



Feature Column

Three Successful Years of Soil and Groundwater Remediation

The Soil and Groundwater Remediation Fund Management Board was established three years ago to integrate soil and groundwater remediation work. Tasks have moved on from investigation of pollution sites and establishing ordinances to pollution impact assessment, pollution control and remediation. Future plans include establishing a groundwater monitoring database, introducing mature technology and developing interdisciplinary manpower.

SGRFMB Established to Integrate Soil and Groundwater Remediation

The EPA announced and set into play the *Soil and Groundwater Pollution Remediation Act*

(SGPRA)(土壤及地下水污染整治法) on February 2, 2000. Months later on October 18, 2000, the Executive Yuan ratified the Soil and Groundwater Pollution Remediation Work Implementation Plan (土壤及地下水污染整治工作執行計畫), which is the basis for all environmental protection agencies in carrying out soil and groundwater pollution remediation work.

The EPA established the Soil and Groundwater Remediation Fund Management Board (SGRFMB) in November 2001 and began collecting soil and groundwater remediation fees. Businesses targeted for fee collection include

raw material manufacturers and importers of 125 types of chemical substances under six main categories. Up to the end of October 2004, approximately NT\$2.11 billion has been collected and over NT\$531 million of this has gone toward remediation.

After over four years of implementing soil and groundwater remediation the EPA has promulgated eleven related regulations and ten administrative regulations under the SGPRA. The Board has administered investigations on 319 hectares of Class V contaminated farmland, 800 gas stations that have been in operation over ten years, and 172 potentially contami-

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Drilling a temporary monitoring well during pollution investigation of petrochemical storage site.

nated large-scale petrochemical storage facilities. Currently the SGRFMB is managing 168 illegal dumping sites, investigating abandoned factories suspected of environmental pollution, and checking into reported cases of pollution.

Up until October 2004 a total of 1,388 plots of land (335 hectares total), ten gas stations, five large-scale storage facilities and ten industrial pollution sites have been announced as control sites and three other lands have been announced as remediation sites. Among these, 803 plots of farmland (196 hectares total) and two sites have already completed improvement plans or control plans and have been removed from the list. The remaining sites are currently undergoing pollution control plans.

work principles will then be set to serve as a reference for competent authorities and local environmental agencies in handling administrative work.

To better understand regional groundwater quality, the EPA has established shallow groundwater quality monitoring stations in ten large groundwater regions. By the end of September 2004, already 431 monitoring wells have been established and groundwater is checked on a seasonal basis. A comparison between groundwater quality monitoring results and monitoring criteria shows that 90% of Taiwan's groundwater is up to standard, with primary pollutants being iron, manganese and ammonium nitrogen. As for sites already suspected of pollution, local environmental protection bureaus (EPBs) have installed on-

ment work is subsequently carried out. To date the EPA has provided around NT\$251 million in subsidies to nine counties and cities to help with farmland pollution improvement.

To gain effective command over gas stations over ten years old and large-scale petrochemical storage facilities where site data shows potential pollution, the SGRFMB first confirms whether soil and groundwater conform to pollution control standards and adopts necessary emergency measures at potentially polluted sites. At industry (factory) pollution sites, investigation, regulatory control and remediation is carried out; at illegal dumping sites and abandoned factories, investigation of potential soil and groundwater pollution is carried out. Reported cases are investigated individually. To date, already ten industry (factory) pollution sites have been announced as control sites.

The Environmental Professionals Training Institute (EPTI) works to enhance the efficiency of administrative organizations and upgrade domestic pollution remediation technology. Apart from inviting local environmental protection personnel to discuss work affairs, EPTI has drawn up soil and groundwater pollution remediation training plans, which are now part of the annual work schedule, and regularly continues to upgrade the work capacity of professional personnel. EPTI has also established regular technology exchange channels with other countries and organizes overseas examination and training plans.

From Pollution Investigation to Assessment and Remediation

Soil and groundwater pollution remediation work is moving from site pollution investigation to pol-

The foundation has already been established for enforcing soil pollution regulations. The focus of future work is to carry forth with pollution site investigation, assessment and remediation.

Comprehensive Investigations Conducted to Identify Pollution

In addition to putting SGPR related regulations in place and completing the "Standard Operating Procedures for Handling Farmland Pollution Incidents" (處理農地污染事件標準作業手冊) and the *Guidelines for Drafting Pollution Control and Remediation Plans* (污染控制及整治計畫撰寫指引), the SGRFMB has drawn up and put into effect Articles 8 and 9 of the SGPR, which specifies a soil pollution analysis system for land used by industries. This system will be promptly announced and implemented after a public hearing. Related administrative

site monitoring wells. Already 404 on-site monitoring wells have been established as of the end of 2003.

Most cases of polluted farmland have occurred in Changhua County, affecting around 200 hectares of land. The second most prevalent areas are Hsinchu City and Taoyuan County. To ensure proper management, the EPA has drawn up the "Standard Operating Procedures for Handling Farmland Pollution Incidents" and has enforced controls over food crops grown on polluted farmland. Necessary measures may include destroying the crop and subsidizing farmers to fallow the land. Polluted farmland plots are announced as soil control sites according to regulations and appropriate improve-

lution impact assessment and remediation. The foundation has already been established for enforcing soil pollution regulations, based on the SGPR and careful scrutiny of the work currently underway. The focus of future work is to carry forth with pollution site investigation, assessment and remediation. The direction of remediation work is as follows:

1. Aggressively carry out pollution site investigation and assessment; adopt pollution emergency measures and track down polluters:

At sites suspected of soil and groundwater pollution, the SGRFMB will carry out on-site investigation, verification and assessment and list sites under regulatory control. Necessary measures will be adopted based on the environmental situation at the pollution site. Such measures may include asking polluters to suspend operations, provide nearby residents with alternative drinking water sources, or control or destroy contaminated crops. Other important future work involves clarifying the responsibilities of polluters and demanding compensation.

2. Actively carry out pollution site control and remediation work to ensure the sustainable use of soil

and groundwater resources:

Pollution site control and remediation work will be vigorously carried out at confirmed soil and groundwater pollution sites that local EPBs have already listed under regulatory control. Farmland with heavy metal pollution will be managed under local EPB farmland pollution improvement plans. The pollution situation should be improved so that normal agricultural operations can be resumed within one year. Confirmed pollution sites such as gas stations and large-scale storage facilities are already required to make improvements before a certain deadline under the local EPB's supervision. As for the four confirmed and announced remediation sites, remediation work can promptly be carried out after investigating pollution boundaries and assessing environmental impact.

3. Complete drafting of regulations pertaining to soil and groundwater pollution remediation; establish administrative system for pollution remediation and a fair and reasonable fee collection system:

Although SGPR related ordinances have already been drawn

up, implementation so far has been open to opinions from all circles. The EPA has already revised related regulations and formulated management mechanisms such as audit and supervisory guidelines and pollution remediation technology standards, striking a balance between responsibility and regulatory controls. These are all important items to consider establishing in the future. To ensure secure, ample financial resources for remediation, the EPA will collect fees for different types of chemical substances and review fee rates. Remediation fee report procedures will be simplified and the EPA will establish a comprehensive online report system.

4. Prevent soil and groundwater pollution, ensure safety of agriculture/aquaculture products and groundwater use. Complete soil and groundwater environmental quality monitoring system.

Strengthening inspection and control of pollution sources is integral to preventing soil and groundwater pollution. Other important work involves effectively integrating appropriate use of groundwater resources, integrating the existing network of various groundwater monitoring wells, and establishing a groundwater monitoring database for effective management and monitoring of soil and groundwater. The safety of agricultural/aquacultural products and groundwater must be assured to reach sustainable use goals for land and groundwater resources.

5. Broaden the scope of remediation research and development; advance the administrative capacity of professional personnel.

Pollution investigation, risk assessment, the level of remediation required and technology development are all important factors in considering pollution site management. Based on other



Extracting suspended oil from soil during pollution investigation at a gas filling station.

countries' experiences, environmental remediation involves an extensive range of disciplines. Taiwan needs more interdisciplinary cooperation to more effectively introduce mature technology and choose locally appropriate methods. Outstanding profes-

sional talents are an essential component to the effective development of remediation work. In the future, environmental protection agencies will continue carrying out training and employee advancement plans to build the capacity of their staff.

account for one third of the nation's developer solution and fixing bath liquid waste. The dumping of these untreated wastes into the environment could cause serious pollution problems.

Confronting this problem, the EPA included photo developing and printing establishments under the regulatory scope of the *Waste Disposal Act* (廢棄物清理法) on 28 October 2003. It was hoped that businesses would take initiatives to ensure appropriate clearance and disposal of their liquid waste.

However, after the first year of implementation, many businesses have yet to cooperate. The EPA recently invited local environmental protection bureaus (EPBs) for discussion, and resolved to launch a five-month inspection of photo developing shops. The focus of inspection is to check whether waste liquid is appropriately stored or entrusted to a certified organization for clearance and treatment. Inspectors will also check to see whether such waste has been dumped into sewers. Enterprises that purchase such liquid waste will also be inspected to verify whether they have a legal permit and whether the waste is undergoing appropriate treatment and not causing secondary pollution.

Waste Management

Mandatory Recovery of Photo Developing Liquid Waste

Photo developing and printing shops should already be aware that the EPA is asking local environmental protection bureaus to launch strict and comprehensive inspections of the management of photo developing liquid waste. Disciplinary action or fines will be administered to businesses that carelessly dump liquid waste and businesses that fail to either appropriately store liquid waste or entrust certified organizations to handle their liquid waste.

Liquid waste from developing and printing photos includes fixing bath and developer solution. Fixing bath is a neutral to weakly acidic solution mainly comprised of ammonium thiosulfate or sodium thiosulfate, as well as a large amount of silver. Some companies are willing to purchase and recover such waste, however the liquid waste leftover after recycling silver contains hazardous substances, which if not handled appropriately could pollute the environment. Developer solution on the other hand is a weakly alkaline solution. Its organic pollution is measured in chemical oxygen demand, which is as high as 40,000 to 65,000 mg/l. Developer solution contains toxic substances hydroquinone and bromide; there is no monetary value in recycling these substances and no companies are willing to recycle this waste. As a result shops frequently dump this waste into the sewers.

The EPA estimates that the nation produces about 36,310 tonnes of developer solution and fixing bath solution every year. The primary source of this waste is printing

and plate making factories, photo developers and hospitals. Of these, the plate making factories and hospitals have long since been included under the scope of industrial waste management. Large-scale printing factories and hospitals have silver recovery equipment installed on-site and handle the treatment of both these liquid wastes on their own. Most photo developers are storefront shops that lack the capacity to treat liquid waste. Such shops



*A photo developing business neatly lines up barrels of liquid waste in a storage room.
(photo: www.iosh.gov.tw)*

The EPA invited local suppliers of major international brand photo developing agents to a meeting at the end of September 2004. These enterprises were asked to help explain the correct storage and treatment methods to photo developing shops. It was brought up at the meeting that in the future Taiwan may follow the methods of other advanced countries such as the EU, the US and Japan. This includes

recycling materials through suppliers and centralized treatment, which could solve liquid waste problems for downstream photo developing shops. The EPA anticipates inspections and cooperation from upstream suppliers will effectively protect the environment and spur on the gradual establishment of a liquid waste recycling and treatment system for photo developers.

cause of depression and neurosis.

Other advanced countries, for example Australia and New Zealand, have set control values for noise emanating from helicopter airports, with maximum limits of 90 and 85 decibels, respectively. Taiwan's current noise control system for areas near civilian and military helicopter airports uses the same noise standards as those for business and entertainment centers and factories. In the future, civilian and military helicopter airports will be subject to maximum limits of 70 and 80 decibels, respectively.

The EPA will intensify inspections of current control standards at the three military helicopter airports in Longtan, Sinshe and Guiren and actual monitoring data will be referred to when delimiting Class III aviation noise control zones. The EPA will supervise the military in adopting more effective aviation noise improvement measures, and work further to reduce the impact range of noise control zones and ensure more peaceful living environments for residents near airports.

Noise Control

Military Aviation Noise Control Zones to Be Delimited Next Year

To remedy the problem of disruptive noise from military helicopters during take-offs and landings, the EPA has designated three military helicopter airports in Longtan (Taoyuan County), Sinshe (Taichung County), and Guiren (Tainan County) as airports that require continuous monitoring of aviation noise. Plans call for officially delimiting these sites as aviation noise control zones next year.

To solve the disturbing noise problems of military helicopter take-offs and landings, the EPA has designated military helicopter airports in Longtan (龍潭), Taoyuan County; Sinshe (新社), Taichung County; and Guiren (歸仁), Tainan County as sites required to install their own noise monitoring equipment and continuously monitor noise. The EPA has also worked closely with the environmental protection bureaus (EPBs) of those three counties to discuss the demarcation of aviation noise control zones. It is hoped that this impels airport management organizations to expedite aviation noise improvement plans. The EPA expects the new zones to be in place next year (2005).

Research by the EPA shows that helicopters in flight not only generate mid and high frequency noise, but low frequency noise also makes up a considerable proportion of their noise range, especially during test flights, low-altitude flights or endurance flights,

which transmit low frequency noise as far as one to two kilometers away. This not only has an impact on the sleep and daily affairs of residents near the airports; it is also a potential

News Brief

Hot Springs Wastewater Control Plan Drafted

In coordination with the *Hot Springs Act* (溫泉法), the EPA has begun drafting a control plan depending on the wastewater source and characteristics in each hot springs zone, nearly half of which are located in source water quality protection areas. The first option is for businesses to install a separate drainage system for treating wastewater from pure hot springs bathwater, which only requires simple treatment and sterilization. The separated drainage systems will greatly decrease the overall discharge and make it easier to treat

shower and bath wastewater from restaurants and private rooms. Businesses choosing this option are not allowed to use over 50 tonnes of water per day. The second option is for businesses without separate drainage systems that discharge over 50 tonnes of wastewater per day. These businesses must abide by stricter controls including the effluent standards, the effluent permit, and water pollution control measures and equipment standards. This control plan is currently being drawn up and must first be discussed with businesses and experts before confirming control methods. (Please see EPM Vol.07 Issue 08)

Air Quality

Monitoring of Ozone-Producing Pollutants Enhanced

Ozone is one of the main pollutants responsible for poor air quality. The EPA has strengthened monitoring of highly reactive VOCs that produce ozone in the Kaohsiung-Pingtung region where there is a high density of petrochemical industries. The EPA and local environmental protection bureaus will continue enhanced monitoring and auditing of petrochemical factories that use or generate these pollutants.

The EPA has been employing infrared remote sensing technology in recent years to monitor the status of air pollution in petrochemical industrial parks and to scan petrochemical factories for potential pollution sources. Ozone is one of the main pollutants contributing to poor air quality in recent years. This year monitoring for highly reactive ozone-producing volatile organic compounds (VOCs) will be intensified in the Kaohsiung-Pingtung region. Monitoring results of six petrochemical factories show that ethylene, butadiene and other alkenes are the main pollutants responsible for producing ozone. The EPA and local environmental protection bureaus (EPBs) have stepped up monitoring and auditing of petrochemical factories that use or generate these substances.

From 1998 to 2003, the EPA has used the monitoring results of infrared remote sensing to successfully detect escaped pollutants on eleven occasions. The EPA has invested over NT\$130 million toward installing pollution prevention equipment or carrying out improvements in manufacture equipment. At factories where infrared remote sensing has detected potential pollution sources, improvements have been made to reduce losses of raw materials or products, reaching a win-win balance point between the environment and the economy.

As for the production of ozone, VOCs and nitrogen oxides (NO_x),

the ozone-producing reactivity of VOCs differs due to the varied structures of over 10,000 types of VOCs. Take for example the high potential for ethylene and propylene to generate ozone – their ozone-producing reactivity is 1,000 to 1,200 times that of methane. This year the EPA is carrying out strict monitoring and control of petrochemical plants with emissions of highly reactive ozone-producing pollutants. Monitoring is carried out with the best alkene-sensitive infrared remote sensing technology. This method is not yet a statutory testing method and is only used to screen pollution sources and as a tool for helping factories improve. This year the monitoring results of six petrochemical manufacturing areas in the Kaohsiung-Pingtung region show that according to measurements of the average concentration of each pollutant and its ozone-producing reactivity, the highest ozone-producing pollutant was ethylene, accounting for 60% of detected pollutants, followed by butadiene (28%) and propylene (7%). From this it can be deduced that alkenes from petrochemical plant emissions are the leading cause of ozone production. Ethylene and propylene are commonly used raw materials in the petrochemical industry. It is easy for plants to overlook an occasional small leak and the consequent slight increase in production costs.

After joining pollution reduction

talks with the EPA, industry has begun to undertake improvements both to save on raw materials costs and to improve ozone concentrations. The EPA has asked the Kaohsiung City and County EPBs to step up audits and counseling for petrochemical plants using large quantities of ethylene or propylene, in order to improve the air quality of the Kaohsiung-Pingtung region.

Recycling

Tightened Auditing of Recycling, Clearance and Disposal Fees

To an increasingly serious degree, corporations are failing to pay recycling, clearance and disposal fees in full. Over the past few years, industry has racked up a cumulative debt of over NT\$2.2 billion in terms of unpaid recycling, clearance and disposal fees. The EPA will promptly strengthen auditing of businesses to put into practice the polluter pays principle, as well as honest reporting and equitable payment principles.

Targeting products, packaging, and containers that are not easy to collect and dispose of, or have recycle or reuse value (such as drinks, cars, batteries, etc.), the *Waste Disposal Act* (廢棄物清理法) stipulates that manufacturers and importers of such materials must report waste amounts and pay a recycling, clearance and disposal fee.

The EPA indicates that over the last six years as of the end of July this year (2004), the number of businesses subject to this regulation has increased from 6,400 to over 9,500.

The EPA screens out and takes firm action on businesses suspected of underreporting fee payments, as well as audits financial accounts of business volume and import volume. Nearly 3,000 corporations have been found underreporting their waste data in the last few years. This accounts for NT\$2.25 billion of uncollected fees. So far NT\$1.44 billion of this has been recovered and the remaining amount is still being collected and investigated.

The EPA explains that without exception, those businesses that have already been asked to pay overdue fines yet are not willing to pay, will be strictly dealt with according to law. In dealing with unlawful companies or their representatives, local administrative offices under the Ministry of Justice have taken strict measures to demand fee payments within a certain deadline, distraining bank accounts, seizing and auctioning property, restricting relocation, or even detaining those responsible until fees are paid.

From now to the end of March 2005, the EPA is entrusting a certified accounting agency to audit the business volume and import volume of at least 1,150 companies, and screen those suspected of seriously falling short of payments. These companies will be subject to longer on-site audits. Such measures are necessary to protect the fairness of the fee system and to broaden the framework for fee collection.

The EPA advises corporations to stop trusting their luck, because once found guilty of underpaying mandatory fees, they will not only be required to pay the missing amount, but also will be fined as much as three times that amount. The EPA will also release each company's tax information to investigation organizations to facilitate strict inspections based on tax records.

Air Quality

Government Assists Industry with Greenhouse Gas Inventory

The *Kyoto Protocol* goes into effect in early 2005, behooving all countries to adopt response measures. Helping domestic industries confront the impact of this trend, the EPA will counsel on how to calculate and establish production greenhouse gas emissions reports, as well as set up a greenhouse gas inventory system.

Following the Russian parliament's ratification of the *Kyoto Protocol* on global climate change on 22 October 2004, the protocol is finally expected to take effect in February 2005.

Most of the world's countries and related international organizations are actively seeking response strategies. The European Union has initiated a greenhouse gas emissions trading system and multinational finance enterprises now take greenhouse gas controls into account when assessing investments. Not just viewed as an environmental issue anymore, the greenhouse effect is now recognized as a universal issue affecting the economy, society and energy use.

The EPA indicates that Taiwan's production industry may be the most directly affected by controls after the *Kyoto Protocol* takes effect. Working to minimize the impact, the EPA has expressly singled out manufacture industry, transport and resident business departments to carry out greenhouse gas inventory and management, reduction planning, strategic analysis and trial action plans based on a comprehensive assessment of Taiwan's greenhouse gas emissions and possible future challenges.

The EPA initiated the "Industry Greenhouse Gas Inventory, Report and Demonstration Trial Plan" (產業溫室氣體盤查、登錄及示範推廣試行計畫) on November 2004. This plan provides

free guidance to industries on how to use a consistent calculation method and establish greenhouse gas emissions records. Industries were brought together for an experience sharing and exchange

News Brief

EPA Commissions Biotech Park to Inspect Water Pollution

In the interest of shortening the time required for companies to establish factories, on November 1 the EPA has commissioned the Pingtung Biotechnology Park Instrument Division to carry out water pollution related application review of companies entering the park. In 2002, the Council for Economic Planning and Development reached a consensus on, requiring technology and science parks, export processing zones and industrial parks under central management to establish a responsible management organization that processes reviews of new companies from a single window. To effectively shorten the time required to set up factories, in the same year the EPA revised related regulations based on that consensus, and added regulations to give authorized commissioned organizations authority to carry out reviews. Since 31 December 2002, the EPA has asked the Science-based Industrial Park Administration, the Southern Taiwan Science Park Administration, the Central Science Park Preparatory Office and the Industrial Development Bureau to carry out reviews according to the *Water Pollution Control Act*.

forum, during which the EPA assisted industries to establish internationally compatible implementation methods for inventorying and reporting greenhouse gases. To solve difficulties created by industries engaged in practices inconsistent with national and international standards, two public briefings will be held in Hsinchu and Kaohsiung at the end of November. The briefings will select 12 factories from power, petrochemical, cement, steel and paper industries to begin the first year of the assistance trial plan.

According to EPA data, the International Standards Organization (ISO) may come out with a greenhouse gas standard ISO 14064 next year (2005). If this standard is approved, the international trend will be to apply for this accreditation. The greenhouse gas inventory work promoted by the EPA this year may comply with this ISO standard, which will benefit participating industries in obtaining ISO accreditation.

Greenhouse gas inventories are the first step to achieving industry greenhouse gas reductions. Although Taiwan is not yet subject to the controls of international treaties, the target of international demands for greenhouse gas reductions has gradually shifted from nations to individual industries in recent years. As most of Taiwan's industries are geared for export sales, this international trend could incite boycotts of Taiwan's export products if no corresponding measures are taken. The EPA welcomes related industries to take advantage of this rare opportunity and eagerly sign up for the selection process. For information regarding sign up and selection, please contact China Technical Consultant Inc., under commission of the EPA. Tel: 02-2773-3317 ext. 306

General Policy

EPA Urges Corporations to Adopt Green Accounting

Keeping up with worldwide trends, the EPA is actively promoting an industry environmental accounting system. This will improve on conventional business accounting systems, which currently lack open financial records on enterprise activities. Environmental accounting portrays the green competitiveness of Taiwan's industries in response to new environmental policies.

Financial information on industry's environmental expenditures can be used to measure the degree to which a nation's industries value environmental quality. Such data also shows the competitiveness of a nation on environmental issues or under environmental limitations. The same information can also serve as the fundamental data required to compile Green GDP.

Environmental accounting systems are the current global environmental trend. There are currently 27 domestic enterprises in Taiwan that have taken the lead in implementing such systems, including Everlight Chemical Industrial Corporation (永光化學), United Microelectronics (聯華電子), Yulon Motor (裕隆汽車), Cheng Lung Paper Company (正隆紙業), and Taipower (台灣電力公司). Corporations with environmental accounting systems earned more points in the 2004 the R.O.C. Enterprise Environmental Awards issued by the President of Taiwan, raising the incentive to keep up with this trend.

Environmental accounting, also called green accounting, accurately shows the corresponding financial information of an enterprise's environmental activities. The EPA indicates that by providing financial information on environmental activities an enterprise can benefit its internal management as well as win

more export orders, reduce costs and strengthen environmental management measures. Such information also reveals each enterprise's achievements in improving the environment as well as areas that still require improvement. Most importantly is that green accounting can trigger changes that improve the nation's environmental quality.

About 30 countries, including the US and Japan, have already established and implemented environmental accounting systems. International corporations' decisions to cooperate with other companies are often based on green accounting information. There is indication that the International Standards Organization (ISO) will assess the possibility of including green accounting systems among their standards in the next few years. Green accounting is expected to become an international reference standard and common trend for business transactions and international trade quality certification. In light of this, the EPA has already included its environmental accounting promotion plan as part of the Environmental Three-Year Action Plan (環境保護三年行動計畫) and midrange implementation plans. Future work includes further publicizing, researching, revising, establishing incentives, and drawing up a complete set of measures.

The EPA established a national environmental accounting system in 2002, laying down the frame-

work and determining target categories for environmental accounting and classification of environmental costs. Green accounting has been designed to show business or production related environmental initiatives. It also shows environmental costs including upstream green purchases from suppliers, downstream green sales to customers, environmental research and development, management, damages and compensation, and social activities.

This year the EPA has been busy

organizing related research and study sessions, seed training workshops, briefings, developing a website, and counseling enterprises during their trial period to raise their knowledge and willingness to implement the system. The EPA's website makes it more convenient for enterprises to understand the green accounting framework and relates experiences and achievements of other companies' trial runs. Interested businesses can contact the EPA directly or get online at www.epa.gov.tw/statistics/環境會計制度/index.html

analysis can be brought into full play and a sustainable business environment can be provided for private environmental analysis organizations. The objective behind this initiative is to make full use of human and technical resources, and put the policy on privatizing environmental protection work into practice.

Analysis organization permits are divided into over ten different fields. Currently Taiwan has 41 air analysis labs, 70 water quality and water supply analysis labs, 61 drinking water analysis labs, 35 groundwater analysis labs, 35 waste analysis labs, 5 toxic chemical substances analysis labs, 23 noise and vibration analysis labs, and 17 soil analysis labs.

Environmental analysis organizations' quarterly reports show that in 2003, the nation's environmental analysis organizations garnered a total business volume of NT\$ 1,032,610,000, taking 269,582 samples and performing 1,170,327 analyses.

Environmental Analysis

EAL Initiates Inspections to Ensure Quality Environmental Analysis

In response to the growing number of environmental analysis organizations in recent years, the Environmental Analysis Laboratory has bolstered its gate-keeping role by initiating inspections of analysis organizations to guarantee the quality of the nation's environmental analysis data. Analysis organizations will be fined if found violating regulations.

Environmental analysis results are an important foundation of environmental protection. Environmental Analysis Laboratory (EAL) statistics show that as of July 2004, a total of 93 laboratories have been established by environmental analysis organizations under the EPA's authorization. Based on the large number of analyses made by domestic environmental analysis organizations last year, testing around 270,000 samples and reaching a business volume of over NT\$1.03 billion, the EAL has begun careful inspections of each organization in order to protect the quality of environmental analysis data. Already 12 inspections were carried out in August.

Analysis organizations are requested to follow the EPA's official standard analysis methods and operations in the Standard Operation Procedures (SOP) before un-

dertaking sampling analysis. Those that fail to do so will be subject to a NT\$6,000 to NT\$200,000 fine according to the *Pollution Control Act* (污染防治法). To ensure the quality of environmental analysis data, all accredited environmental analysis organizations are targeted for inspection in this year's audit plan.

In the interest of privatizing environmental protection work, an accreditation system for environmental analysis organizations has been activated since 1987 and much work has gone into assisting enterprises to become EPA-accredited analysis organizations. These organizations are responsible for following environmental protection regulations on inspections and environmental quality monitoring. In this way the efficacy of private environmental

News Brief

NATA: Thumbs Up for EAL

The internationally reputable laboratory accreditation organization, the National Association of Testing Authorities, Australia (NATA) paid a three-day visit to the EPA's Environmental Analysis Laboratory from October 4 to 6 to administer a routine biannual reassessment and audit. NATA gave a strong affirmation of the institute's sampling and testing capabilities and quality system operations for testing various environmental samples of air, water, waste, soil, and dioxin, etc. NATA inspectors especially praised EAL's high tech dioxin testing technology, ranking EAL as one of the world's leading institutions in this field. The EAL first obtained NATA accreditation on 31 January 1995. NATA's high approval during this year's audit has special implications for EAL in its tenth consecutive year of NATA accreditation.

Green Mark**Green Mark Specs Ready for Video Disc Players**

Manufacturers of video disc machines including DVD and VCD players are now eligible to apply for the Green Mark eco-label. The EPA has just announced new specification standards and will soon accept applications from manufacturers for video disc players deemed by official standards to be energy efficient, devoid of hazardous substances, and easy to recycle and reuse.

Working to strengthen international cooperation on eco-labeling, this year the EPA has drawn up eco-label specifications for "video media broadcast equipment" together with three other eco-label organizations in Japan, South Korea, and Thailand. The four cooperating countries will begin accepting applications for eco-labels at the same time. Video disc players are the fourth type of product for Taiwan to open up to international specifications, following toner cartridges, water-based paint, and multi-function office machines.

Video media broadcast equipment including DVD, VCD, VCR-DVD and stereo-DVD dual-function systems are now universal home electronics products. These products were prioritized for eco-label specifications during last year's international eco-labeling conference. South Korea is responsible for gathering all the relevant information and developing draft plans.

The focal environmental demands made by this specification are that products are energy efficient, do not contain hazard-

ous substances and are easy to recycle or reuse. Similar demands are made of product packaging. It is hoped that such environmental initiatives in energy conservation and resource recycling help us face the challenge of rapidly declining global oil resources.

The EPA's objective of participating in the formulation of international common eco-label specifications is multidimensional. In addition to addressing environmental demands, Taiwan's active participation will raise the nation's international status in environmental protection. At the same time, this move helps reduce barriers to international trade by providing manufacturers with internationally recognized environmental specifications to adhere to when designing and manufacturing products.

On February 2003, the European Union issued the Directive on Waste Electrical and Electronic Equipment (WEEE) and the Restriction of Hazardous Substances

Activity**Persistent Organic Pollutants (Dioxin) Conference—Sources, Monitoring, and Controls**

The "Persistent Organic Pollutants (Dioxin) Conference—Sources, Monitoring, and Controls" sponsored by the EPA and co-sponsored by the Center for Environmental Safety and Health Technology Development (ITRI) and the National Central University's Graduate Institute of Environmental Engineering was held on October 14. Among those invited to attend were five experts from the US EPA: Mr. Robert Hall (Chief, Air Pollution Technology Branch), Dr. Brain K. Gullett (Acting Branch Chief, Office of Science Policy in Washington D. C., US EPA), Dr. Chun Wai, Lee (Senior Engineer, Office of Research and Development, National Risk Management Research Laboratory (NRMRL)), Mr. Jeffrey V. Ryan (Senior Scientist, NRMRL) and Mr. Joseph Wood (Senior Scientist & Engineer). The forum discussed the

production and history of dioxin in addition to other topics based on the US' experience, including how to use cement furnaces to treat hazardous industrial waste and methods for the continuous monitoring of dioxin. The

director of the National Central University's Graduate Institute of Environmental Engineering delivered a talk entitled: "Important Issues Concerning Combustion Generated POPs in Taiwan."



Persistent Organic Pollutants (Dioxin) Conference—Sources, Monitoring, and Controls: Director Ho Soon-ching (何舜琴) (right) of the EPA's Department of Air Quality Control

(RoHS). From August 2005, manufacturers of ten categories of products including large and small home electronics, and information and communication products will be responsible for recycling their products. From 1 July 2006, the

following six hazardous substances will be prohibited from use in manufacturing products: lead, cadmium, mercury, chromium, PBBs and PBDEs. Green Mark specifications for video disc players make similar

demands. By obtaining the Green Mark for video disc players, manufacturers minimize risks on the market and improve the competitiveness of their products in the international market.

News Briefs

Keelung City Waste Incinerator Ready Next Year

The bid for the contract to continue construction of the Keelung City resource recovery plant (incinerator) was decided on 1 November 2001. Construction has lasted for 42 months. A trial run was administered this October and the first trial incineration is slated for February 2005. All construction will be completed and the plant will begin operations in June 2005, after which operation will be handed over to the Keelung City government. The plant is to takeover waste management after the closing of the local landfill. Construction of Keelung City's waste incineration plant began in 1994. However, due to the original contractor's financial problems, the bidding had to be held all over again twice. Since the restart of construction in 2001, the EPA has been closely monitoring the work, which is now back on schedule. The construction has passed quality assurance audits of both the Public Construction Committee and the EPA with high ratings and the company has been nominated by the EPA for this year's "Golden Award in Public Construction."

Training for Air Con Installers to Reduce Noise Pollution

Noise from air conditioners and water cooling towers are the number one topic of public nuisance complaints received by environmental protection agencies. From November 2004, the Environmental Professional Training Institute (EPTI) will hold workshops in northern and central Taiwan for manufacturers and consignees of air conditioner systems and water cooling towers. Training will cover noise control standards and regulations, low frequency noise testing and control technology and common practices so

that installation technicians have a good command of appropriate installation techniques or can advise proprietors in choosing optimal installation locations to effectively stop low frequency noise.

International Media Affirms Taiwan's Recycling Policies

Three reporters from the UN's special organization for international media (ACANTU) came to Taiwan to interview the Recycling Fund Management Board (RFMB) on October 12. After the RFMB gave a small briefing entitled "Resources Recycling in Taiwan ROC," ACANTU president, Ms Hedayat Abdel Nabi of Egypt, US ABC News reporter Ms. Lisa Schlein, and Finland-based Talous Sanomat's Ms. Kirsi Hyytiäinen all expressed strong interest in Taiwan's current action taken on waste sorting, recycling, the plastic bag restricted use policy and the per bag trash collection fee. The reporters were in favor of such measures and asked many in-depth questions with both sides engaged in enthusiastic and interactive two-way

exchange.

Jianan Gas Station Deemed Groundwater Pollution Remediation Site

On October 19, the EPA announced the Jianan Gas Station in Liujia Township (六甲鄉), Tainan County as a groundwater pollution remediation site primarily based on the presence of benzene and toluene in groundwater tests. Preliminary assessment results showed that benzene reached concentrations as high as 23.6 mg/l, about 472 times the groundwater pollution control standard for benzene of 0.05 mg/l. According to the *Regulations for Preliminary Assessment of Soil and Groundwater Pollution Control Sites* (土壤及地下水污染控制場址初步評估辦法), if the concentration of any one pollutant exceeds the control standard by over 20 times, the said area shall be considered a remediation site.



EPA Administrator Juu En Chang (張祖恩) (third from left) and six enterprises call on citizens to recycle batteries.

Activities

Administrator Dumbledore: "Trick or Battery"

This year's Halloween was no ordinary one for the EPA as senior officials put on an energetic and stimulating environmental education show for community residents. On the eve of October 31, EPA Administrator Juu-En Chang (張祖恩) led his team dressed as several characters in Harry Potter together with residents and children of the Jhenhua community in Beitou, Taipei City. The disguised posse knocked on the doors of residents calling out, "Trick or battery!" Residents were asked to give their used batteries to the children in the parade. The group collected many bags of batter-

ies and all participants went away with a good understanding of the environmental importance of recycling batteries.

2,500 Citizens Participate in World Water Quality Monitoring Day

The EPA has invited citizens to participate in the Second World Water Quality Monitoring Day activities from September 18 to October 18. Over 440 groups with over 2,500 people joined in this year's water quality monitoring activity. EPA Administrator Juu-En Chang notes that last year over 20 countries participated in this global event. Over 160

groups representing 1,600 people in Taiwan teamed up with this international water quality monitoring initiative last year. This year's results were fruitful as well, attesting to the eager involvement and concern for water resources by more and more citizens. The results of this year's monitoring can be found online at www.epa.gov.tw/monitoring/wmd/0615.html.

Digital Environmental Alliance Resounds Recycling Policy

The Digital Environmental Alliance formed by PC Office magazine and the five companies IBM, Duracell, MOTOROLA, OLYMPUS, and Mr. Battery was formally inaugurated on October 21. EPA Administrator Juu-En Chang spoke at the inauguration ceremony, thanking this group of enterprises for cooperating with the government in advocating Taiwan's environmental policies. Chang expressed hope for industry groups to make extra efforts toward environmental protection. Chang noted that nearly all those participating in this alliance are multinational corporations with a substantial share of the market. As participation has a bearing on various industry award programs, Chang anticipates good results. Adopting a catchy recycling slogan, the Digital Environmental Alliance reminds the public to help eliminate the hazardous substances mercury, cadmium and lead from the environment by recycling batteries.



Administrator Juu-En Chang (second from right) dressed as Hogwarts' Professor Dumbledore along with Recycling Fund Management Board Executive Secretary Chen Lian-ping (陳聯平) (first from right) and Taipei City Department of Environmental Protection Director Chen Yeong-ren (陳永仁) (first from left).

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