

生命泉源

Our Water



陳志強先生是一名經驗豐富的水質化驗師，工作地點在位於沙田濾水廠的新界東化驗室。對他而言，確保所負責的水質化驗在高水平下進行，並在各種情況下獲得有效且準確的測試結果是一項神聖的任務。要達到目標，擁有不斷更新的專業知識和技能是不可缺少的。

Mr C K CHAN is an experienced waterworks chemist working at Mainland East Laboratory, Sha Tin Water Treatment Works. He says that it is a holistic mission for him to ensure all water quality tests under his supervision are conducted to the highest standard leading to valid and accurate results under all circumstances. To achieve this, possession of updated professional knowledge and skills is essential.







取樣員在抽取水樣本。
Water sampler at work.

我們的挑戰

確保香港從內地水源、本地集水系統及其他水資源獲得安全可靠和源源不絕的供水。

我們的方案

本署與廣東省達成突破性協議，保證未來的輸港水量恰到好處，而且價錢適中；並落實本地與入口水源的水質保障計劃，確保「從源頭到用戶」的水質一樣良好。

OUR CHALLENGE

To ensure Hong Kong has a safe and continuous supply from both its Mainland source and through its own reservoir collection system and alternative water sources.

OUR SOLUTION

We have finalised a ground-breaking agreement with Guangdong Province that assures Hong Kong's future water supplies at an appropriate volume and price, and are implementing an enhanced source-to-tap quality assurance plan on imported and local water.

尋求水源 Sourcing our Water

本港約七至八成食水來自廣東省東江，佔二零零五年全港總用量的79.7%，相等於7.71億立方米，共花費25.30億元。

本港與廣東當局原來的協議規定香港不論實際需要，每年必須購買固定的水量。這協議現在已修訂使本港在購水量方面具較多的彈性。

Between 70 and 80 per cent of Hong Kong's fresh water supply is piped into the SAR from Dongjiang, in Guangdong province. In 2005, this accounted for 771 million cubic metres of water, or 79.7 per cent of Hong Kong's consumption for the entire year. In budget terms, this water came at a cost of HK\$2,530 million.

The original agreement under which Hong Kong had agreed to take a set amount of water annually, whether or not that water was required, has been replaced by an agreement that contains greater flexibility in terms of the amount of water received.

二零零六年四月，香港與廣東省當局，就輸港的內地唯一水源——東江，成功落實新供水協議。此協議令香港能按月決定購水量，取其所需。因此，在本地水庫存水量高企的月份，我們可以少購東江水。而廣東省當局亦可將水源轉供內地網絡。

除東江的入口供應外，其餘20%的用水量則由多個本地水庫供應。

經過兩年旱期，二零零五年比前年錄得近倍的降雨量。比起二零零四年的1.11億立方米集水量，去年從3 214.5毫米的降雨量中，收集了2.98億立方米雨水。

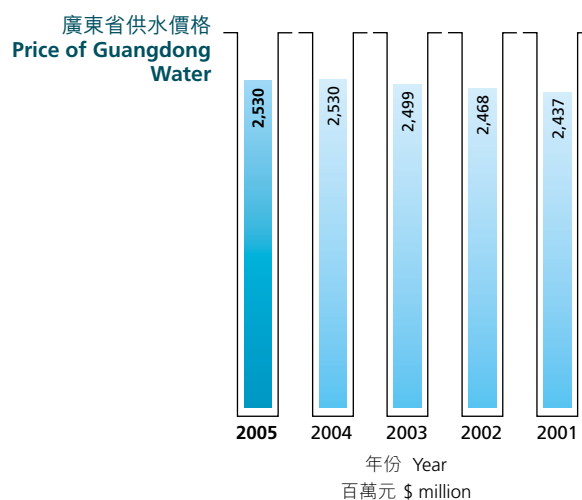
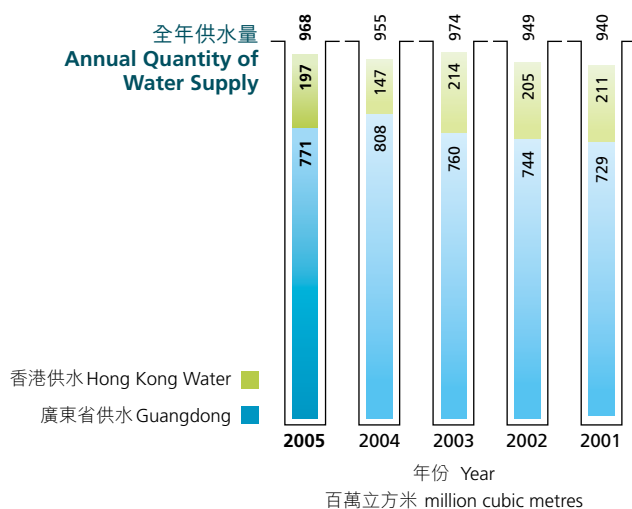
海水是本地另一個供水的來源。在需求方面，我們鼓勵市民節約用水，以消減整體用水需求的增長。

Negotiations between the Hong Kong and Guangdong authorities on a new water supply agreement covering water supplies from Dongjiang, our sole Mainland source, were successfully concluded in April 2006. This agreement enables Hong Kong to determine more precisely the amount of water it requires on a monthly basis. The result: Hong Kong only takes what it needs. During months when storage in our own reservoirs is at a high level, Hong Kong will lessen its demand on the Dongjiang source. In turn, Guangdong authorities will use that water to supplement their own supply grid.

Apart from the imported supply from Dongjiang, the remaining some 20 per cent of Hong Kong's water is drawn from a number of reservoirs around the territory.

Following two years of relative drought, the rainfall recorded in Hong Kong in 2005 was almost double that of the previous year. A total of 3 214.5 mm fell and that yielded 298 million cubic metres of water, compared to 111 million cubic metres of the previous year.

This domestically sourced water is supplemented by alternative supplies of sea water for flushing. On the demand side, the public is encouraged to trim down the overall growth in water demand through careful conservation.



本港使用海水沖廁系統。我們按照本署訂定的水質指標處理海水，並定期監察以確保符合標準。所供應的海水經過電解氯化消毒，以防海洋生物和細菌在供應系統中滋長。而所有海水配水庫均禁止任何未經授權的人士進入。

全新的海水供應工程計劃於港島薄扶林和新界元朗實行。

本署繼續支持在非住宅地區廣泛應用水冷式空調系統。現時系統已涵蓋 77 個指定地區。

Sea water continues to be abstracted for use in the flushing systems. This seawater is treated to WSD quality objectives and its quality is regularly monitored to ensure compliance. To prevent bacterial and biological growth in the supply system, the sea water supplied is disinfected by electro-chlorination. All service reservoirs holding sea water have been secured against unauthorised access.

Major new sea water supply projects are planned for implementation in Pok Fu Lam on Hong Kong Island and in Yuen Long in the New Territories.

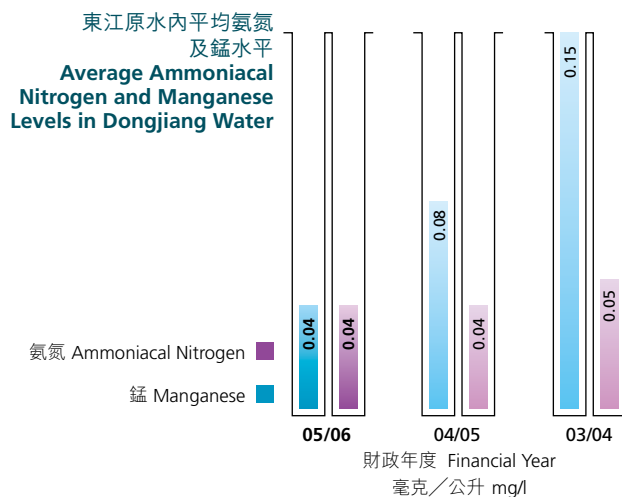
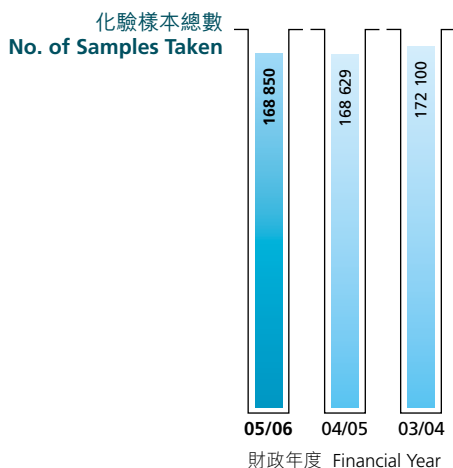
The WSD continues its support to an implementation scheme that will involve wider use of water-cooled air-conditioning in non-domestic premises. Currently, 77 designated areas are covered by the scheme.

全面水資源管理計劃

為配合香港的持續發展，我們推行「全面水資源管理計劃」，其內容包括：開拓水源、再造使用、節約用水、保護水源的幾個主要元素，以及善用不同水源的管理方法。顧問研究經已展開，以安排長遠策略和制定相關計劃。

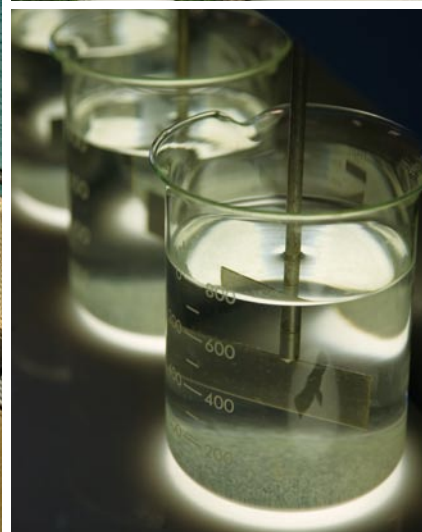
Total Water Management Programme

For the sustainable development of Hong Kong, a Total Water Management programme comprising key elements of new water resources, water reclamation, water conservation and water resources protection and management was initiated for better utilization of the different water resources. A consultancy study was commissioned to map out the long-term strategies and to formulate the relevant implementation plans.





曾置於屯門的海水化淡試驗廠已遷移到鴨脷洲進行另一階段的試驗。
The desalination pilot plant at Tuen Mun was relocated to Ap Lei Chau for another trial test.



(上) 運送由廣東省輸入的原水的水管。
(upper) Mains for conveying water imported from Guangdong Province.

(下) 按照世界衛生組織頒布的指引試驗水質。
(lower) Testing for purity in accordance with World Health Organization guidelines.

為開拓水源，本署繼續進行試驗計劃評估以逆滲透技術進行海水化淡的成本效益。透過是次研究，我們努力評估香港的海水環境和氣候是否適合應用此技術。據了解，逆滲透技術已經過不斷改良以致其運作成本亦正在大幅下降。為期一年的屯門區試驗已於2005年終完成。試驗場地現已遷往鴨脷洲，以便於不同的海水環境下作進一步測試。

In relation to the exploitation of new water resources, the pilot study for assessing the cost effectiveness of the desalination of sea water employing reverse osmosis technology continued. Through this study, we endeavoured to assess whether this process can be successfully applied in Hong Kong's sea water conditions and climate, acknowledging that advances in technology had already resulted in substantial reduction in process costs. The 1-year trial operation had been completed in the Tuen Mun area in late 2005 and the plant used in these trials had since been relocated to a second test site at Ap Lei Chau for further testing under different sea water conditions.

在鴨脷洲海水化淡試驗廠內使用的逆滲透
薄膜管道組合。
*An assembly of Reverse Osmosis membrane
tubes used in the desalination pilot plant at
Ap Lei Chau.*



香港不斷尋求保護和開拓水源的新措施。現正研究再造水使用的潛力。再造水使用的試驗計劃已於特區的新旅遊點——大嶼山昂坪展開。經三級處理的再造水將用於沖廁及有限制灌溉。

Hong Kong continues to search for new measures to assist with water conservation and to identify alternative water resources. Reclaimed water is another potential source currently under study. A pilot scheme on the use of reclaimed water has been commissioned at the SAR's new tourist spot, Ngong Ping, on Lantau Island. Water reclaimed from tertiary treated sewage effluent is used for toilet flushing and controlled irrigation.

維持水質

不論來源，本署從水源到配水系統均採取嚴格的水質監控，以確保符合高質量標準。我們定期在指定及隨機的地點抽樣檢查。並嚴謹地使用先進技術化驗，使本署可因應水質的變化迅速作出反應，確保供水的安全。

Maintaining Water Quality

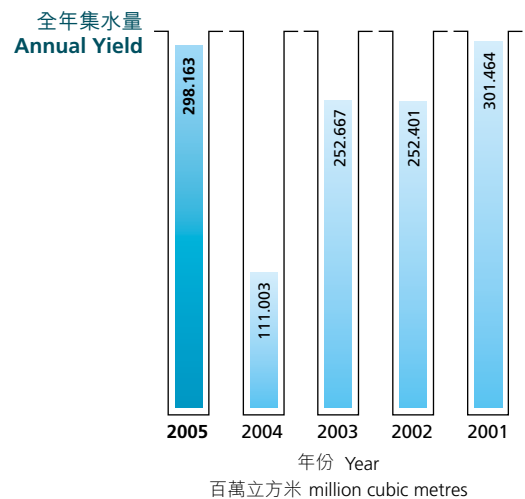
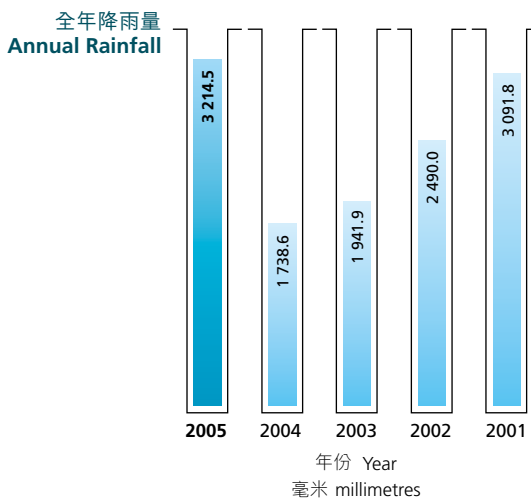
Irrespective of just where Hong Kong's water comes from, stringent tests are undertaken at source and along the supply chain to ensure that the water meets the strict quality standards. Samples are taken regularly from both selected and randomly determined points. Advanced technology is applied to the tests under strict conditions and the test results ensure that the Department will respond to changes in water quality to ensure the safety of the water supply.

二零零五至零六年間，我們從不同的輸水位置收集了超過168 000個樣本分析。樣本抽取自集水區、進水口、接收東江水的抽水站、水塘、濾水廠、配水庫、分配系統及客戶水龍頭。

緊密及積極的監察，可保證本地供水安全衛生，免受賈第蟲及隱孢子蟲等有害微生物的影響。在這方面監察的主要資料已於二零零五年五月及十一月在互聯網上刊出，以供公眾參考。

During 2005/06, over 168 000 water samples were collected as part of our source-to-tap analysis. Samples were taken from catchments, intakes, pumping stations that receive Dongjiang water, impounding reservoirs, water treatment works, service reservoirs, distribution systems and customer taps.

This close and proactive monitoring confirmed that our treated water supply was safe, wholesome and free of harmful micro-organisms such as Giardia and Cryptosporidium. Key data was published on the internet in May and November 2005 as public information.



位於船灣淡水湖的大美督二號原水抽水站。
Tai Mei Tuk No. 2 Raw Water Pumping Station in Plover Cove Reservoir.

年內，全新的「化驗室資訊管理系統」已投入運作，該系統大大提高了運作和數據管理的效率，令水質資料得以及時發佈。此系統同時亦提供了重要的資料儲存庫。

A new Laboratory Information Management System (LIMS) came on stream during the year to help achieve more efficient levels of operation and data management and the timely dissemination of water quality information. This also provides us with important archival records.

我們了解維持水庫生態平衡對水質的重要。故此，在二零零五年，我們在部分水塘中放入了17萬條鯽魚和大頭魚的魚苗，以加強水質管理。

We are constantly mindful of the importance of maintaining an effective ecological balance in our reservoirs to ensure water quality. As a result, we released 170 000 fish fry of silver carp and big head into some of our impounding reservoirs in 2005 to enhance water quality management.

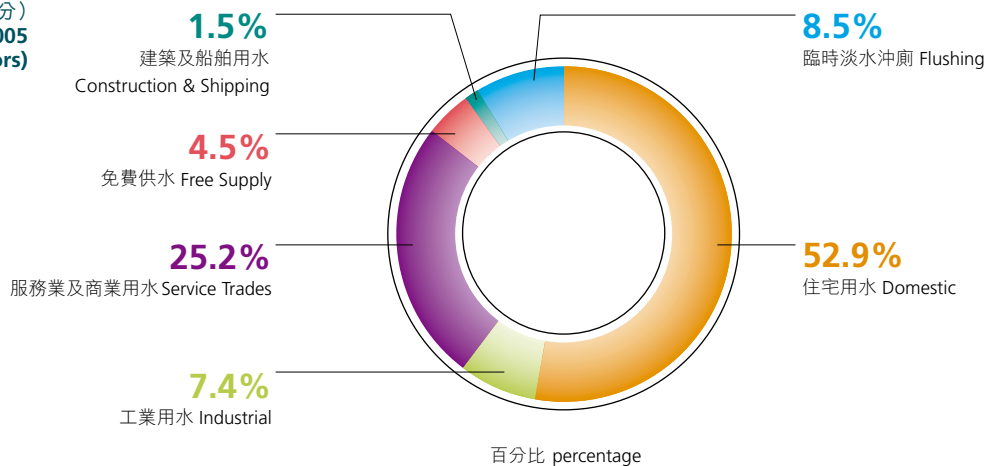
本署在區內的濾水廠和木湖抽水站，改良了水質的聯機監察系統。測量參數包括：混濁度、酸鹼度、殘餘氯化物及氟化物。這些數據對水質管理至為重要。

At water treatment works across the territory and Muk Wu Pumping Stations, the Department upgraded on-line systems that measure water quality parameters such as turbidity, pH, chlorine residual and fluoride. Again this is an important aspect of water quality management.

全年食水用水量
(按用水類別劃分)
Annual Water Consumption
(by sectors)

年份 Year	住宅用水 Domestic	工業用水 Industrial	服務業及 商業用水 Service Trades	免費供水 Free Supply	建築及 船舶用水 Construction & Shipping	臨時 淡水沖廁 Flushing	食水 總用水量 Total Fresh Water Consumption
百萬立方米 million cubic metres							
2005	512	72	244	44	14	82	968
2004	493	75	245	42	16	84	955
2003	511	77	234	52	18	82	974
2002	479	82	241	44	24	79	949
2001	468	83	242	43	27	77	940

2005年食水用水量
(按用水類別劃分)
Annual Water Consumption 2005
(by sectors)



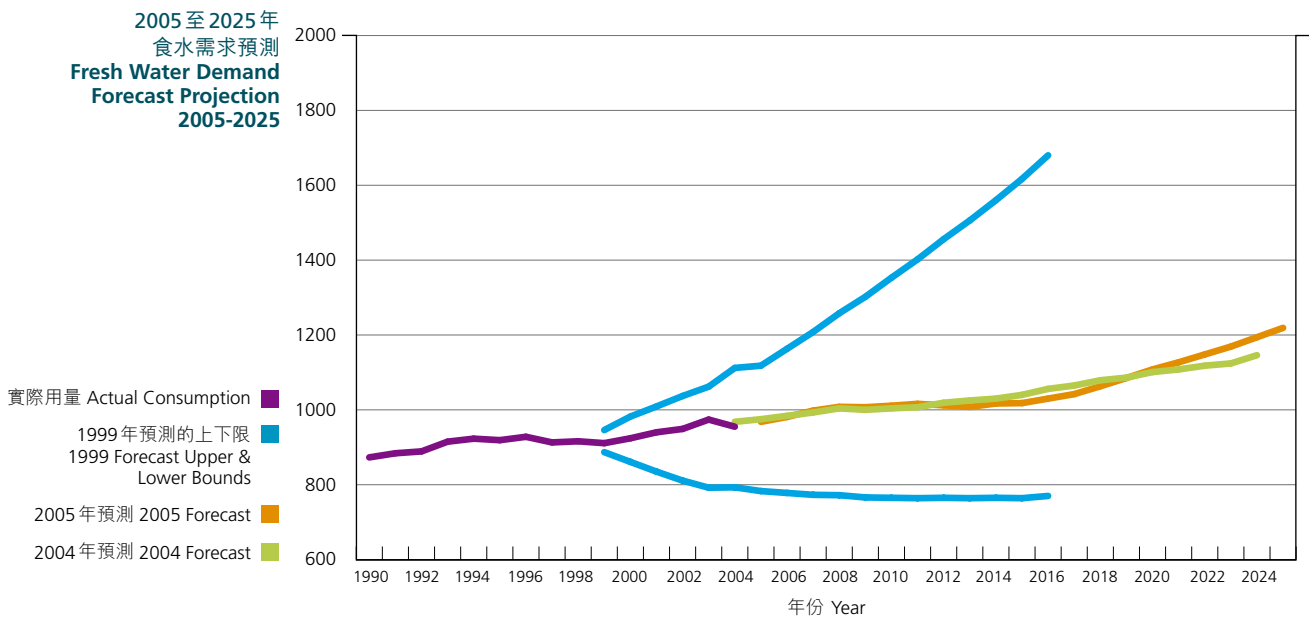


食水的處理是輸送給用戶前的重要潔淨過程。
 Water treatment, a crucial process for purification of water before delivering to customers.



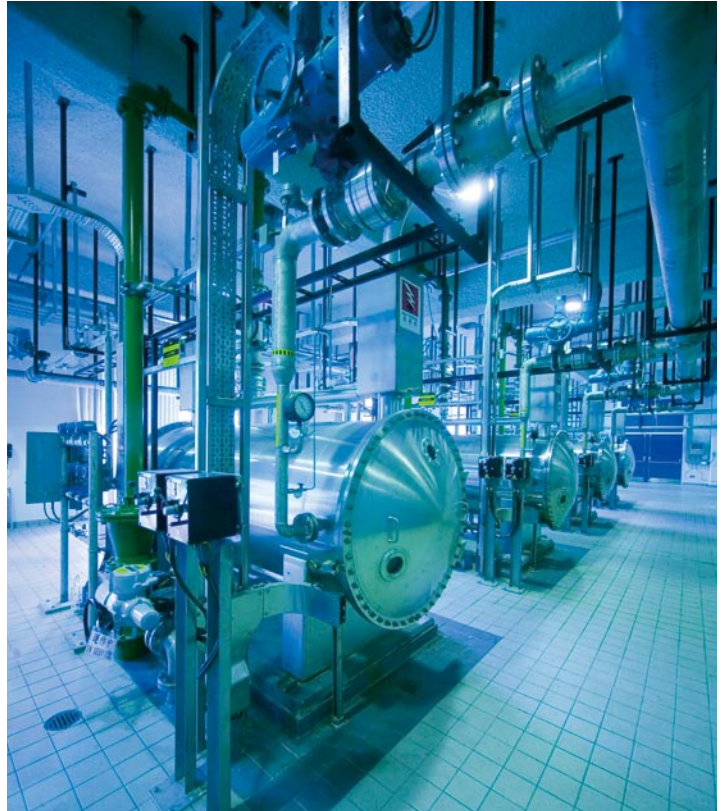
搜捕魚類樣本藉以對水塘內的生態平衡和水質進行分析。
 Fish samples are constantly taken for analysis of the ecology balance and water quality in impounding reservoirs.

2005至2025年
 食水需求預測
**Fresh Water Demand
 Forecast Projection
 2005-2025**





進行氣相式譜儀分析。
Staff performing gas chromatographic analysis.



位於牛潭尾濾水廠的臭氧生產機。
Ozone generator at Ngau Tam Mei Water Treatment Works.

海水仍是沖水系統的主要來源，我們定期監察水質，以確保符合必要的指標。

香港繼續按照國際認可的指引進行水質監控工作。世界衛生組織於二零零四年頒布最新的飲用水水質指引，引入有關供應安全飲用水的預防管理工作的框架，其中包括訂立和實行水安全計劃。

我們正努力編訂香港的「水安全計劃」，希望能盡早正式引進。我們將透過有系統的風險管理，為整個計劃訂定必要的預防措施，以保證本港的飲用水安全。風險評估的範圍包括香港及內地的水源，經濾水處理以至用戶的水龍頭。我們將每年檢討和修訂計劃，亦會繼續提高本港水質的透明度，每半年把水質資料上載至部門的網頁，讓公眾隨時獲得有關的資訊。

Sea water remains an important source for flushing water supply and its quality is regularly monitored to ensure it complies with the requisite water quality objectives.

Hong Kong continues to work within internationally accepted guidelines on water quality. The World Health Organisation (WHO) launched its latest guidelines for drinking water quality in 2004. This involves the introduction of a preventative management framework for the supply of safe drinking water, including the development and implementation of a water safety plan.

We are currently developing Hong Kong's Water Safety Plan and working towards its early introduction. This holistic plan will stipulate the preventive framework to ensure the safety of the city's drinking water supply by employing the systematic risk management approach. Risk assessments are evaluated from the water supply source, both in Hong Kong and on the Mainland, through water treatment to customer taps. As a plan, it will be updated and reviewed annually. We will continue to enhance the transparency on water quality in Hong Kong by publication of water quality data twice a year.

認可計劃 Recognition Scheme

自願參與的「食水系統優質維修認可計劃」持續受到市民歡迎。

本計劃的宗旨，是要確保從每個用戶的水龍頭流出來的食水，均達到水務署供應的優質飲用水標準，並符合世界衛生組織頒布的指引。此計劃從二零零二年七月起推行，獲「水質事務諮詢委員會」認可。計劃針對水龍頭輸送出來的水的淨度的問題，例如因內部供水系統保養不善而導致食水變黃的現象。

本署已向符合資格負責內部水管系統維修的公司頒發認可證書。本年內共頒發了約1 500張證書，而有效證書所惠及住宅樓宇用戶的數目約45萬。

The voluntary Fresh Water Plumbing Quality Maintenance Recognition Scheme remains well received.

The scheme aims to ensure that the water emerging from customer taps is of the same high potable quality produced by the WSD in conformity with WHO guidelines. The scheme was introduced in July 2002 with the endorsement of the ACQWS to deal with problems affecting the purity of the tap water, such as discolouration, that sometimes occur as a result of improper maintenance of internal plumbing systems.

Certificates of Compliance are awarded to those who are responsible in the maintenance of their internal plumbing systems. This year, about 1 500 certificates have been issued. Some 450 000 households in residential buildings are being covered by valid certificates.



水質分析前進行的樣本預備程序。
Sample preparation for water analysis.