Indoor Air Quality Control

- HKUST continues to implement the "No Smoking Policy". Smoking is prohibited at all covered areas on campus.
- Air-conditioning system filters and air ducts were regularly inspected, cleansed or replaced by the EMO/Building Services-Maintenance Section.
- Provided pool cars for EMO operations on campus.
- For school buses, drivers were encouraged to switch off the idling engines when waiting. Starting vehicle's engine is only allowed at 5 minutes before departure.

Vehicle's Exhaust Emission Control

- Provided pool cars for EMO operations on campus.
- Air-conditioning system filters and air ducts were regularly inspected, cleansed or replaced by the EMO/Building Services-Maintenance Section.

Water Quality Control

- Collected water samples from potable water supply outlets and from the university's indoor swimming pools for water quality testing and assurance of maintaining proper standard.
- In 2003, the amount of 17,155kg cooking oil was collected from catering outlets for recycling. To support cleaning services and grease trap management, CSO continued to collect monthly management fees from operators of catering outlets.

Environmental Compliance

- We continued to comply with various environmental regulatory requirements applicable to HKUST operations. These include monthly monitoring of waste water and sea water discharges, hazardous waste management, etc.
Waste Recycling and Minimization

Enhanced efforts in minimizing and recycling wastes yielded significant improvements. Administrative units including Estates Management Office (EMO), Campus Services Office (CSO), Student Affairs Office (SAO), Purchasing Office (PURO) and Safety & Environmental Protection Office (SEPO) worked together on achieving goals for further waste minimization. The details of our achievements are listed below:

Wastewise Scheme:
In 2003, the HKUST fulfilled the following waste reduction targets and was awarded the "Wastewise Logo". The award represents a benchmark of university's commitment towards environmental protection through waste reduction. Other than the benefit of cost saving, the Wastewise Logo is synonymous with demonstrating protection through waste reduction. The Scheme Organizer is the Environmental Protection Department of the Hong Kong SAR government and the Scheme Adviser is Hong Kong Productivity Council. An internal working group was formed for monitoring the implementation of Wastewise Scheme at HKUST. Representatives were nominated from SEPO, EMO, SAO, CSO and PURO to serve on this working group.

Targets Achieved in 2003:

1: HKUST is moving towards a paperless workplace. We continue to use electronic means for communication. They include, but are not limited to, electronic mail, electronic meeting, facsimile transmission and electronic printing. The amount of A4 paper purchased per year in 2003 was 7,840 reams, a 3.6% reduction compared with figures for 2002. This represents 360 reams or 40,000 sheets of paper.

2: Most of the safety helmets currently in use are made of plastics. Hong Kong’s hot and humid weather conditions may drastically lower their impact resistance and damage the helmet’s lives. The Occupational Safety and Health Council (OSHCE) commissioned the Department of Mechanical Engineering of HKUST to conduct a thorough study on the protective functions of safety helmets. From the survey, it was determined that the service life of plastic safety helmet used in Hong Kong construction sites should not exceed two years. HKUST has been following this recommendation. In HKUST, 64 used safety helmets were collected by EMO Store for recycling.

3: A "Garage Sale" was organized by EMO and was held in November 2003. A total of 105 sales tables were set up. Used materials were divided into 8 categories: Household items and sundries, Clothes, Shoes, Bags & Accessories, Books, Music CD, Video CD, Domestic Electrical Appliances. The Student Social Service Society organized 2 rounds of collection of used items for reuse by others via distribution by charitable organizations.

4: SAO and Student Societies implemented the used book re-sale / exchange program on campus. As reported from student groups, there were 25 rounds of sales during the period. A total of about 1,250 used books were sold / exchanged.

5: To encourage the use of mass transit, HKUST organized school buses for use by staff members with several bus routes around Hong Kong, Kowloon and N.T. districts. The "Octopus" system has been installed on school buses and they replaced the use of printed paper tickets. The total number of staff bus trips taken in year 2003 was 212,167. The use of Octopus system helps to save about 8 sheets of 4,000 sheets of A4 paper.

6: Color-coded bins have been provided for collection of different wastes (paper, plastic bottles and aluminum cans). In 2003, HKUST further increased the amount of recycled waste paper, plastic bottles and aluminum cans by 5%. The total quantities were:

Waste paper: 149,294 kgs
Plastic bottles: 422 kgs
Aluminum cans: 1,226 kgs

Income derived from recycled paper was dedicated to supporting various environmental initiatives.

7: SEPO implemented the "end-of-life" walkie-talkie batteries recycling program. A total of 551 pieces of "end-of-life" walkie-talkie batteries (117 kgs) were collected for recycling.

8: SEPO continued the use of recycled paper for printing. Among other usage, a total of 3,560 copies of the newsletter "Safetywise" published were printed on recycled paper.

9: CSO, EMO and SEPO together with the LGI career launched the food waste collection and composting scheme at LGI canteen catering. The program aims to reduce the amount of food waste being sent to landfill and have it recycled for campus horticulture purpose. A food waste-recycling machine was purchased and installed in May 2003. The total amount of food waste recycled by the food composter in 2003 was 10,470 kgs.

Resource Conservation

Conserving resources continued to be an area of emphasis in our facility management operations. EMO worked with the Energy Services Provider "ESICO" on the following projects:

- The first energy performance contract for the academic building was completed in mid-2003, with an average energy reduction of 3,954 Mega Watt Hours (MWH) per annum over the past 5 years. This translates into HK$ 1.1 million saving and avoidance of 2,519 tonnes of CO2 emission per year.
- The second energy performance contract for the library building continues. This reduced 1,639 MWH, translating into savings of HK$ 1.2 million in 2003.
- The third energy performance contract for the laboratory building continues. This reduced 1,639 MWH, translating into savings of HK$ 1.2 million in 2003.
- The gas energy reduction was 5,561 Giga Joules (GJ), translating into savings of HK$ 1.2 million in 2003.
- The air-conditioning plant, two variable speed drives (VSD) were installed in parallel with the existing VSDs to facilitate unique and consistent chilled water pump operations. Pumping energy was reduced by 500 Kilo Watt Hours (KWH) per day during hot season.

Environmental Research Projects

HKUST continues to conduct research on different environmental issues including the atmospheric environment, air and water pollution, marine environment such as Pearl River estuary, coastal water of Hong Kong and the South China Sea; wind energy resources, waste water treatment, use of waste tars, energy and environmental applications of nanoporous materials, waste glass management, green building, sustainable infrastructure and materials development, noise control, etc. Units engaging in environmental studies include Department of Chemical Engineering, Department of Chemistry, Department of Biology, Center for Coastal and Atmospheric Research, Institute for Environment & Sustainable Development, Department of Civil Engineering, Atmospheric, Marine & Coastal Environment Program, etc. A comprehensive list of environmental research projects is available at http://www.ust.hk/ sepo/En.Rep/en03.pdf.

- Mr. Paul Bolton, the Vice President for Administration & Business (VP-AB) and Directors from EMO, CSO, SAO and SEPO attended the Presentation Ceremony of Wastewise Logo Awards which was held on 16 February 2004 at the HK Convention & Exhibition Center. On behalf of HKUST, VP-AB received the Gold Wastewise Award from EPD, the scheme organizer.
- Faculty members and researchers at HKUST continued to reap benefit from the Chemical Exchange Program. The program aims to reduce the amount of usable chemicals being disposed of as chemical waste, by making them available to other faculty members or researchers who can use them. Fifty-one items of various chemical reagents were recycled in 2003.
- SEPO kept monitoring the collection of printer toner cartridge for recycling. The quantity of used printer cartridges recycled increased from 1,329 pcs. in 2002 to 1,624 pcs. in 2003. In addition, new suppliers for refurbished toner cartridges had been identified.
- Also related to air-conditioning, over 300 floating-type control valves were replaced by spring-return type for automatic close off of chilled water supply to fan coil units during scheduled power off period. This reduced pumping energy by 360 KWH per day during the hot season.
- T3 fluorescent lamps c/w electronic ballast are now being adopted for replacement of aged conventional fluorescent lamps in carpark and corridor area. Substantial energy saving is expected.
- Electric heat pumps were installed in mid-2003 for supplying hot water to the Microelectronics Fabrication Facility and the Animal & Plant Care Facility. Instead of obtaining hot water from the remote central gas combustion boiler, the heat pumps provide localized hot water supply to maintain correct space temperature and humidity control for the animals and the processes. The use of the heat pumps reduced gas consumption by 4,000 GJ, translating into savings of HK$540,000 per annum.

Mobile Real-time Air Monitoring Platform Project:
- In the "Symposium on Environmental Issues for Schools - Air Quality" held on 9 July 2003 at the Pollution Monitoring Centre for 11 local secondary schools, colleagues presented their study findings in conjunction with the Education and Manpower Bureau and the Hong Kong Science Museum, showcased the results of a new venture launched by RLD to deepen environmental education and research interests among secondary school students in Hong Kong.

- Catering outlets continued their effort in reducing paper napkin consumption and to avoid abuse of usage through various ways, such as using napkin dispensers, and packing paper napkin together with tableware in individual bags. Some catering outlets continued to use biodgradable disposal wares, such as meal boxes.
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2: Most of the safety helmets currently in use are made of plastics. Hong Kong’s hot and humid weather conditions may drastically lower their impact resistance and shorten their service lives. The Occupational Safety and Health Council (OSHC) commissioned the Department of Mechanical Engineering of HKUST to conduct a thorough study on the protective functions of safety helmets. From the survey, it was determined that the service life of plastic safety helmets used in Hong Kong construction sites should not exceed two years. HKUST has been following this recommendation since last year. A total of 105 used safety helmets were collected by EMO Store for recycling.

3: A “Garage Sale” was organized by EMO and was held in November 2003. A total of 105 sales tables were set up. Used objects in good condition were collected for sale, including house items and sundries, clothes, shoes, bags & accessories, books, music CD, video CD, domestic electrical appliances, etc.

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Mobile Real-time Air Monitoring Platform Project:

- In the “Symposium on Environmental Issues for Schools - Air Quality” held on 9 July 2003 at the Hong Kong Science Museum, highlighted the results of a new framework developed by HKUST to address the environmental education and research interests among secondary school students in Hong Kong.

- The symposium, as a part of the Mobile Real-time Air Monitoring Platform (MAP) project sponsored by the Jockey Club and organized by the Institute for Environment and Sustainable Development (IESD) as well as the Department of Chemical Engineering in conjunction with the Education and Manpower Bureau and the Hong Kong Science Museum, showcased the results of a new venture launched by HKUST to address the environmental education
Indoor Air Quality Control

- HKUST continues to implement the "No Smoking Policy". Smoking is prohibited at all covered areas on campus.
- Air-conditioning system filters and air ducts were regularly inspected, cleansed or replaced by the EMO/Building Services - Maintenance Section.

Vehicle's Exhaust Emission Control

- Provided pool cars for EMO operations on campus.
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Environmental Compliance

- We continued to comply with various environmental regulatory requirements applicable to HKUST operations. These include monthly monitoring of waste water and sea water discharges, hazardous waste management, etc.

Environmental Awareness / Training

- SEPO continued to provide a two-hour mandatory training course on Hazardous Waste Management. This course covers regulatory requirements, HKUST waste management policy, technical issues and disposal of hazardous wastes.
- A series of environmental training programs lasting from November 2003 to April 2004 under Phase V of the "Waste Recycling Scheme in Tertiary and Vocational Institutes" were organized by the Environmental Campaign Committee and the Environmental Protection Department to raise the environmental awareness among staff and students.
- Environmental tours to Mai Po and Hoi Ha Wan Marine Park were organized by the Nature Club.
- CSO continued to promote the "Bring Your Own Cup" incentive program for all students and staff members. At the "coffee shop" and the "coffee cart" which are located at the Academic Concourse, one can get discount for all drinks (except packaged drink), if he/she brings his/her own cup.
- Students organized "Waste Recycling Competition" at UG student halls. HKUST provided souvenirs and cash prizes to winners.

Environmental Tours

- The school outreach program venture kicked off in May 2002, when HKUST’s mobile air monitoring platform started touring the 11 secondary schools, briefing students on the causes of air pollution and ways to monitor the problem. Equipped with the basics of air quality monitoring, the students were guided by their teachers to design and conduct their own projects on air quality monitoring.
- Deprived of advanced research facilities normally available at universities, the participating students demonstrated ingenuous flexibility in developing their research equipment precisely according to the limited resources at their disposal. Students of HKMLC Queen Maud Secondary School, for instance, wanted to study the air quality at public transport terminals. Instead of using sophisticated air sample collecting devices, the young researchers came up with a simple tape to collect airborne particulates equally suitable for testing at their school laboratories.
- At the concluding symposium, representatives of the participating schools took turns to present their findings in the form of drama, role play, multi-media presentation, or any other ways they thought suitable to underline their interest and creativity.
- It is hoped that the same outreach program will be launched in the following year to allow more secondary students to participate in research activities and appreciate the importance of environmental protection in an active and personal way.