and Composition Section, Food Complaints Section, Outsourcing Management Section, Quality Management Section, Residues Section, Strategic Development Section and Trace Elements Section. The Other Scientific Services Group comprises the following 9 operational sections: Chemical Safety Section, Chinese Materia Medica Chemistry Section, Chinese Medicines Section, Environmental Chemistry A Section, Environmental Chemistry B Section, Pharmaceutical Chemistry Section, Pharmaceutical Quality and Investigation Section, Product Testing and Dutiable Commodities Section and Trade Descriptions Section.

The Forensic Science Division comprises two Groups viz. the Criminalistics & Quality Management Group and the Drugs, Toxicology & Documents Group. The Criminalistics & Quality Management Group comprises 6 operational sections: Biochemical Sciences A Section, Biochemical Sciences B Section, Chemical Sciences Section, DNA Database and Parentage Testing Section, Physical Sciences Section and Scene of Crime and Quality Management Section. The Drugs, Toxicology & Documents Group comprises 5 operational sections: Controlled Drugs A Section, Controlled Drugs B Section, Forensic Toxicology A Section, Forensic Toxicology B Section and Questioned Documents Section.

Page 8, Our Accolades

Professional excellence

We endeavor to strive for scientific excellence to provide quality and impartial analytical, forensic, and advisory services to support other government departments.

We are a full member of the Asia-Pacific Metrology Programme (APMP) and one of the founding members of the Co-operation on International Traceability in Analytical Chemistry (CITAC).

Under the International Committee for Weights and Measures (CIPM) Mutual Recognition Arrangement (MRA), we are the Designated Institute in the field of metrology in chemistry for Hong Kong, China; and the official observer of the Consultative Committee for Amount of Substance: Metrology in Chemistry and Biology (CCQM).

In addition, we are certified to ISO 14001:2015, and accredited to ISO/IEC 17020:2012, ISO/IEC 17025:2017, ISO 17034:2016, and ISO/IEC 17043:2010.

Recognition awards

Two premises of our laboratory received Indoor Air Quality (IAQ) certificate awards of “Excellent Class” under the IAQ Certification Scheme.

We continue to stay committed to maintaining the indoor air quality of the working environment and safeguarding personal health in our workplace.

Involvements in external committees

International bodies

(1) Asia-Pacific Metrology Programme (APMP)

- Clean Water Focus Group (CWFG);
- Developing Economies' Committee (DEC);
- Food Safety Focus Group (FSFG);
- Technical Committee for Amount of Substance (TCQM);
- TCQM Inorganic and Electrochemical Analysis Sub-committee; and
- Technical Committee for Quality Systems (TCQS).

(2) Asian Forensic Sciences Network (AFSN)

- Crime Scene Investigation Workgroup (CSIWG);
- Digital Forensic Workgroup (DFWG);
- Illicit Drugs Workgroup (IDWG);
- Questioned Document Workgroup (QDWG); and
- Toxicology Workgroup (TXWG).

(3) International Committee for Weights and Measures (CIPM)-Consultative Committee for Amount of Substance: Metrology in Chemistry and Biology (CCQM)

- Strategic Planning Working Group (SPWG);
- Working Group on Inorganic Analysis (IAWG);
- Working Group on Key Comparisons and CMC Quality (KCWG);
- Working Group on Nucleic Acid Analysis (NAWG);
- Working Group on Organic Analysis (OAWG);
- OAWG Advances in Measurements Methods Task Group;
- OAWG Environmental Task Group;
- OAWG Food Sector Task Group;
- Working Group on Protein Analysis (PAWG); and
- PAWG Task Group 2.

(4) International Organization for Standardization (ISO)

- ISO/TC34 Food Products Technical Committee;
- ISO/TC61 Plastics Technical Committee;
- ISO/TC147 Water Quality Technical Committee;
- ISO/TC181 Safety of Toys Technical Committee;
- ISO/TC249 Traditional Chinese Medicine Technical Committee;
- ISO/TC276 Biotechnology Technical Committee; and
- ISO/TC334 Reference Materials Technical Committee.

(5) Interpol

- Interpol International Forensic Science Managers Symposium Organising Committee.

(6) World Health Organization (WHO)

- Tobacco Laboratory Network (TobLabNet).

Statutory Bodies

(1) Chinese Medicine Council of Hong Kong

- Chinese Medicine Council of Hong Kong;
- Chinese Medicines Board; and
- Chinese Medicines Committee.

(2) Occupational Safety and Health Council

- Occupational Safety and Health Council;
- Chemical Safety and Health Advisory Committee;
- Finance and Administration Committee; and
- Research Committee.

(3) Pharmacy and Poisons Board of Hong Kong

- Pharmacy and Poisons Board;
- Examination Committee;
- Pharmacy and Poisons (Manufacturers Licensing) Committee;
- Pharmacy and Poisons (Registration of Pharmaceutical Products and Substances) Committee;
- Poisons Committee; and
- Postgraduate Pharmacy Training and Development Committee.

Non-statutory Bodies

(1) Department of Health/Hospital Authority/The Chinese University of Hong Kong

- Coordinating Committee Meeting of Hong Kong Poison Control Network (HKPCN).

(2) Department of Health

- Advisory Committee of the Government Chinese Medicines Testing Institute (GCMTI);
- International Advisory Board of the Hong Kong Chinese Materia Medica Standards (HKCMMS); and
- Scientific Committee of the HKCMMS.

(3) Environment and Ecology Bureau

- Inter-departmental Task Force on Phasing Down the Use of Hydrofluorocarbons; and
- Task Force on Emergency Response to Marine Environmental Incidents (TFER).

(4) Fire Services Department

- Dangerous Goods Standing Committee.

(5) Centre for Food Safety of the Food and Environmental Hygiene Department

- Task Force on Standard Setting for Veterinary Drug Residues in Food; and
- Working Group on Amendment to Harmful Substances in Food Regulations.

(6) Hong Kong Accreditation Service (HKAS)

- Accreditation Advisory Board;
- Working Party for Accreditation of Inspection Bodies;
- Working Party for Biological & Chemical Testing;
- Working Party for Forensic Testing;
- Working Party on Proficiency Testing Providers and Reference Material Producers;
- Task Force on Crime Scene Investigation;
- Task Force on Gemstone Testing; and
- Task Force on Polymerase Chain Reaction Test (PCR Test).

(7) Hong Kong Council for Testing and Certification (HKCTC)

- Official Member of the Council.

(8) Hong Kong Observatory (HKO)

- Our representatives attended the All-partners meeting for Science in the Public Service (SIPS).

(9) Security Bureau

- Research Advisory Group (RAG) under Narcotics Division; and
- Standing Chemical, Biological, Radiological and Nuclear Planning Group (SRPG).

Page 13, Analytical & Advisory Services

We thrive to maintain high standard of analytical and advisory services to fulfil our statutory commitments in public health and safety, environmental protection, as well as protection of government revenue and consumer interests.

Page 14, Food Safety and Environmental Hygiene

We have along endeavoured to provide quality testing and investigation services to ensure food safety and environmental hygiene in Hong Kong. Comprehensive analytical services are provided to the Agriculture, Fisheries and Conservation Department and the Food and Environmental Hygiene Department (FEHD) in support of the enforcement of various pertinent regulations under the Public Health and Municipal Services Ordinance (Cap. 132), Pesticides Ordinance (Cap. 133) and Public Health (Animals and Birds) Ordinance (Cap. 139).

We also provide testing services to support the Centre for Food Safety of the FEHD in implementing the food surveillance programme, as well as handling food incidents. The scope of chemical analyses covers food composition and labelling to additives, contaminants, pesticide and veterinary drug residues.

Work statistics

Food samples

We completed a total of 196,420 tests on a wide range of food samples. 99% of the samples were completed within reporting time averaging 19 working days.

Breakdown percentages of the number of tests conducted are as follows:

- 54% on pesticide and veterinary drug residues;
- 26% on food additives and composition; and
- 20% on contaminants.

Urgent analytical services

In addition to routine monitoring work, we also rendered analytical support to the handling of various food incidents, including the analyses of histamine and metallic contaminants in seafood, pesticide residues in fruits, veterinary drug residues in porcine muscle, liver, and kidney, colouring matters in “lucky bun”, as well as radionuclides in food.

We completed 143 urgent tests and all of the samples were completed within 2 working days.

Food complaints

There were 6,070 tests conducted for food deterioration and investigation cases. 97% of the cases were completed within 25 working days.

Seepage and swimming pool water samples

A total of 76,515 tests were performed for seepage and swimming pool water samples. 98% of the samples were completed within 10 working days.

Professional advice

Professional advice to a total of 8 requests on analytical methods and nomenclature in relation to the active ingredients of registered pesticide formulations was provided.

Page 17, Environmental Protection

We provide comprehensive analytical and advisory services to the Environmental Protection Department in improving the environmental quality and in enforcing various pollution control-related legislations such as the Air Pollution Control Ordinance (Cap. 311), Waste Disposal Ordinance (Cap. 354), Water Pollution Control Ordinance (Cap. 358), Ozone Layer Protection Ordinance (Cap. 403), Hazardous Chemicals Control Ordinance (Cap. 595), etc.

Environmental samples such as air, water, sediment, biota, and waste are submitted for analyses pertaining to various environmental programmes and illegal discharge investigations. Testing of materials for presence of asbestos, as well as analyses of diesel, biodiesel, unleaded petrol, and marine fuel are also part of our statutory functions.

Analytical services relating to environmental monitoring are also provided to the Agriculture, Fisheries and Conservation Department, the Electrical and Mechanical Services Department, the Food and Environmental Hygiene Department, and the Leisure and Cultural Services Department. Technical support is rendered to the Marine Department in the identification of the sources of oil spills in the enforcement of the Shipping and Port Control Ordinance (Cap. 313).

Work statistics

Air samples

(including air samples and air pollution control samples, such as fuel oil and consumer goods containing volatile organic compounds (VOCs))

- 65,266 tests were performed on monitoring samples. 99% of the samples were completed within reporting time averaging 20 working days.
- 2,699 tests were performed on litigation samples. 100% of the samples were completed within reporting time averaging 18 working days.
- 438 tests were performed on field investigation (air pollution) samples. 100% of the samples were completed within reporting time averaging 12 working days.

Environmental waste samples

(including wastewater, leachates, livestock waste, chemical wastes and miscellaneous solid wastes)

- 10,034 tests were performed on monitoring samples. 99% of the samples were completed within reporting time averaging 27 working days.
- 285 tests were performed on litigation samples. 100% of the samples were completed within reporting time averaging 12 working days.

Water monitoring samples

(including river water, marine water, sediment and biota)

- 131,049 tests covering more than 100 different pollutants including various nutrients, trace metals, and organic compounds were conducted. 99% of the samples were completed within reporting time averaging 20 working days.

Page 19, Consumer Protection

We provide analytical and advisory support to the Customs and Excise Department (C&ED) and other government departments in the enforcement of legislations concerning consumer protection. Analytical services are provided to support their statutory functions under various regulations and ordinances such as the Weights and Measures Ordinance (Cap. 68), Dutiable Commodities Ordinance (Cap. 109), Trade Descriptions Ordinance (Cap. 362), Toys and Children's Products Safety Ordinance (Cap. 424), and Consumer Goods Safety Ordinance (Cap. 456).

Our scientific services cover a large variety of products including cigarettes, toys and children's products, consumer goods, dutiable commodities, and miscellaneous commodities. Besides, suspected counterfeit goods samples are also submitted for authenticity testing.

Work statistics

Trade descriptions

- 5,322 tests across a diverse range of commodities were conducted to evaluate compliance with labelled claim and verify authenticity, thereby supporting the enforcement of the Trade Descriptions Ordinance (Cap. 362).
- Samples of consumer goods submitted for assessment of labelled claim included disinfectants, prepackaged products, and health supplements.
- Testing on authenticity encompassed a broad spectrum of trading goods, including Chinese medicine, seafood, and products derived from both plant and animal origins.

Toys and children's products

- 21,911 tests for phthalates contents and safety requirements stipulated in the standards under relevant Ordinances were conducted.
- Test items included festive toys, plush toys, sound-producing toys, toy vehicles, magnetic toys, projectile toys, wooden toys, inflatable toys, clay toys, bibs, sipping cups, feeding dishes/bowls, baby toothbrushes, baby food storage containers, bath caps/hats, learning chopsticks, feeding bottles, potty seats, baby pillows, high chairs, children's paints, soother holders, etc.

Consumer goods

- 12,020 tests for compliance testing under the provisions of the statutory general safety requirements of the Consumer Goods Safety Ordinance (Cap. 456) were conducted.
- A wide variety of samples including foldable furniture, festive items for Lunar New Year and Christmas, swimsuits, food containers, and cosmetics such as sun lotions, perfumes, facial masks, body wash products, etc. were submitted.
- We worked closely with the C&ED to follow up cases of public concern, e.g. hair clay published by the CHOICE Magazine.

Miscellaneous commodities

- 130 tests were conducted to check for the integrity of flexible gas tubing under the requirement of the Gas Safety Ordinance (Cap. 51).
- We also received ad hoc samples for analysing the gaseous composition of liquified petroleum gas.
- 182 tests on various items, including gold medals, for evaluation of government tenders were conducted.

Investigation samples

- 266 tests on strategic commodities and valuable articles, including gold, for investigation cases under the Import and Export Ordinance (Cap. 60) were conducted.
- 47 tests were conducted to investigate suspected short weights of goods.

Smoking products

- 100 brands of best-selling cigarettes available in the local market were examined. Their tar and nicotine yields were published on GL website for public browsing.
- 14,437 tests on alternative smoking products, including electronic smoking products, heated tobacco products, and herbal cigarettes were conducted.
- 416 tests on various other tobacco products were conducted.

Dutiable commodities

- 1,408 tests on hydrocarbon oils and 1,538 tests on liquors were conducted.

Page 23, Drug Quality

We work closely with the Department of Health (DH), the Hospital Authority, and the Customs and Excise Department to safeguard public health and support the enforcement of the Import and Export Ordinance (Cap. 60), Antibiotics Ordinance (Cap. 137), Pharmacy and Poisons Ordinance (Cap. 138), and Chinese Medicine Ordinance (Cap. 549).

Our professional services on pharmaceutical analyses mainly provide support to (1) the routine market surveillance programme for monitoring the quality of local registered pharmaceutical products; (2) the investigatory programme for complaint cases, illegal sales (including via internet) and possession of suspected regulated drug substances; (3) the general quality control programme for government procurement exercises on pharmaceutical products; and (4) the routine surveillance programme for testing drug adulteration in health products.

Routine analyses for Chinese medicines include (1) testing of Chinese herbal medicines (Chms) and proprietary Chinese medicines (pCms) for contamination of heavy metals, toxic elements, and pesticide residues; (2) drug adulteration in pCms; and (3) analysis of aflatoxins and sulphur dioxide residues in Chms. Apart from providing analytical support in the chemical markers identification testing for suspected unregistered pCms, we also offer full support to the DH for urgent investigatory analyses of samples from cases relating to adverse reactions arising from the consumption of pCms containing undeclared drug ingredients, and from poisoning incidents caused by erroneous substitution or contamination of Chinese medicines.

In addition, we remain committed to offering analytical and advisory support for the development of Hong Kong Chinese Materia Medica Standards (HKCMMS) by performing method verification and trial run studies.

Work statistics

Pharmaceutical samples

- 85 tests were conducted for urgent samples relating to pharmaceutical incidents. 100% of the samples were completed within 2 working days.
- 54,041 tests were conducted for other pharmaceutical samples. 99% of the samples were completed within reporting time averaging 25 working days.

Chinese medicine samples

- 4 tests were conducted for urgent samples relating to Chinese medicine incidents. 100% of the samples were completed within 2 working days.
- 87,876 tests were conducted for other Chinese medicine samples. 99% of the samples were completed within reporting time averaging 30 working days.

Page 25, Public Safety

To support the HKSAR Government in ensuring public safety, we are entrusted with the statutory role to provide analytical and advisory services. The scope of services includes (1) providing analytical and advisory services to the Fire Services Department and other government departments in the classification of dangerous goods and on matters relating to occupational safety and health; (2) providing 24-hour emergency response services to support the Fire Services Department in handling of chemical incidents; (3) collaborating with the Hong Kong Observatory (HKO) in monitoring radiation levels of environmental samples; (4) rendering analytical support to the Food and Environmental Hygiene Department (FEHD) in the surveillance of radioactive contamination of imported foodstuff; (5) providing technical support to the Daya Bay Contingency Plan (DBCP) and the Nuclear Powered Vessel Contingency Plan for Public Safety During Visits of Nuclear Powered Warships "PORTSAFE" in Hong Kong; (6) providing technical support for the implementation of the Chemical Weapons Convention in Hong Kong; and (7) providing professional services to the Trade and Industry Department and the Customs and Excise Department in enforcement of relevant local legislations in the control of import and export of strategic commodities.

Work statistics

Dangerous goods

- 5,252 tests on the classification of dangerous goods under Dangerous Goods Ordinance (Cap. 295) and its subsidiary regulations were conducted. 100% of the dangerous goods were completed within reporting time averaging 14 working days.

Radioactivity measurement

- 4,003 tests on sample pre-treatment for radioactivity measurement under the HKO Environmental Radiation Monitoring Programme (ERMP) were conducted.
- 24 tests on treated leachate from the Environmental Protection Department for radioactivity measurement were conducted.
- 990 tests on imported food samples for radioactivity measurement under the FEHD Food Surveillance Programme (FSP) were conducted.

All of the samples were completed within reporting time averaging 12 working days.

None of the food samples tested was found to exceed the guideline levels stipulated in the Codex Alimentarius Commission for cross-border trade of foodstuffs in respect of 3 major gamma-emitting radionuclides, namely I-131, Cs-134, and Cs-137.

Occupational safety and health

- 3,608 tests on samples taken by the Labour Department and the Hong Kong Police Force were conducted.

Advisory services

Apart from provision of testing services, we also provide advisory services to client departments to support law enforcement.

- 10 pieces of advice related to the classification of items under the Dangerous Goods Ordinance (Cap. 295) were provided.
- 758 pieces of advice pertaining to the implementation of the Import and Export (Strategic Commodities) Regulations (Cap. 60G) and Chemical Weapons (Convention) Ordinance (Cap. 578) were provided.

Page 28, Forensic Science Services

We endeavor to deliver impartial, accurate, and quality forensic scientific services to support the Hong Kong judiciary system.

Page 29, 24-Hour Scene of Crime and Laboratory Examination Services

Providing high quality crime scene investigation (CSI) services to law enforcement agencies (LEAs) in Hong Kong is one of our prime aims. A comprehensive range of 24-hour CSI services is provided by a team of experienced Laboratory Specialist Services Officers (Scientific Evidence Officers) and chemists from different operational sections. Scene investigation services include but not limited to the identification, preservation, and retrieval of relevant scientific evidence materials for examination, professional evaluation of forensic evidence, reconstruction on the sequence of events at the scene and evidence presentation in court.

In addition to general CSI services, our trained professional staff provide 4 specialised scene investigation services: (1) fire investigation to determine the cause and progression of suspicious fires; (2) traffic accident reconstruction to decipher potential causes of road traffic accidents; (3) bloodstain pattern analyses of serious crime scenes, such as murder and serious wounding cases, to help reconstruct the possible events that may have taken place; and (4) investigation of illicit drug manufacturing/cultivation activities. Where necessary, a comprehensive team, including general crime scene officers and professional specialists, will collaborate on the scene investigation.

We also provide round-the-clock laboratory examination services to client departments for cases requiring immediate attention to provide imperative forensic evidence for criminal investigation and preliminary court proceedings. Such round-the-clock service also encompasses provision of verbal expert advice to assist LEAs in crime investigations. In 2024, we provided 7 times of round-the-clock laboratory examination services for LEAs.

Work statistics

In 2024, we attended a total of 389 crime scenes comprising

- 176 traffic accident and vehicle-related scenes;
- 137 general crime scenes;
- 56 illicit drug-related scenes;
- 15 fire scenes; and
- 5 scenes with bloodstain pattern analyses.

Issue of interest

On 17 December, a counter-terrorism exercise, codenamed "WISDOMLIGHT", organised by the Inter-departmental Counter-Terrorism Unit (ICTU) took place at the Kai Tak Youth Sports Ground. In addition to mobilising every ICTU member departments, we also joined forces with them.

Our chemists and Scientific Evidence Officers were responsible for conducting investigations and collecting on-site evidence. With the aid of professional equipment, including portable Raman spectrometers and 3D laser scanning instruments, it was able to efficiently conduct preliminary detection and identification of suspicious chemicals as well as scanning and digitising the crime scene conditions.

Page 32, Forensic DNA Examination

Our Forensic DNA experts are dedicated to providing quality DNA testing services to the Hong Kong Police Force (HKPF) and other law enforcement agencies in conducting scientific analysis during criminal investigations.

Our two Biochemical Sciences A and B Sections are responsible for examining biological evidence collected from crime scenes using DNA profiling technology and analysing the DNA results to identify individuals involved in the crime cases. In addition, the Sections also offer 24-hour on-site bloodstain pattern analysis service to assist the HKPF in analysing the crime scene.

The DNA Database Unit (DDU) of the DNA Database and Parentage Testing Section (DPS) maintains and updates a DNA database on behalf of the Commissioner of Police for DNA data of convicted offenders and suspects of serious criminal offences. Outstanding DNA profiles from evidence materials are uploaded to the DNA database for regular data comparison with a view to locating any potential culprits involved. Since the setup of the database in 2000, a large number of outstanding crime scene DNA profiles have been matched and subsequently led to further investigations by law enforcement agencies in otherwise unsolved crime cases.

The Parentage Testing Unit (PTU) of DPS provides genetic testing services mainly to the Immigration Department for the verification of parent-child relationships in connection with immigration-related cases since 2000.

Work statistics

Biochemical sciences

We examined a total of 2,175 non-complicated and complicated cases. As compared with the figure in 2023, there was a decrease of about 4%. 99% of the non-complicated cases were completed within 60 working days and 98% of the complicated cases were completed within 130 working days.

There were 14,712 exhibit items examined for biological evidence in relation to criminal cases. As compared with the figure in 2023, there was a decrease of about 5%.

In addition, we also provided 3 times of “round-the-clock testing service” for law enforcement agencies.

DNA database

The use of the database resulted in 375 pairs of matches between crime scene exhibits with offenders/suspects, and 75 pairs of matches among the crime scene exhibits themselves. These matching results have provided important clues for the law enforcement agencies to further investigate unsolved crime cases.

We examined 2,658 cases and 95% of them were completed within 22 working days. As compared with the figure in 2023, there was a decrease of about 3%.

By the end of 2024, the number of relevant DNA data stored in the database was 64,248. In addition, we also provided 1 time of “round-the-clock testing service” for law enforcement agencies.

Parentage testing

We provide DNA testing services in connection with the Certificate of Entitlement applications pursuant to the Immigration (Amendment) Ordinance 2001.

We examined 2,374 cases with 96% of them were completed within 22 working days. As compared with 524 cases in 2023, the total number of cases examined was increased by 1,850. The positive parentage matching rate was 99%, decreased by about 0.5% as compared with the figure in 2023.

Page 36, Criminalistics – Contact and Physical Evidence

We provide services on the examination of trace evidence, such as textile fibres, paint, glass, flammable and explosive residues, and miscellaneous chemical investigation. Trace evidence examination and miscellaneous chemical investigation frequently play important parts in the evidence produced in crime investigation and subsequent legal proceedings.

Fire investigation and traffic accident investigation are currently included under our 24-hour services. The former is to determine the origin, cause, and development of a fire or explosion. It involves multiple disciplines including fire chemistry, fire dynamic, knowledge of building systems, scene investigation techniques, chemical analyses, and various analyses tools. The latter is to assist the Hong Kong Police Force in the reconstruction of the traffic accident.

Physical examination services provided include traffic accident reconstruction (TAR), forensic video analyses (FVA), tyre examination, vehicle number restoration, forgery and counterfeit items and cases involving marks and impressions evidence. The latter helps associating physical contact of objects such as tools and shoes with toolmarks and shoeprints recovered at the crime scene.

TAR involves the application of various scientific disciplines including mathematics, physics, automotive engineering, video analysis, and scene investigation techniques in deciphering possible cause of road traffic accidents. Examination of failed tyres often provides useful information in determining whether their deflation is the cause or a consequence of the accident. Vehicle number restoration entails the discovery and retrieval of numbers unique to the vehicles concerned as a means of detecting unauthorised vehicle-taking or modification.

FVA involves the analyses of digital evidence pertaining to video footage or images of captured events related to a crime. It utilises advanced video analyses and image processing software to extract/analyse relevant information from the digital evidence. Subsequent image comparison between the image of an object in the footage and the control images of the corresponding seized exhibits could serve as valuable evidence for criminal investigation or court proceeding purposes.

Work statistics

Chemical sciences

We examined a total of 560 cases involving 3,302 exhibit items in relation to fire investigation, trace evidence and miscellaneous chemical investigation.

As compared with the figures in 2023, there was a decrease of about 3% in the total number of cases and about 3% decrease in the total number of exhibit items examined.

- For fire investigation, 13 cases involving 89 exhibit items were examined. 100% of the cases were completed within 88 working days.
- For trace evidence investigation, 330 cases involving 2,118 exhibit items were examined. 99% of the cases were completed within 66 working days.
- For miscellaneous chemical investigation, 217 cases involving 1,095 exhibit items were examined. 100% of the cases were completed within 33 working days.

Physical sciences

We examined a total of 756 cases involving 1,821 exhibit items in relation to forensic video analyses, marks and impressions evidence examination, traffic accident reconstruction, and miscellaneous physical investigation.

As compared with the figures in 2023, there was a decrease of about 10% in the total number of cases and an increase of about 13% in the total number of exhibit items examined.

- For forensic video analyses, 16 cases involving 23 exhibit items were examined. 100% of the cases were completed within 88 working days.
- For marks and impressions evidence examination, 115 cases involving 355 exhibit items were examined. 96% of the cases were completed within 66 working days.
- For traffic accident reconstruction, 337 cases involving 440 exhibit items were examined. 94% of the cases were completed within 66 working days.
- For miscellaneous physical investigation, 288 cases involving 1,003 exhibit items were examined. 93% of the cases were completed within 33 working days.

Page 39, Controlled Drugs

We provide comprehensive analytical services for enforcing the control of drugs and their chemical precursors involved in the contravention of the Dangerous Drugs Ordinance (Cap. 134), Antibiotics Ordinance (Cap. 137), Pharmacy and Poisons Ordinance (Cap. 138), and Control of Chemicals Ordinance (Cap. 145). These services are mainly provided to the Hong Kong Police Force and the Customs and Excise Department, as well as other law enforcement agencies (LEAs).

Work statistics

Drug cases analysed

We examined 3,412 drug cases involving 33,491 exhibit items. As compared with figures in 2023, there was a decrease of about 9% in the total number of cases and an increase of about 5% in the total number of exhibit items examined.

- For illicit drug seizures, 92% of the cases were completed within 11 working days.
- For major illicit drug seizures and manufacturing, 91% of the cases were completed within 44 working days.
- For other illegal drug activities, 97% of the cases were completed within 120 working days.

Scene visits

We attended 56 illicit drug manufacturing/cultivation scenes, representing an increase of about 47% as compared with 38 scene attendance in 2023.

Most of the scene visits in 2024 were related to cocaine manufacturing while the rest involved cannabis cultivation and manufacturing of other drugs including heroin, tetrahydrocannabinol (THC) oil, and etomidate.

Drug abuse

We provide statistical figures from the results of examined case exhibits to relevant policy bureau and LEAs for reference when monitoring trends of drug abuse in Hong Kong.

Among the total number of cases examined in 2024, cocaine was the most common drug of abuse, representing about 25% of the total cases, which was the same as that of 2023; followed by cannabis, methamphetamine hydrochloride ("Ice"), ketamine and heroin which accounted for about 24%, 15%, 14% and 8% of the total cases, respectively. As compared with the figures of 24%, 15%, 12% and 9% of the total cases respectively obtained for the same 4 drugs in 2023, the proportion of cases involving ketamine and heroin showed a slight increase and decrease respectively while the proportion of cases involving each of the remaining two drugs was comparable to that of 2023.

According to examination results, the monthly average purity of the controlled drugs in 2024 were comparable to 2023. The average purity ranged from

- 76% to 81% for cocaine as compared with 56% to 89% in 2023;
- 92% to 100% for "Ice" as compared with 89% to 99% in 2023;
- 74% to 83% for ketamine as compared with 63% to 83% in 2023; and
- 72% to 83% for heroin as compared with 77% to 85% in 2023.

Professional advice

To combat growing abuse of etomidate and its structural analogues, the HKSAR Government proposed amendments to the Dangerous Drugs Ordinance (Cap. 134) to regulate these emerging drugs in 2024. We have offered expert advice on the proposed legislative amendments and successfully developed analytical methods for determination of etomidate and its analogues.

We will continue to offer professional advice to the policy bureau in relation to the legislation amendments for the control of other abused drugs.

Page 42, Forensic Toxicology

Forensic toxicology services encompass 5 operational areas:

Analytical toxicology

Biological specimens from the deceased, suspects or victims, as well as relevant exhibits seized at death or crime scenes are examined for drugs and poisons to assist the judiciary, coroners, pathologists, and the Hong Kong Police Force (HKPF) in death inquiries and criminal investigations.

Drink driving testing

Alcohol concentrations in blood or urine of drivers are determined so as to assist the HKPF to take enforcement action in accordance with the drink driving provisions in the Road Traffic Ordinance (Cap. 374).

Drug driving testing

Blood or urine samples of drivers are examined for the presence of drugs including the 6 specified illicit drugs of zero-tolerance so as to assist the HKPF to take relevant enforcement action in the Road Traffic Ordinance (Cap. 374).

Hair drug testing

Drugs of abuse are examined in hair samples collected by non-government organisations in collaboration with schools under the Healthy School Programme of the Narcotics Division, Security Bureau.

Urinalysis

Drugs of abuse are examined in urine samples collected by the Social Welfare Department, the Correctional Services Department, the Methadone Clinics of the Department of Health, the HKPF (under the Police Superintendent's Discretion Scheme, Voluntary Drug Test Scheme, and Recruitment Urine Drug Test) and the Immigration Department, as well as the non-government organisations and schools (under the Healthy School Programme of the Narcotics Division) in their respective drug use surveillance programmes.

New service to client

We will provide alcohol and drug testing in blood and urine specimens to the Marine Department from 1 January 2025 when the Marine Safety (Alcohol and Drugs) Ordinance (Cap. 649) is effective.

Work statistics

Analytical toxicology

A total of 2,210 cases involving 10,197 samples were examined for analytical toxicology, with 86% of the cases were completed within 33 working days. As compared with figures in 2023, there was a decrease of about 5% and 6% in the total number of cases and samples, respectively.

The majority of the cases came from the Forensic Pathology Service, contributing 1,785 cases and 8,512 samples, which represent 81% and 83% of the total cases and samples, respectively. The remaining cases were mainly from the Hong Kong Police Force, accounting for 281 cases and 1,254 samples, which represent 13% and 12% of the total number of cases and samples, respectively.

Amongst these examined cases in 2024, approximately 60% were found to have drugs or poisons.

Drink driving testing

We examined 59 drink driving cases, representing an increase of about 55% as compared to that of the previous year. About 98% of the drink driving cases were completed within 11 working days.

Drug driving testing

We examined 39 drug driving cases, representing a decrease of about 7% as compared to that of the previous year. All drug driving cases were completed within 33 working days.

Hair drug testing

We examined 2,408 hair samples (mainly from the Healthy School Programme), representing a decrease of about 7% as compared to that of the previous year.

Urinalysis

We examined 13,083 judicial confirmation and 3,987 methadone clinic cases, representing a decrease of about 7% and about 13%, respectively as compared to that of the previous year.

There were 93% judicial confirmation (routine), 100% judicial confirmation (enhanced probation) and 92% methadone clinic cases completed within 22, 6 and 11 working days, respectively.

Page 47, Questioned Documents

We provide services to law enforcement agencies on the determination of the authorship of questioned handwriting and signatures, as well as the authenticity and/or alteration of questioned documents. Moreover, we offer express service for urgent examination of the authenticity of travel and identity documents.

Work statistics

We completed a total of 244 cases, including 206 handwriting, counterfeit and forgery cases and 38 express service cases. 99% of the counterfeit and forgery cases were completed within 30 working days. All handwriting and express service cases were completed within 66 and 1 working day, respectively.

The Hong Kong Police Force remained the major client, accounted for about 84% of the total cases and about 71% of the express service cases submitted. The Hong Kong Smart Identity Card remained the most prominent type of items for the express service, contributing to 66% of the express cases examined in 2024.

In addition to regular service, we continue to provide technical advice, professional support, and testing services to other government departments for documents with security features such as the new generation Hong Kong Smart Identity Cards from the Immigration Department and security papers and laminates from the Government Logistics Department.

Page 49, Development

We leverage the latest advancements in science and technology to enhance our analytical techniques and capabilities to better serve our stakeholders.

Page 50, Food Safety

We continued to outsource certain routine food testing work covering the testing of pesticide and veterinary drug residues, preservatives, metallic contaminants, and other contaminants to commercial testing laboratories. The released resources were deployed to meet the demand of the work arising from the amendments of food legislation, development of new testing methods, and other duties which included managing outsourcing activities, promoting chemical metrology work, and enhancing the testing capabilities of local laboratories.

In response to the discharge of nuclear-contaminated water at the Fukushima Nuclear Power Station, we have developed different analytical methods and extended the scope of radiation testing to cover more radionuclides in food imported from Japan.

One of the initiatives outlined in the Supplement to the Chief Executive's 2024 Policy Address was to review food safety standards relating to metal contents in food under the Food Adulteration (Metallic Contamination) Regulations (Cap. 132V) to further enhance food safety. This includes formulating legislative amendment proposals and launching public consultation in 2024-25. To support this initiative, we have been developing methods actively for testing relevant metallic contaminants.

The Preservatives in Food (Amendment) Regulation 2024 came into effect in December 2024, followed by a 24-month transitional period. The list of permitted preservatives/antioxidants has been updated. As the number of “additive-food” pairs with specified maximum permitted levels has also been substantially increased, we have been closely liaising with the Centre for Food Safety (CFS) to ensure timely provision of relevant testing services. Furthermore, in light of the reviews of the regulation of veterinary drug residues and sweeteners in food under the Harmful Substances in Food Regulations (Cap. 132AF) and Sweeteners in Food Regulations (Cap. 132U) respectively, we have been actively undertaking method development and procurement of all necessary reference materials and equipment, with a view to expanding the scope of testing service to cope with the anticipated new testing demand from the CFS.

On genetically modified (GM) foods, the analytical capabilities have been extended to include two new soybean GM events, namely “MON 87701” and “MON 87705” using real-time polymerase chain reaction.

New equipment and facilities were acquired in 2024. They were

- Liquid chromatograph-tandem mass spectrometer for preservatives testing.
- Liquid chromatograph-tandem mass spectrometer for pesticide residues testing.
- Liquid chromatograph systems coupled with diode array and fluorescence detectors for seepage analyses.
- Automatic solvent evaporation systems for preparation of seepage samples.

Page 52, Environmental Protection

To cope with the updating of the Stockholm Convention on Persistent Organic Pollutants (POPs), we continued our method development and validation work for the analyses of more POPs in various environmental samples.

To support the Environmental Protection Department in providing data for the network construction of the National Environmental Quality Standards for Surface Water, we developed analytical methods for the analyses of permanganate index, selenium, volatile phenols, and petroleum hydrocarbons in water monitoring samples.

To facilitate the implementation of the newly amended Product Eco-responsibility Ordinance (Cap. 603) for regulating disposable plastic tableware and other plastic products, we developed a test method for identification of polymers in disposable plastic products by Fourier transform infrared (FTIR) spectrometry and pyrolysis gas chromatography-mass spectrometry.

New equipment and facilities were acquired in 2024. They were

- FTIR spectrometer and FTIR spectroscopic imaging system for testing of polymer materials in disposable plastic products.
- Total organic carbon analyser for the determination of total organic carbon in environmental samples.
- Inductively coupled plasma-optical emission spectrometer for the determination of elements in environmental samples.

Page 53, Consumer Protection

Throughout the year, we continued to innovate and verify new methods to enhance consumer protection services. The scope of services was expanded to include the authentication of Asian moon scallops, venus clams, and various poultry species, such as pigeon and turkey.

To facilitate the enforcement of the Toys and Children's Products Safety Ordinance (Cap. 424), a variety of equipment for the mechanical testing of children's products were installed.

As a Testing Member of the World Health Organization (WHO) Tobacco Laboratory Network (TobLabNet) and one of the region's leading tobacco testing laboratories, we are committed to ongoing tobacco testing and research activities. This includes contributing to the WHO through training and the development of testing methods, along with various other initiatives.

Page 54, Drug Quality

We continued to develop methods to address the testing needs for new pharmaceutical products. Liquid chromatography-tandem mass spectrometry (LC-MS/MS) and high resolution liquid chromatography–quadrupole orbitrap mass spectrometry were adopted for the determination of N-nitrosodimethylamine (NDMA) impurity in sartan pharmaceutical products.

In the realm of proteomics, high resolution liquid chromatography-quadrupole orbitrap mass spectrometry was employed for identification of humanised monoclonal antibodies, analysis of human serum albumin, and further development in the quantitation of atezolizumab.

Regarding the determination of elemental impurities in oral drugs (tablets and capsules), we developed a method for the determination of Class 1 elemental impurities including arsenic, cadmium, lead, and mercury by inductively coupled plasma-mass spectrometry with reference to the International Council for Harmonisation of Technical Requirements for Pharmaceuticals for Human Use (ICH Q3D) and the US Pharmacopeia-National Formulary (USP-NF).

To strengthen our analytical capabilities in Chinese medicines testing, we have successfully developed new multi-residue analytical methods by gas chromatography-tandem mass spectrometry and LC-MS/MS. These advancements support the upcoming implementation of new requirements regarding the expanded scope of pesticide residues in Chinese herbal medicines samples. Furthermore, we continue to leverage these advanced technologies to develop new qualitative methods for identifying chemical markers.

New equipment and facilities were acquired in 2024. It was:

- High performance liquid chromatograph-tandem mass spectrometer for enhancing analysis of organic impurities in pharmaceutical products.

Page 55, Controlled Drugs

In response to the trends of continual emergence of new psychoactive substances, including etomidate, and the implementation of legislative amendments in relation to drug control, we strive to develop new analytical methods for new drugs identification as well as quantification.

Forensic Toxicology

We continue to advance our methods to enhance our analytical toxicology services for client departments. A new method has been developed for screening of common drugs and poisons in blood samples with our recently acquired ultra-performance liquid chromatography-quadrupole time-of-flight mass spectrometer (UPLC-QTOF-MS). This method offers high sensitivity, rapid analysis, and multi-analyte detection, facilitating efficient drug and poison screening.

Page 56, Metrology in Chemistry

As a designated institute responsible for metrology in chemistry in Hong Kong, China under the International Committee of Weights and Measures (CIPM) Mutual Recognition Arrangement (MRA), our role is to establish and disseminate traceability of related measurements to support the testing community in Hong Kong through the production of certified reference materials (CRMs) and provision of reference measurements. Our proficiency testing (PT) schemes with metrologically traceable reference values are especially helpful in carrying out this mandate.

By actively participating in meetings, workshops, symposiums, and comparison studies organised by international and regional metrology organisations (RMOs) such as the International Bureau of Weights and Measures (BIPM) and the Asia Pacific Metrology Programme (APMP), we contribute to Hong Kong's development and prosperity as well as international efforts in building a robust and harmonised scientific measurement infrastructure for global trade, commerce, and regulatory affairs.

Organisation of comparison studies and PT schemes

(1) Local PT schemes

- Boric acid in food (GLHK PT 24-01);
- Propionic acid in flour confectionery (GLHK PT 24-02);
- Benzoic acid, methyl paraben, and ethyl paraben in soybean sauce (GLHK PT 24-03); and
- Inorganic arsenic in aquatic product (GLHK PT 24-07).

(2) RMO supplementary comparisons and pilot studies

- Histamine in fish (APMP.QM-S21).

Participation in international comparisons and pilot studies

- Polar analyte in high protein food matrix-metronidazole in porcine muscle (CCQM-K180);
- Low-polarity analytes in abiotic matrix: PAHs in sediment (CCQM-K184);
- Elements in pork (CCQM-K187);
- Critical elements in lithium ion batteries (EURAMET.QM-S16);
- Mass fraction of polar to non-polar pesticides in plum slurry (AFRIMETS.QM-S1);
- Cadmium and lead in cacao powder (SIM.QM-S18);
- Species specific meat composition determination of DNA extracted from meat (CCQM-P231); and
- Trace elements in river water (APMP.QM-P36).

Calibration and Measurement Capability (CMC) claims

In 2024, we attained 4 new CMC claims under the categories of food and water. According to the BIPM Key Comparison Database (KCDB), we achieved 120 CMC claims as at the end of December 2024.

Categories and number of CMC claims achieved by the GL are as follows:

- 5 in Advanced materials;
- 16 in Biological fluids and materials;
- 43 in Food;
- 2 in Fuels;
- 10 in High purity chemicals;
- 3 in Inorganic solutions;
- 6 in Organic solutions;
- 1 in pH;
- 13 in Sediments, soils, ores and particulates;
- 12 in Water; and
- 9 in Other materials.

Achievement

In addition to the Analytical & Advisory Services Division, the Forensic Science Division has also been accredited as a PT provider in accordance with ISO/IEC 17043:2010 in September 2024. We demonstrated our impartiality and implemented measures to uphold confidentiality, showcasing the technical competence of the staff involved in designing PT schemes and fully complying with the relevant accreditation requirements.

Issue of interest

During 20 to 26 April,

Our representatives attended the CCQM working group meetings and the 29th CCQM meeting at the BIPM in Paris, France. The CCQM is responsible for the development, improvement, and documentation of national standards' equivalence, including CRMs and reference methods, for chemical and biological measurements. After the meetings, they visited the Chemistry Department of the BIPM.

During 17 to 18 June,

Our representatives visited the Korea Research Institute of Standards and Science (KRISS). During the visit, both parties engaged in comprehensive information exchange and in-depth discussions regarding the production of CRMs, purity assessment, and gas analysis. The visit also fostered mutual understanding and facilitated knowledge-sharing about the latest advancements in the preparation of standard gas mixtures.

On 10 and 16 September,

We co-organised a two-day workshop titled "Metrology Workshop—Fundamentals of Metrology 2024" with the Standards and Calibration Laboratory (SCL) of the Innovation and Technology Commission at the Hong Kong Science Museum, and about 160 participants attended the workshop. Our chemist delivered a presentation on "Metrology in Chemical Measurement" during the workshop.

In 2024, we organised our first PT scheme (GLFSD PT24-01) on the determination of vehicle speed from video footage. The study was open to forensic laboratories in Asia through the Asian Forensic Sciences Network (AFSN). A total of 9 laboratories/institutions from 5 different Asian countries participated in the study. As at December 2024, all speed results were submitted for analysis, and preliminary analysis indicated that all results were satisfactory. Final reports are expected to be released in 2025.

The study promoted valuable exchanges within the forensic community across Asian countries and supported the participating laboratories/institutions in their accreditation processes.

Page 60, Training · Sharing · Exchange

In the spirit of fostering learning and strengthening professional relationships, we actively exchange our knowledge and experience with experts both locally and internationally.

Training to client departments

Apart from analytical and advisory and forensic science services, we also provide training to different client departments in order to reinforce cooperation and strengthen our service quality. In 2024, 1,018 participants from the Customs and Excise Department, Department of Justice, Fire Services Department, Food and Environmental Hygiene Department, Hong Kong Police Force, Independent Commission Against Corruption, Marine Department, and Social Welfare Department joined a total of 28 lectures and/or visits organised by our professional staff.

Number of trainees attended trainings arranged by the GL in 2024 are as follows:

- 20 from Customs and Excise Department;
- 19 from Department of Justice;
- 25 from Fire Services Department;
- 44 from Food and Environmental Hygiene Department;
- 820 from Hong Kong Police Force.
- 43 from Independent Commission Against Corruption;
- 31 from Marine Department; and
- 16 from Social Welfare Department;

Facilitation and support to local testing community

In supporting the accreditation of local testing laboratories under the Hong Kong Laboratory Accreditation Scheme (HOKLAS), in 2024, our professional staff have acted as technical assessors in 18 assessments, totalling 41 man-days.

Number of man-days of GL staff acted as HOKLAS assessors in 2024 are as follows:

- 7.5 in Chemical testing;
- 0.3 in Chinese medicine;
- 2 in Construction materials;
- 17.3 in Environmental testing;
- 12.3 in Food; and
- 1.5 in Toys and children's products.

Attachment trainings provided to experts outside Hong Kong

During 9 to 20 September,

Four experts from the Narcotics and Toxicology Divisions of the Forensic Science Analysis Centre, Department of Chemistry of Malaysia (KIMIA), participated in a two-week attachment training program at our headquarters. This program focused on the exchange of knowledge regarding the latest techniques and quality laboratory practices. The Malaysian experts also shared their experiences and practices during a seminar, strengthening our future collaboration.

During 9 to 20 December,

Two experts from the Academy of Forensic Science of China, participated in a two-week training program at our headquarters. The program included an overview of the Hong Kong judiciary system and the role of expert witness in court, laboratory safety, administrative management, as well as technical exchanges on toxicology. Our counterparts from Shanghai shared their experiences in a seminar, strengthening our long-standing partnership and commitment to future collaboration.

Our visitors

On 23 April,

A delegation from the Office of Narcotics Control Board of Thailand, led by the Director of Narcotics Law Enforcement Bureau, Mr. Prin MEKANANDHA, visited our laboratory. During the visit, our staff introduced our organisation structure and the drug trend in Hong Kong.

On 3 May,

Commissioner for Narcotics of the Narcotics Division, Security Bureau, Mr. Kesson LEE, shared insights and perspectives on drug testing with our staff.

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On 14 August,

A delegation from the National Institute of Metrology, China (NIM) led by the Acting Director of Center for Advanced Measurement Science (Division of Life Science)/Vice Director of Shenzhen Institute for Technology Innovation, Dr. Zhen-fei SONG, exchanged views on metrology development and future collaboration opportunities with our staff.

On 21 August,

A delegation from the Guangdong Provincial Public Security Department, Narcotics Control Bureau, Ministry of Public Security of China, led by the Deputy Head, Mr. Ya-guang CHEN, exchanged experiences and views on work related to controlled drugs and toxicology analyses with our staff.

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On 23 October,

A delegation from the Singapore Police Force (SPF), led by the 3 Head Forensics Management Branch, Forensics Division, Ms. Jo CHAN, exchanged views on crime scene investigation and forensic work with our staff.

On 20 November,

A delegation from the Narcotics Control Bureau, Ministry of Public Security of China, led by the Division Director, Mr. Xiao LI, discussed and shared views on work related to controlled drugs with our staff.

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During 25 to 26 November,

Deputy Director of Institute of Forensic Science, Ministry of Public Security of China, Mr. Bao-liang SUN, led a delegation and shared experience in the fields of DNA database and court testimony in China and Hong Kong with our staff.

During 26 to 28 November,

Deputy Secretary of Drug Intelligence and Forensic Center, Ministry of Public Security of China, Mr. Wei-fang LI, led a delegation and shared experience in the fields of controlled substance analysis with our staff.

On 27 November,

A delegation from the Ministry of Trade of the Republic of Indonesia, led by the Director of Standardization and Quality Control, Mr. Matheus H PURNOMO, visited our Food Safety Laboratory and exchanged views on work related to quality assurance, food safety, public health, and environmental protection with our staff.

On 29 November,

A delegation from the General Administration of Customs of China (GACC), led by their Vice-Minister, Mr. Ling-jun WANG, was welcomed by the Deputy Secretary for Environment and Ecology (Food), Mr. Anthony LI and the Government Chemist, Dr. Wai-on LEE. They convened a meeting to discuss work related to food and product safety.

Staff development

During 1 January to 31 December,

Our chemist assumed a position in Nairobi, Kenya under the United Nations Environment Programme (UNEP) for a 2-year tenure starting in May 2023. As one of the second batch of the 12 young Hong Kong civil servants recommended by the Ministry of Foreign Affairs of China to participate in the Junior Professional Officer (JPO) Programme of the United Nations, she applied her professional knowledge to contribute in environmental protection initiatives aligned with mission of her new post.

During 1 January to 30 November,

Our chemist took up a new challenge at the International Bureau of Weights and Measures (BIPM) in Paris, France under the 6-month Visiting Scientist Programme, which started in 1 September 2023 till 29 February 2024. The programme aimed at developing analytical methods for purity assessment of drug materials. Afterwards, she was invited back again by the organisation for another 3-month term from 2 September to 30 November 2024 to further her research work.

During 1 January to 31 December

Our chemist was enrolled in the 2-year Master's Degree in Public Policy Programme (Class 2023) co-organised by the Civil Service Bureau and Peking University starting in September 2023. During the first year of the programme while studying full time at the Peking University, she had many opportunities to visit various Mainland organisations, including National Institute of Metrology, China (NIM).

During 8 to 12 July,

Our Chief Chemist joined the "2024 Thematic Study Programme on Promoting the Development of the Guangdong-Hong Kong-Macao Greater Bay Area" training programme. The programme was jointly organised by the Hong Kong & Macao Affairs Office (HKMAO) of the State Council, and the National Development and Reform Commission (NDRC) of China.

During 24 November to 5 December,

Our representatives and staff of the Fire Services Department participated in the Fire Investigation Technical Exchange and Training held at the Tianjin Fire Physical Evidence Identification Centre of Fire Rescue Bureau, under the Emergency Management Department. The programme highlighted challenges of fire investigation associated with lithium batteries, electric cars, and new energy systems, as well as advancements in evidence examination and experience sharing in fire investigation.

Connecting to the world

During 3 to 8 June,

Our chemist was invited to join the Chinese delegation, and to represent the GL, as a member to work in the Secretariat during the 55th Session of the Codex Committee on Pesticide Residues (CCPR55) meeting held in Chengdu, China. He was also appointed as one of the three rapporteurs for CCPR55 to record discussions and decisions made by the Committee.

During 11 to 12 July,

Our representatives attended the 28th Tripartite Technical Support Meeting in Foshan, China, where they engaged with the Guangdong and Macao delegates to exchange insights and experiences on different facets of work. Discussions included analytical methods and recent trends of new drugs, standard methods for handwriting identification, DNA “next-generation sequencing” (NGS) technology, and the handling of exhibit items related to fire and explosive crimes. Our chemist also delivered a presentation titled “Scene Investigation-Vehicle Fire”.

During 22 to 24 July,

Our chemist and representatives of national metrology institutes/designated institutes, as well as experts on climatic science and gas analysis attended the Asia-Pacific Metrology Programme (APMP) Joint Workshop 2024 of Climate Change and Clean Air Focus Group/Technical Committee for Amount of Substance (TCQM) Gas Analysis Working Group organised by the Zhengzhou Institute of Metrology (ZIM) in Zhengzhou, China. The workshop highlighted the critical role of metrology in supporting climatic action, with a focus on developing accurate and reliable measurement systems for greenhouse gases and air pollutants.

During 26 to 30 August,

Our representatives attended the Asian Forensic Science Network (AFSN) and Asia Pacific Medico-Legal Agencies Conference 2024 in Bangkok, Thailand, themed “Bridging Forensic, Humanitarian, and Technological Progress”. The event attracted more than 400 experts to participate in the discussions and exchanges on various topics related to the theme.

During 3 to 6 September,

Our representatives attended the 7th National Congress of Forensic DNA Technology in Hubei, China. The visit familiarised the attendees with new forensic DNA technology and its recent development in China.

During 9 to 10 September,

The 2024 Global Public Security Cooperation Forum, with the theme “Win-win Cooperation under Significant Changes: Building a Global Community of Common Public Security” was held in Jiangsu, China, this year. The conference gathered over 2,100 participants, including officers from law enforcement agencies and renowned experts and scholars from 122 countries, regions, and international organisations. Our representatives also attended the sub-forum for forensic science hosted by the Criminal Investigation Police University of China, where there was a thorough technical exchange with international counterparts on the theme “Age of AI+: Innovation and Development of Forensic Science”.

During 29 September to 4 October,

Our chemist attended the 44th International Symposium on Halogenated Persistent Organic Pollutants (POPs)–Dioxin 2024 in Singapore, which provided a forum for presentations of the most recent research discoveries related to POPs and other emerging contaminants. It also offered a good opportunity for engaging worldwide experts and researchers in the fields of POPs, environmental chemistry, and toxicology for collaboration, networking and knowledge-sharing.

During 7 to 9 October,

Our chemist attended the 19th Meeting of Consultative Committee for Amount of Substance: Metrology in Chemistry and Biology (CCQM) Working Group on Nucleic Acid Analysis (NAWG) held in Berlin, Germany. The meeting featured updates on current and upcoming key comparisons and pilot studies within the CCQM NAWG, as well as discussions on the latest information and technologies being shared among scientific institutes worldwide.

During 8 to 10 October,

Our senior chemist attended the Forensic Science Symposium 2024 in Vienna, Austria, organised by the United Nations Office on Drugs and Crime (UNODC) in collaboration with the AFSN, the European Network of Forensic Science Institutes (ENFSI), and the United States Drug Enforcement Administration (DEA). She was invited to deliver a presentation titled "Strategic Forensic Drug Testing of Novel Ketamine and Etomidate Analogues". The symposium aimed to establish connections with counterparts from forensic laboratories worldwide and exchange experience and knowledge with other experts in the field of controlled drugs.

During 5 to 8 November,

Our chemist attended the 11th International Symposium on Recent Advances in Food Analysis (RAFA) in Prague, Czech Republic. The symposium highlighted the contemporary trends in the analytical and bioanalytical strategies for food quality and safety control. The event provided a platform for scientists from academia and industry, as well as representatives of national and international agencies, control authorities, governmental and commercial laboratories, to exchange insights on recent developments in food analysis and to foster networking and collaboration.

During 19 to 20 November,

Our representatives visited the Central Narcotics Bureau (CNB) and Health Sciences Authority (HSA) in Singapore. They were engaged in technical exchange regarding drug control policies and strategies, as well as to explore potential cooperation opportunities.

During 18 to 20 December,

Our representatives joined the HKSAR Government delegation, led by the Permanent Secretary for Environment and Ecology (Food), Ms. Irene YOUNG, to meet with the Mainland officials from the Ministry of Foreign Affairs (MFA), the China Atomic Energy Authority (CAEA), the Ministry of Environment and Ecology (MEE), the General Administration of Customs (GACC), Ministry of Natural Resources (MNR) as well as the experts from the China Institute of Atomic Energy (CIAE) in Beijing, China. The meetings offered an opportunity for authorities of both sides to have a better understanding of the current situations and considerations on radiation measurement issue.

Presentations

- F Wong presented “Application of a Novel Frame Interval Timer for Frame Rate Determination from Video Footage” at the Asian Forensic Science Network (AFSN) and Asia Pacific Medico-Legal Agencies Conference 2024 in Bangkok, Thailand;
- WK Wai presented “Application of Forensic DNA analysis in Dangerous Drugs Cases: Experience Sharing Prospects” at the 7th National Congress of Forensic DNA Technology in Hubei, China;
- CH Tao presented “Application of Crash Data and Video Analysis in Traffic Accident Reconstructions” at the AFSN and Asia Pacific Medico-Legal Agencies Conference 2024 in Bangkok, Thailand;
- CK Li presented “Challenges in Chinese Handwriting and Signature Examination” at the AFSN and Asia Pacific Medico-Legal Agencies Conference 2024 in Bangkok, Thailand;
- HP Yau presented “Chemical Analysis: A Journey from the Polar Regions to Space” at the Scientific Seminar and Workshop-“Innovation and Application of Testing Technology” in Hong Kong, China;
- PW Kong presented “Determination of Chlorpromazine in Animal-derived Foods using QUECHERS by Liquid Chromatography-Tandem Mass Spectrometry (LC-MS/MS)” at the 11th International Symposium on Recent Advances in Food Analysis (RAFA) in Prague, Czech Republic;
- KF Poon presented “Development of a Single Methodology for the Determination of a Collection of Persistent Organic Pollutants in Environmental Samples using Dispersive SPE and Gas Chromatography-Isotope Dilution Mass Spectrometry (GC-IDMS)” at the 44th International Symposium on Halogenated Persistent Organic Pollutants (POPs)-Dioxin 2024 in Singapore; and
- JPK Lau presented “Enhancing People's Quality of Life: The Indispensable Role of Metrology in Food Analysis” at the Scientific Seminar and Workshop-“Analytical Science and Metrology for Enhancing People’s Quality of Life” in Hong Kong, China.

- CH Tao presented “Experience Sharing on Traffic Accidents Investigation/Reconstruction by Government Laboratory, Hong Kong” at the AFSN Digital Forensics Workgroup Symposium in Beijing, China;
- SC Tso presented “Government Laboratory’s Contribution to Environmental Protection” at the Exchange Session on “Polar Research and Climate Change” in Hong Kong, China;
- KF Poon presented “Government Laboratory’s Role in Safeguarding Public Health and Protecting the Environment” at the Scientific Seminar and Workshop- “Analytical Science and Metrology for Enhancing People’s Quality of Life” in Hong Kong, China;
- LH Tong presented “Introduction of Career Opportunities at the Government Laboratory” at the Civil Aid Service Cadet (CAS) Corps Presentation Ceremony 2024 in Hong Kong, China;
- JTF Lau presented “Introduction of Government Laboratory and Career Opportunities” at a Career Talk held at the Technological and Higher Education Institute of Hong Kong in Hong Kong, China;
- WF Wong presented “Introduction of Government Laboratory and Metrology Development” during her visit to the Korea Research Institute of Standards and Science (KRISS) in Daejeon, Korea;
- WH Fung presented “Introduction of Government Laboratory and Metrology Work” during his visit to the KRISS in Daejeon, Korea; and
- JTF Lau presented “Introduction of Government Laboratory’s Work on Quality Assurance, Food Safety, Public Health, and Environmental Protection” during the visit by the Ministry of Trade of the Republic of Indonesia in Hong Kong, China.

- YT Lai and PK Chow presented “Junior Detective 4.0” at the Science in Public Service in Hong Kong, China;
- JPK Lau presented “Metrology in Chemical Measurement” at the Metrology Workshop-Fundamentals of Metrology 2024 in Hong Kong, China;
- KW Ku presented “Pediatric Cannabis Edibles Ingestion: A Case Report” at the AFSN and Asia Pacific Medico-Legal Agencies Conference 2024 in Bangkok, Thailand;
- ML Man presented “Safe Handling of Chemicals” at the Scientific Seminar and Workshop-“Innovation and Application of Testing Technology” in Hong Kong, China;
- HY Chan presented “Scene Investigation-Vehicle Fire” at the 28th Tripartite Technical Support Meeting in Foshan, China;
- SM Leung presented “Strategic Forensic Drug Testing of Novel Ketamine and Etomidate Analogues” at the Forensic Science Symposium 2024 in Vienna, Austria;
- LS Choi presented “Testing of Bongkreikic Acid in Food” at the Experience Sharing Seminar on Food Chemical Testing in Hong Kong, China; and
- YT Wong presented “Testing of Lauric Arginate Ethyl Ester in Food” during a Briefing on Testing of Lauric Arginate Ethyl Ester in Food in Hong Kong, China.

Publications

- DY Luk (GL staff), THM Cheung (GL staff), WN Cheng (GL staff), WK Sze (GL staff), MH Lo (GL staff), JSW Wong (GL staff), and CK Li (GL staff) published a paper titled “Accreditation of Crime Scene Investigation under ISO17020:2012 Standard in Hong Kong” in *ForensicAsia*, Issue No. 14, 2024, pages 24 to 28.
- KCW Tse (GL staff), WH Fung (GL staff), M Khan, SS Riquelme, J Vera, L Xiao, L Hai, R Cristancho, A Rodriguez, DA Garzon Z, CA España, E Kakoulides, G Karanikolopoulos, E Stathoudaki, V Schoina, C Elishian, I Komalasari, L Bergamaschi, G D'Agostino, M di Luzio, SI Miyashita, M Arvizu-Torres, E Vasileva-Veleva, E Carrasco, AT Junsay, M Strzelec, R Shin, R Jaćimović, M Horvat, D Mazej, A Alilović, T Zuliani, A Botha, M Linsky, N Laitip, RP Zambra, and R Napoli published a paper titled “Final Report for APMP.QM-S19: Supplementary Comparison on Toxic Elements in Seafood” in *Metrologia*, Volume 61, 2024, 08001.
- JB Chao, LD Ma, NJ Shi, YQ Li, Y Chen, LJ Dong, YJ Zhou, P Grinberg, Z Mester, E Pagliano, HT Quezada, JPA Gamba, IF Tahoun, O Rienitz, J Towara, C Pape, U Schulz, A Roethke, WH Fung (GL staff), JPK Lau (GL staff), QKW Chan (GL staff), KCW Tse (GL staff), C Cheong, VI Dobrovolskiy, SV Prokunin, DA Vengina, A Sobina, A Shimolin, R Shin, WZR Yu, HW Leung, NL Tangpaisarnkul, P Rodruangthum, SZ Can, FG Coskun, and O Cankur published a paper titled “Final Report for CCQM-K161: Anions in Seawater” in *Metrologia*, Volume 61, 2024, 08016.
- P Grinberg, K Nadeau, L Yang, Z Mester, WH Fung (GL staff), KCW Tse (GL staff), J Merrick, Ian White, I Schipp, O Acosta, M Puelles, JLG Quino, RC de Sena, MD de Almeida, ES Dutra, JB Chao, LJ Dong, E Kakoulides, G Karanikolopoulos, E Stathoudaki, SS Tripathy, DD Toppo, J Pokhariyal, A Krishna, C Vinod, L Taneja, C Elishian, I Komalasari, N Baharom, HBA Kadir, EC Solis, C Uribe, AT Junsay, CD Laurio, JD Maniego, CJ Gatchalian, JEC Guerrero, M Strzelec, A Bojanowska-Czajka, B Warzywoda, R Jaćimović, T Zuliani, P Phukphatthanachai, N Laitip, U Thiengmanee, R Napoli, and E Ferreira published a paper titled “Final Report for SIM.QM-S12: Supplementary Comparison on Trace Elements in Natural Water” in *Metrologia*, Volume 61, 2024, 08002.
- WC Cheng (GL staff), KL Dao (GL staff), and WC Wong (GL staff) published a paper titled “Fluorodeschloroketamine found as a Street Drug in Drug Seizures

and Drug Driving Cases in Hong Kong” in *Forensic Science International*, Volume 361, 2024, 112075.

Page 80, GL & the Community

While we dedicated wholeheartedly to our work, we contribute to society by engaging in various government initiatives and nurturing future generations through organisation and participation in youth programmes.

Our support

Launch Ceremony of the Digital Herbarium for Chinese Medicines (DCHM) on 26 March

Government Chemist, Dr. Wai-on LEE, attended the launch ceremony of the DHCM website, which was established by the Government Chinese Medicines Testing Institute (GCMTI). The website provides comprehensive, accessible, and accurate Chinese medicines information to the public, as well as the Chinese medicine and related sectors.

Chinese Icebreaker Xuelong 2 Vessel Welcoming Ceremony on 8 April

China's first domestically built research icebreaker Xuelong 2 came to Hong Kong for the first time after completing their latest Antarctic expedition. Government Chemist, Dr. Wai-on LEE, attended the welcoming ceremony and visited the vessel.

Exchange Session with Xuelong2 Icebreaker Experts on 10 April

Our Chief Chemist shared our work on environmental protection with the experts of the icebreaker and other government departments at the exchange session titled “Polar Research and Climate Change”.

National Security Education Day cum Civil Aid Service (CAS) Open Day on 14 April

As one of the officiating guest, Government Chemist, Dr. Wai-on LEE, supported and joined the National Security Education Day cum CAS Open Day. The event aims to raise public awareness of national security and showcase its achievements.

CAS Cadet Corps Presentation Ceremony 2024 on 26 May

As the principal officiating guest, Government Chemist, Dr. Wai-on LEE, attended the presentation ceremony at the CAS Headquarters. Dr. LEE was accompanied by the Cadet Corps Commander, Mr. Chung-hang CHEUNG, to present awards to outstanding cadets including the Hong Kong Award for Young People Silver and Bronze Awards, and Grantham Uniformed Youth Groups Outstanding Service Award.

In addition, our chemist delivered a presentation ahead of the ceremony to the cadets, deepening their understanding about the diverse scientific services provided by us.

**The Inheritance and Innovation of the Chinese Medicine Cultural Treasure-
National Survey of Chinese Materia Medica Resources (Hong Kong Region)
Activity Day on 22 September**

Government Chemist, Dr. Wai-on LEE, attended the Activity Day organised by the Department of Health. The event aims to facilitate the Chinese medicine sector and public to learn more about medicinal plant resources in Hong Kong, as well as to promote the culture of Chinese medicine.

Kai Tak Sports Park (KTSP) Drill on 8 December

In preparation for the grand opening of the KTSP in March 2025, the HKSAR Government conducted a series of drills to test the project's readiness and refine arrangements for crowd control, transportation, and contingency plans. Our colleagues actively participated in the drill, demonstrating our dedication and support to these important events.

Youth Development

Career Talk at the Technological and Higher Education Institute of Hong Kong (THEi) on 24 April

Our chemist shared insights on the various scientific services provided by us to teachers and students at the Tsing Yi campus of THEi. She also introduced the work experiences, entry requirements, and career opportunities at the GL.

Career and Life Adventure Planning (CLAP) for Youth Programme during 7 to 9 July

About 90 secondary school teachers and students visited our headquarters to participate in a series of lectures, lab tours, and hands-on experiments prepared by our staff.

Government Career Fair 2024 during 11 September to 3 October

Our chemists engaged with students at the career fair, held at 6 local universities. They showcased the analytical, advisory, and forensic services provided to various government departments and discussed the entry requirements and career opportunities with university students.

Career Talk to THEi Teachers and Students on 20 November

Our chemists provided an overview of our work in food safety, Chinese medicine quality, environmental protection, and forensic science to about 30 teachers and students from THEi at our headquarters.

Science in Public Service-Junior Detective 4.0 on 14 December

Our chemists led "junior detectives" into a simulated crime scene and used innovative technologies to collect different scientific evidence. They also introduced how DNA technology assists the police in conducting parentage testing for missing person cases. "Junior detectives" gained hands-on experience on different scientific tests, deepening their understanding in forensic analysis.

Celebrating the 75th Anniversary of the Founding of the People's Republic of China Series

Scientific Seminar and Workshop-“Analytical Science and Metrology for Enhancing People's Quality of Life” on 14 August

We organised the Science Exploration Activity of “Science in the Public Service”, themed “Analytical Science and Metrology for Enhancing People's Quality of Life” at the Hong Kong Science Museum. Our chemists presented their scientific work in areas such as food safety, pharmaceuticals, product safety, and environmental protection.

In addition, we were honoured to have the Acting Director of the Department of International Cooperation from the National Institute of Metrology, China (NIM), Ms. Juan CAI, to share insights on the origin, role, and future development of metrology in China. The presentations enriched public's understanding on how chemical metrology contributes to enhancing people's quality of life.

Scientific Seminar and Workshop-“Innovation and Application of Testing Technology” on 12 October

In association with the Hong Kong Association for Science and Mathematics Education, we organised a scientific seminar and workshop titled “Innovation and Application of Testing Technology”.

Through the workshop, our chemists introduced the testing techniques and latest technologies in China’s space and polar expedition, essential elements in ensuring chemical safety and career opportunities at the GL. Over 150 teachers and students from 9 local secondary schools participated in the event.

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Address: 7th Floor, Ho Man Tin Government Offices, 88 Chung Hau Street, Ho Man Tin, Kowloon, Hong Kong

Telephone: (852) 2762 3700

Fax: (852) 2714 4083

Email: glabinfo@govtlab.gov.hk

Website: www.govtlab.gov.hk

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